

















# **A CYCLOPEDIA OF EDUCATION**



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# A CYCLOPEDIA OF EDUCATION

EDITED BY

PAUL MONROE, Ph.D.

PROFESSOR OF THE HISTORY OF EDUCATION, TEACHERS COLLEGE  
COLUMBIA UNIVERSITY

WITH THE ASSISTANCE OF DEPARTMENTAL EDITORS

AND

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# A CYCLOPEDIA OF EDUCATION

**GAILHARD, JOHN** — Writer of the *Complete Gentleman*, 1678. This treatise is divided into two parts, the first containing directions for the education of youth, in their breeding at home, and the second concerns itself with their breeding in traveling abroad. Gailhard seems to have spent a number of years as tutor abroad to "several of the nobility and gentry." In the first part, he treats of breeding children at home, and recommends a wide curriculum similar to that of Milton. Throughout the stress is laid upon the bearing and breeding and character which should be shown by the nobleman and the best means of inducing it.

In the next part, Gailhard points out the qualifications, duties, and value of the traveling tutor, and his treatise is probably the most complete on the subject. Before traveling, the pupil should learn something of the language of the country to which he goes. He should, too, know well his own country and its main characteristics before traveling. The pupil, following the excellent custom noted by Bacon, is to "take pains in writing in his Diary Book" all he sees. Religious devotions and reading of the Bible must not be neglected. Physical exercises and music must also receive attention. If he comes to a convenient place, he should learn the general principles of physic, say at Padua or Montpellier, and Civil Law, say at Angers or Orleans. Drawing should also be learned. Gailhard suggests three years as the time for the Grand Tour, of which half should be spent in France. On the whole, Gailhard's book gives great insight into the tone and standards of the young gentleman of the times and the current English views of foreign nations. F. W.

See GENTRY AND NOBLES, EDUCATION OF

**GALE, GEORGE WASHINGTON** (1789-1863). — A pioneer in the movement for manual training in the United States, was graduated from Union College in 1814 and from the Princeton Theological Seminary in 1818. He was for several years engaged in the work of the ministry; but, failing in health, he retired to a farm at Whitesboro, N. Y., where he gave a class of boys free board and tuition for a few hours of work each day on the farm. Out of the experiment grew the Oneida Manual Labor Institute of which he was principal for seven years (1827-1834). Courses were given in applied agriculture and woodwork. He was one

of the founders of Knox College at Galesburg, Ill., and for a few years a professor there.

W. S. M.

See INDUSTRIAL EDUCATION; MANUAL TRAINING SCHOOLS

**GALE COLLEGE, GALESBURG, WIS** — See LUTHERAN EDUCATIONAL SYSTEM IN THE U. S.

**GALEN, CLAUDIUS** (131-c. 201). — Greek physician and writer on medical subjects. He was born at Pergamon in the reign of Hadrian. Galen studied medicine at Pergamon, Smyrna, and Alexandria. On completing his studies he returned to his native city where he was appointed physician to the athletes in the gymnasium. He spent a few years at Rome, where his ability attracted attention. In 169 he was summoned to attend the Emperors Marcus Aurelius and L. Verus in the campaign on the north-eastern frontier. He returned to Rome, where he became for a time physician to Aurelius and Commodus. The exact date of his death is not known, but Galen certainly lived in the reign of Septimus Severus.

Galen was a prolific writer and is credited with some 500 works. Of the extant works about 118 are considered to be genuine. Although known mainly by his medical works, he wrote many treatises on philosophy and literary criticism. Among his writings are commentaries on the dogmas of Plato and on the *Timæus*. His interest in the works of Hippocrates is shown by the commentaries. He also wrote on the Ancient Comedy, on Atticisms, and on style. But his fame rests on his works in the field of medicine. He touched on every aspect of the subject, including anatomy and physiology, dietetics and hygiene, pathology, diagnosis, pharmacy, and materia medica, therapeutics, and surgery. He treats of the anatomical phase most successfully, although it is not thought that he had any opportunities for dissecting human bodies. He himself recommended the dissection of animals, and especially monkeys, as being most like the human being. He is reputed to have performed some remarkable surgical operations. In the field of pharmacy and materia medica he seems to have had more faith in amulets than in medicine, although he was famous for certain prescriptions. Galen was the first and greatest authority on the pulse.

Galen's works held the place in the study of medicine in the medieval universities which Aristotle held in philosophy. His authority was not questioned until the sixteenth century. In 1559 a Dr Geyner was admitted to the College of Physicians of England only on recanting his attacks on the infallibility of Galen. But from the time of Galen all sects (*c q* Dogmatics, Empirics, Eclectics, Pneumatics, and Episynthetics) were united under the one great source of medical lore. His works were for a long time read in Latin or Arabic translations. The first edition of the Greek text was published by the Aldine press in 1525.

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**GALILEI, GALILEO** (1564-1642).—The famous astronomer was born at Pisa. His father, who was skilled in music and mathematics, intended the son for trade, but was prevailed upon to send him to the University of Pisa to study medicine. Galileo was of such an argumentative disposition that he won for himself the nickname of "the wrangler." But his bent was not for medicine. In 1582 he made his first scientific discovery of the principle of oscillation of a pendulum and invented an instrument which was useful to doctors in testing the beat of the pulse. Through poverty he was compelled to leave the University without a degree in 1585. In 1586 he wrote an essay, not published until the last century, on the hydrostatic balance, an instrument which he had invented to measure the specific gravity of solids. In 1589 he became professor of mathematics and astronomy in the University of Pisa. At this period began his long series of experiments which mark the beginning of modern methods in scientific study. In place of deductions and reliance on the authority of Aristotle he made actual experiments as precise as they could be in his time. He devoted his attention to a study of falling bodies, and concluded, contrary to the opinion of the day, that the time taken by falling bodies depended not on their weight, but on the resistance of the air. Although the appointment at Pisa was for three years, he left before his time expired, owing to the attacks of his opponents. In 1592, he was appointed professor of mathematics at Padua, originally for a period of six years, later gradually extended to eighteen years, and then for life. Here he attracted large audiences to his lec-

tures, and devoted his attention to mechanics and the invention of scientific instruments. His first discovery of importance in astronomy was made in 1604 when he noticed the appearance of a star in the constellation Serpentarius which was more distant than the planets. From this period on Galileo's reputation was spread over Europe by his telescopic observations, and his improvements on the telescope. His discoveries he published in 1610 in *Sidereus Nuncius* (*Sidereal Messenger*). Here he showed that the markings on the moon were caused by mountains and their shadows, that the moon was much like the earth, and that celestial phenomena were similar to those on the earth. The Pleiades and the Milky Way he proved to consist of numerous stars invisible to the naked eye. In the same year he discovered the Satellites of Jupiter. Feeling the need of more time for his researches and writing, he returned to Pisa, where he was appointed professor of mathematics and first philosopher and mathematician to the Grand Duke of Tuscany, a well-salaried post with few duties attached. Among his other discoveries were the sun spots and the fact that Venus derived light from another body in the same way as the moon.

There were not wanting those who seized an opportunity of assailing Galileo for his overthrow of the belief in the celestial bodies as perfect and unchangeable. He was drawn into a dispute on the question of the validity of reasoning and observation on the one hand, and scriptural and ecclesiastical authority on the other. His attitude is illustrated by the following quotation from his writings, "Methinks, that in the discussion of natural problems we ought not to begin at the authority of places of scripture, but at sensible experiments and necessary demonstrations." In 1615 he was denounced to the Inquisition which appointed a body of theologians to examine the Copernican doctrines, as a result Galileo was admonished by order of the Pope to abandon his opinions. For the next few years Galileo remained in Rome, where he had powerful friends. In 1623 he wrote *Il Saggiatore* (*The Assayer*), the final contribution to a controversy on which he had entered with a Jesuit in 1618. The book again brought him into favor with the Pope, to whom it was dedicated. In 1632, after considerable difficulties with the censors at Rome and Florence, he published a Dialogue on the *Two Chief Systems of the World, the Ptolemaic and Copernican*, which was a powerful argument in support of the Copernican theory set out in a thinly veiled disguise. A feeling that the book treated disparagingly of the Pope caused the Inquisition to stop the sale of the book and to compel Galileo to appear for trial. He was treated kindly during the trial, but was condemned to prison. Through the influence of his friends he was allowed to remain in confinement in a country house near Florence. He

continued his investigations, which, however, were cut short by blindness in 1636. The chief work of this period was *Mathematical Discourses and Demonstrations concerning Two New Sciences, relating to Mechanics and to Local Motion*, written in the form of a dialogue and dealing with statics, falling bodies, and projectiles. In 1642 Galileo died and was buried in the Cathedral of Santa Croce. Galileo ranks with Bacon as one of the founders of modern experimental science. In astronomy he will always have a permanent place, for many of his discoveries, despite the lack of exact instruments, were remarkable for their precision. In dynamics he created an entirely new science which served as a basis on which future scientists were to build.

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**GALL, FRANZ JOSEPH** (1758-1828).—The founder of phrenology (*q.v.*), born at Tiefenbrunn in Baden, the son of an Italian merchant named Gallo. He received his early education at the hands of his uncle, a Catholic priest; later studied at Baden, at Bruchsal, at Strassburg, where he distinguished himself by research in natural history, and at Vienna, where he took his doctoral degree and commenced the practice of medicine. In 1796 he began to promulgate his theory in lectures, which were continued until 1802, when they were forbidden by the Austrian government as inimical to religion. In 1805 he left Vienna, in company with his pupil Spurzheim, and in 1807 established himself at Paris. In the intervening two years he lectured in the principal cities of northern and central Europe, and in 1823 delivered a few lectures in London. He continued lecturing at Paris until a few months before his death, which occurred at Montrouge.

The observations on which Gall based phrenology began during his boyhood, with the noticing of an apparent relation between the size of the eye and the retentiveness of memory. At Strassburg and Vienna Gall was indefatigable in the examination of the heads of persons who exhibited striking mental peculiarities, modeling many of them in plaster and wax; and extended his study to the lower animals. He was practically the first to recognize the main features of the gross anatomy of the brain, and the function of the fibers and of the cortex. The importance of his work is indicated by one of the inscriptions on a medal struck in his honor in Berlin: *Il trouva l'instrumente de l'âme*. Gall's most important publications

were the *Recherches sur le système nerveux en général et sur celui du cerveau en particulier*, written in collaboration with Spurzheim (*q.v.*), and published in 1809; and the *Anatomie et physiologie du système nerveux*, which appeared in four volumes in 1810-1819. The latter work was commenced with Spurzheim, but finished alone, the two having quarreled and separated. An abridged edition was published by Gall in 1822, and an English translation appeared in Boston in 1835. K. D.

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**GALLAUDET, THOMAS HOPKINS** (1787-1851).—The founder of the first American school for the deaf, born in Philadelphia the 10th of December, 1787. He received his education at the Hartford Grammar School, Yale College (graduating in 1805), and Andover Theological Seminary. Becoming interested in the deaf, and recognizing their need of education, he went to England to study the methods of lip-reading and articulation in use in that country. The selfishness of the proprietors of the British schools made it impossible for him to study the methods there used, and he went to Paris, where he was cordially received by the Abbé Sicard (*q.v.*), who placed all the facilities of the French institution at his disposal. The manual or sign method was employed in the Paris school, and this was the method that Gallaudet brought to America. With the assistance of Laurent Clerc, who had been associated with the Abbé Sicard, Gallaudet organized the American Asylum for Deaf-mutes at Hartford, in 1816, and continued at its head until 1830. As this was the first school for the deaf in the United States, practically all the instructors in deaf schools in the country for a half century were trained at Hartford, and the manual or sign alphabet became the dominant method of instruction. During 1832 and 1833 Gallaudet was professor of the philosophy of education in New York University. This was the first professorship of education in the United States. (See EDUCATION, ACADEMIC STUDY OF.) He was also active in the movement which established the first normal schools in America. Besides his writings on the education of the deaf, he published a number of essays on the philosophy of education and several text-books, including the popular *Mother's Primer* and the *Child's Picture Defining and Reading Book*. His *Plan of a Seminary for the Education of Instructors of Youth* (Boston, 1825) gave rise to the normal school idea in America. He died at Hartford the 9th of September, 1851. W. S. M.

See DEAF, EDUCATION OF THE.

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**GALLAUDET COLLEGE, WASHINGTON, D.C.**—A coeducational institution for the higher education of the deaf, founded in 1864 as the National Deaf-Mute College. The present name was adopted at the request of the alumni in 1894 in honor of Thomas Hopkins Gallaudet (*qv*). The course given by the college extends over five years, including one year of preparatory work. A general course in the essentials of a liberal education is given leading to the degrees of BA and BS. A normal course is maintained for training hearing persons who are already graduates of colleges and wish to become teachers of the deaf. There are fourteen members on the faculty.

**GALLOWAY, SAMUEL** (1811-1872) — A pioneer of the common school movement in Ohio; was graduated at Miami University in 1833. He was teacher and principal of schools in Ohio, state superintendent of public instruction (1844-1851), and professor in Miami University. He was one of the organizers and the first president of the Ohio State Teachers' Association. W. S. M.

**GALLOWAY COLLEGE, SEARCY, ARK** — An institution for the education of women under the auspices of the Methodist Episcopal Church, South, established in 1890. Preparatory, collegiate, and music courses are offered. Twelve units are required for entrance to the college course which leads to the AB degree. There are nineteen teachers on the faculty.

**GALTON, FRANCIS** (1822-1911). — A celebrated English scientific investigator, born in Birmingham, England, in 1822, of a distinguished family. His paternal grandfather, a Quaker and a business man of ability, was interested in the study of birds and in statistics. A cousin, Sir Douglas Galton, was an eminent engineer. This mathematical inheritance was supplemented on the mother's side by genius in the study of nature. Galton's maternal grandfather was Erasmus Darwin, hardly less remarkable a naturalist than his illustrious grandson, Charles Darwin. Galton studied at Trinity College, Cambridge, and took the degree of BA in 1844. He began his career as an explorer of the upper Nile, and later of Damaraland in Southwest Africa. In the latter region he discovered the Ovampo race, an agricultural people. As an explorer he not only added materially to anthropology, etc., but also to the methods by which expeditions can most successfully be carried on. His results were published in the Royal Geographi-

cal Society's Journal for 1852, and in his books, *Narrative of an Explorer in Tropical South Africa*, and *Art of Travel or Shifts and Contrivances in Wild Countries*.

The second phase of Galton's activity concerns meteorology. He invented the graphic method of indicating weather conditions, which is to-day used in connection with weather forecasts. It appears in his *Meteorographica*, or *Methods of Mapping the Weather*, published in 1863. He also developed the theory of anti-cyclones especially valuable in such prognostications. In addition he invented many instruments useful in meteorologic observations. The phenomena of meteorology are so complicated that predictions can be made only in terms of probability and on the basis of extensive statistical data. These methods, Galton conceived, should be applied to biology, anthropology, and psychology, for here, too, the conditions are exceedingly complicated, and statistical methods and probabilities are an appropriate foundation and form of expression for predictions. His work in these fields constitutes the third phase of Galton's activity. He began with the study of heredity, and in 1869 published his *Hereditary Genius*, in which he demonstrated the inheritance of genius. A child whose ancestors are talented is shown to have a much greater chance of being well endowed than one not possessing such an heredity. He continued his studies of eminent men in his *English Men of Science*, published in 1874. Later he took up the investigation of the nature of mental powers, and to get material, devised the method of the *questionnaire*. He used this method especially in the study of mental imagery, in which his researches, published in 1883 in *Inquiries into Human Faculty*, are classic. The method of the *questionnaire* also gave him his data in regard to family faculties, by which he was enabled to make a careful quantitative study of the types and amount of inheritance. In these studies, published in 1889 in *Natural Inheritance*, he developed an ingenious method of using the probable chance distribution of variable factors as a basis for estimating the likelihood of the presence of any chance tendency disturbing such a distribution. He also laid the foundation for his *Law of Ancestral Inheritance* (see HEREDITY), which he stated in a paper presented before the Royal Society. In connection with these anthropological and psychological researches he invented composite photography, as a means of bringing out the typical facial characteristics of a group. He also discovered the unique character of the arrangement of the lines on the fingers of any individual, and his works on *Finger Prints* and an *Index of Finger Prints* formed the basis of the Bertillon system of identifying criminals. The latest work of Galton concerns eugenics (*qv*), by which he meant the science of controlling mating in the interest of the preservation and improvement

of the type This practical application of his studies in heredity has an immediate relation to education, since it is upon this agency that the principles of eugenics must in the main depend in order to reach the individual and affect practice. It is likely, however, that the greatest service rendered by Galton to education consists in the statistical methods by which quantitative accuracy can be introduced into the complicated phenomena of mental culture. Only thus can educational theory and practice be given the convincing character of science. Galton died on Jan. 17, 1911.

E. N. H

See ERROR OF OBSERVATION; GENIUS; GRAPHIC CURVE; HEREDITY.

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**GALTON'S LAW** — See HEREDITY

**GALWAY, UNIVERSITY COLLEGE** — See IRELAND, EDUCATION IN

**GAMALIEL** — (Grandson of Hillel, and the founder and head of the liberal school which bore that name, was one of the most distinguished of Jewish scholars and educators. In such high respect was he held that at his death, according to the Mishna, "reverence for the law ceased and purity and abstinence died away," such was their sense of loss in the death of their greatest bulwark of learning and morality. Under his influence instruction in the Jewish law was more fully imbued with the spirit of practical life than in later times. He was an enthusiastic student of Greek literature, which was held in abhorrence by the rabbis and forbidden to the young. His influence appears in the training of St. Paul, who prided himself upon having sat at the feet of this greatest of Jewish teachers. His enlightenment and toleration are apparent in his verdict as President of the Sanhedrin of Jerusalem in the trial of St. Peter and other Apostles (Acts v, 33-42). The tradition that Gamaliel became a Christian and was baptized by St. Paul is inconsistent with the honors afterwards heaped upon him by the Jews. W. R.

See JEWISH EDUCATION

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**GAMES.** — A game is a form of play in which the players adhere more or less strictly to certain traditions, regulations, or rules, written or unwritten. Games are a later development of play (*q.v.*) Phylogenetically and ontogenetically informal play precedes formal play or games.

**Origin** — The origin of most existing games is obscure. Falkener has traced some to certain rites of divination, and Culin also asserts that games were derived from serious religious ceremonies. Even as late as the Olympic games of Greece and the Ludi Apollinares at Rome athletic games had a religious significance. Nearly all our existing games are modified forms of games of great antiquity. Culin says, "It is safe to say that no new game has been invented during the historic period, and that all we regard as new are only modifications of games played before the building of the Egyptian pyramids." "Among the pictures of ancient Egyptian games on the tombs of Beni Hassan" (3000-2500 B.C.), says E. B. Taylor, "one shows a player with head down so that he cannot see what the others are doing with their clenched fists above his back." This game is played by boys to-day. It is the American game sometimes called "Biff," the English game of "Hot Cockles," the French game of "Main-Chaude," and the Greek "Kollabismos." Taylor calls attention to Luke 22:64 "And they blindfolded him and asked him saying, Prophecy who is he that struck thee?" Among the games of the American Indians are found the prototypes of dice, cards, chess, golf, shinney, baseball, and racket.

Games, like informal play, doubtless grew out of experience. Among the first games of children are games of chasing, throwing, and striking. These suggest the hunting and fighting experiences of the race. A. B. Gomme in her notable study of the games of children has classified games according to the experience represented, as contest games, marriage games, funeral games, harvest games, divination games, etc. Many folk dances especially suggest experience. Among the Indians, dances represent scenes of the hunt or the war-path. Among civilized people, many folk dances represent industrial experiences, as in the harvest and weaving dances.

**Practical Uses of Games.** — The uses of games may be divided as follows:

A Fundamental	B Incidental
(1) For conservation	(1) Recreational
(2) For development	(2) Substitutional
(3) For education	(3) Prophylactic
(a) Physical	(4) Cathartic
(b) Mental	(5) Corrective
(c) Moral	(6) Vicarious
(d) Social	

**Conservation** — It is the office of games to conserve certain essential characteristics, certain fundamental interests and powers. It is a principle in evolution that when an organ develops from a lower to a higher form there is a tendency toward a loss of some excellence.

formerly possessed. In any period of rapid evolution there is always a danger that the passing of the old may be too rapid or too complete, that the foundation may be sacrificed to the superstructure, that the fundamental may be depleted in the acquisition of the accessory. It is of great importance in the evolution of a species that right proportions be maintained between that which was the old and that which is the new. This danger that is present in the development of a species is increased in the case of the recapitulatory process in the individual, a fact of tremendous importance in education.

Now James has shown that many essential hereditary characteristics are conserved by means of instincts. That is, what is really inherited in such cases is only a potentiality or tendency, and the survival of the characteristic, or power, depends upon habits formed through instinctive reaction to the environment. But many instincts ripen at a certain age, and then weaken or disappear. If a habit has been formed meantime, well and good, if not, it is likely never to be formed.

It is well understood that there is a progression of games in childhood and youth corresponding to the progression of interests and powers through the various periods of growth and development. These various games call out, exercise, and develop certain fundamental physical, mental, moral, and social traits of peculiar interest at the several periods. If no adequate opportunity be provided for the kind of play necessary to call out, exercise, and develop these traits at the time of keenest natural interest in them, these interests tend to fade away, as is the case of the instincts mentioned by James, and the most favorable opportunity for forming habits of reaction in accord with these is lost. "If," says James, "a boy grows up alone at the age of games and sports, and learns neither to play ball, nor row, nor sail, nor ride, nor skate, nor fish, nor shoot, probably he will be sedentary to the end of his days, and, though the best of opportunities be afforded him for learning these things later, it is a hundred to one but he will pass them by and shrink back from the effort of taking those necessary first steps, the prospect of which at an earlier stage would have filled him with eager delight." So, on the moral side, if a boy grows up alone and does not learn to play games which call for great activity, competition, courage, fortitude, perseverance, fairness, generosity, loyalty, cooperation, sacrifice, he loses the most favorable opportunity for the development of these traits in him. While it is possible to conceive that work might at a favorable time provide opportunity for the exercise of these traits, yet work, in so far as it departs from play, in the psychological sense, must in the nature of the case be so much be educationally less effective.

*Development* — The normal development of

an organ depends upon three factors. (1) natural impulse to growth, or heredity, (2) nutrition; (3) exercise. According to Tyler, there seem to be three stages of development. (1) A period of growth in which there is little or no exercise of the organ. (2) A period in which growth continues and modification of internal structure, under the stimulus of exercise, begins. (3) A period after growth in size and weight has been attained, in which exercise and structural change continue, as the organ approaches maturity. When we consider that the game interests have their genesis in structure which at its various stages of development calls for exercise appropriate to its needs and powers, it necessarily follows that the kind of exercise supplied by the games must in turn greatly stimulate growth and development. Moreover, the emotional accompaniment of joyous participation in games and the effect upon the vaso-motor system tend to bring about a condition of full nutrition of the developing organs. This explains the exhilaration which accompanies participation in games like baseball and tennis, for example. In short, appropriate games provide the exercise which is suited to the present needs and powers of the developing organs, the exercise which best stimulates growth and structural change, and which also stimulates the vaso-motor system and tends to bring about a condition of full nutrition.

*Education — Physical* — The value of games in physical education is obvious. Moreover, it is interesting to note that games have been the conservative and not the radical element in systems of physical training. Of the great systems of the world, the Grecian, the medieval, the British, the German system of Guts Muths and Jahn, and the Swedish system of Ling, the exercises of the first three were largely or wholly games, there was a large element of games in the fourth, and there is especially in America a constantly increasing element of games in the last. It is now very generally recognized that specific movements designed for the development of particular muscles or groups of muscles and performed while consciousness is largely absorbed in the execution of the movements, are not, from the standpoint of health and vitality, as beneficial as the exercises involved in games, in which there is a far larger element of pleasure and little or no consciousness of the details of the movements executed.

*Mental* — Recent studies of the relation of motor ability to intelligence have emphasized the educational value of play activities. Mosso and others have shown that the phenomena of muscular fatigue and mental fatigue are identical. Fatigue of the muscles is attended by a loss of power of attention, and fatigue of attention by loss of power of the muscles.

Educationally, games develop power rather than extend intelligence, that is, develop an



ability to apply what one knows rather than give comprehensive knowledge which may or may not be applied. Educationally games excel in this, that they develop a capacity for instantaneous and perfectly coordinated reaction to situations within the field in which the education applies, however restricted that field may seem to be. In emergencies, crises, in time of stress, excitement, or peril, within the field of action analogous to that covered by games, games provide a training *par excellence*. For example, games may furnish no definite knowledge that would enable a lawyer to conduct a case successfully, but they do provide a training which would enable a lawyer, under the strain of an exciting trial, in full possession of himself, to concentrate and coordinate every power to the task in hand.

**Moral** — The relation of games to moral training has always been recognized to a certain extent. However, a far greater appreciation of the moral significance of games has come about in recent years, through the stimulus of a new appreciation of the meaning and significance of play in general, and notably by such a study as Guheik's *Psychological, Pedagogical and Religious Aspects of Group Games*. The generally accepted theory that evolutionary progress has been from the fundamental to the accessory and that this same order, in a general way, is observed in the normal development of an individual, has as apt an application in the field of conduct as in physical or intellectual development. One readily recognizes that there are certain fundamental virtues which are the basis of later accessory moral qualities. Now, the significance of games in moral training lies not alone in the opportunity for the exercise of fairness, courage, cooperation, etc., but especially in the fact that children and youth have, at a certain age, an instinctive interest in just these fundamental virtues. Just as the developing organs call for physical exercise of a type appropriate to their needs and powers, so also the moral nature or organism calls for a display of certain types of character appropriate to the stage of development. For example, the individual competitive games of boys from ten to twelve call for such traits as courage, hardihood, pugnacity, fairness. The boy who displays these qualities is admired by his companions, and the boy who lacks them is not. But physical courage is a prototype of moral courage, hardihood of fortitude, pugnacity of righteous wrath, fairness of justice.

**Social** — A game is socialized play. Games necessitate an appreciation of social relationships, and there were no games until the race had developed a capacity for social activities. Since games developed commensurately with the capacity of the race for social activity, there is in games a review of the social development of mankind.

There are several obvious applications of the social influence of games, as for example —

1 In the development of sociability and sympathy.

2 In the training and control of the fighting instinct, or the instinct of competition, as a basis of noble emulation on the one hand and of capacity for righteous conquest on the other.

3 In the training for cooperative action.

4 In providing an outlet for types of activity that might otherwise become anti-social.

Games might be classified according to social significance, in three classes —

1 Sociable or cooperative games, such as the dramatic and imitative games of children, folk games, dances, group singing.

2 Competitive games, such as wrestling, boxing, racing.

3 Cooperative-competitive games, such as baseball, football, basketball.

The emphasis of interest in these games is somewhat as follows. In sociable or cooperative games, to about seven (possibly, in the case of girls, at all periods), in competitive games from about seven to about twelve, in cooperative-competitive games, from about twelve on.

**Incidental uses of games** — *Recreational*

— Since games have the uses mentioned under Conservation, Development, and Education, they are, for children and youth at least, to be regarded as having a far deeper significance than the merely recreational, yet the recreational effect of games as a change from study and sedentary pursuits and its value are obvious.

**Substitutional** — Games provide a useful substitute for what might prove harmful activities. They also divert from undesirable states of consciousness, as in disappointment, anger, morbid introspection and the like. "Horse play," orgies, outbreaks, might often be diverted through the legitimate channel of games.

**Prophylactic** — Games often prevent anti-social activities and the acquisition of anti-social habits. Boys are arrested for misdemeanors in throwing, stoning windows, snowballing pedestrians, provoking persons, even policemen, to chase them, etc. Ball games and running games provide the same activity and excitement in a legitimate form.

**Cathartic** — Aristotle thought that certain primitive instincts could be purged away by harmless means, as by the drama, and in this way harmful and anti-social expression of the impulse be prevented. Strictly, games should not be regarded as cathartic so much as directive. Games serve not so much by purging away as by training and directing the primitive instincts. For example, boxing under right conditions diminishes fighting, not, however, by purging away the fighting instinct, but by directing and controlling it, making it a basis for a higher expression in games and in

# SUMMARY OF ACTIVE PLAYS AND GAMES MOST BENEFICIAL AT DIFFERENT AGES

ADAPTED FROM DR. F. A. SCHMIDT'S CHART OF PHYSICAL EXERCISES BY G. E. JOHNSON

Age	Special Physiological Character	Characteristic Change in Nervous System	Prevailing Need of Exercise	Special Moral and Social Significance	Free Play, Experimentation of bodily movements and of the senses	Dramatic and Imitative Games	Rhythmic Movement Folk Games Dances	Simple Games of Movement Tag and Running Games Competition	Coöperative-competitive Games Especially Ball Games	Trial of Apparatus Skill on Jumping Throwing	Exercises of Quickness especially races according to time and distance Skating, Skiing	Trial of Strength Apparatus
0-3	Rapid growth in height and weight	Development of the brain and nervous system	Getting control of large bodily movements plenty of open air life Stimulation and therefore of metabolism and blood formation	Sympathy and								
3-6	Greatest liability to contagious diseases	Perfection of the senses Continuation of rapid brain growth	Perfecting control of large bodily movements Plenty of open air life Stimulation of breathing, of circulation and therefore of metabolism and blood formation	Sociability								
6-9	Getting accustomed to threatening position in which less growth in height Disturbance in the formation of blood easily occurring	Close of rapid brain growth transition from emphasis on growth to emphasis on structural change	Plenty of open air life Stimulation of breathing, of circulation and therefore of metabolism and blood formation	Measuring self in terms of mates								
9-12	After the second dentition greater growth in height Increase in the volume of muscles	Rapid structural development of muscular action Period of habituation	Training to a constant, straight bearing and easy, graceful walk Strengthening particularly of the back and abdominal muscles help to development of the chest	Self-assertion Competition Fighting								
12-15	The beginning of greater growth in heart and lungs and beginning of puberty	Accelerated development of association fibers	Greater stimulation of the activity of breathing and circulation Development of skill and courage Moderate exercises of duration	Recognition of group for self-advancement Control of resentment Fair play Loyalty								
15-17	Great increase of the heart muscle Circulation of the arteries With boys, beginning of puberty	Continued development of association fibers	Encouraging of alertness, a spirit of enterprise and daring Greater exercises of duration Exercises of strength to a moderate degree	Coöperation to group Sacrifice and service in interest of group								
17-20	Achievement of puberty and in general of growth and height Greater growth in breadth	Continued development of association fibers	Highest achievement in exercises of quickness Growing capability to perform exercises of strength and duration	High ideals of sportsmanship Fortitude Magnanimity Justice								

Sober Period

Competitive Period

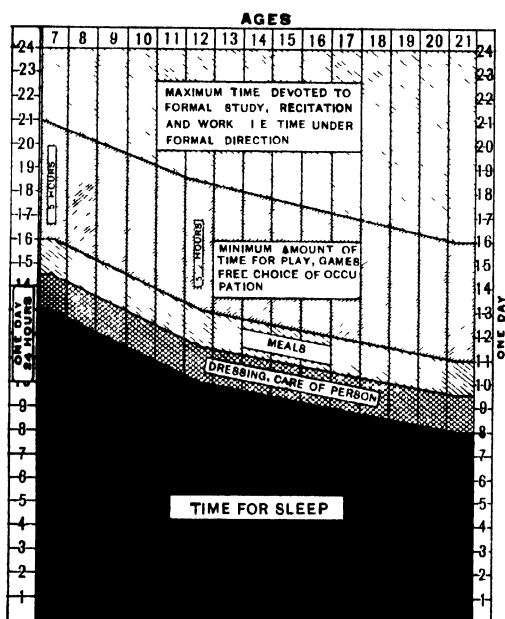
Coöperative-competitive Period

## GAMES

the affairs of life All social, moral, and civil leaders, reformers, and martyrs have possessed in a high degree this primitive instinct trained to a higher and nobler expression

**Corrective.** — Games supply exercises best adapted to develop in a normal child perfect physical form and proportion This is obviously so inasmuch as they involve the types of activity which shaped the body in the process of evolution. When the body of a child has become ill-formed through some cause or other, games, wisely chosen, may supply a most valuable corrective

**Vicarious.** — The value of a game is not alone to the players. Games benefit those who only stand and wait The sympathetic participation of little children in the game they are watching is evident to the observer.



Heightened color, deepened breathing, accelerated heartbeat, joyous emotion, muscular movements, are all present. The recreational value of professional baseball to the spectators is due not alone to a shifting of attention from ordinary channels to the game but also to a genuine participation, to a degree, in all the emotions and movements of the players themselves

**Practical Application** — Games serve a fundamental need in education, physically, mentally, morally, and socially and should be regarded as essential to a school curriculum. For that portion of a community not in educational institutions, adequate play facilities are as truly necessary for social order and civic progress as our lecture halls, reading rooms, libraries, and museums.

## GANGLION

**Time to be given to Plays and Games.** — The following diagram suggests the amount of time that might profitably be given to plays and games at different ages.

**Selection of Games** — Games should be selected to meet the peculiar needs and opportunities of the successive periods of development. Physically, they should further the best physiological growth at the period of their most rapid development. Mentally, they should provide expression for the nascent interests and emotions of the period. Morally, they should stimulate conduct in accord with the elemental virtues and ideals toward which there is an instinctive response. Socially, they should involve an expression of the social interests and the form of social organization adapted to the stage of development

The following chart may prove suggestive in relation to the choice of games G E J

For philosophical theory of games, see PLAY

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### GAMES, PSYCHOLOGY OF — See PLAY

**GAMMON THEOLOGICAL SEMINARY, ATLANTA, GA** — An institution for the training of ministers for the Methodist Church. The A B degree is required from candidates who wish to proceed to the degree of bachelor of divinity. Diplomas and certificates are granted for shorter courses

**GANGLION** — A group of nerve cells See NERVOUS SYSTEM.

**GARDENS, SCHOOL; GARDENS FOR CHILDREN**

— Most gardens which are definitely planned with reference to the education of groups of children are under the management of schools, and hence are usually known as school gardens. In America and England many excellent gardens are conducted for similar educational ends, but quite independently of schools. Hence the term school garden has come to be applied rather loosely to any children's garden designed for educational purposes, especially for teaching about plants and methods of gardening by the active or laboratory method. This latter qualification distinguishes school gardens from botanical gardens, which are usually of educational value to children in that they exhibit plants merely for observation.

As to the definite educational aims of school gardens, the great majority of those in continental Europe were originally intended for teaching practical gardening and agriculture as a phase of vocational education; and there is developing a similar tendency in some villages and rural districts of America and England. But the great majority of school gardens in America and England and many in various countries of the continent of Europe are now being conducted as a phase of nature study with a general cultural rather than vocational aim. Probably nine out of ten of the children who have worked in American school gardens in the past ten years lived in towns and cities and had little prospect of ever engaging in the business of raising plants for market; so that the gardens have obviously not developed in response to stimulation by the growing agricultural phase of vocational education, but are now conducted simply as a very practical part of the larger nature study or general science movement which aims to present the scientific study of common natural objects and processes from the point of view of general elementary education. Only a relatively limited number of gardens in rural districts in America have been definitely modified to meet the demands of agricultural education, and this chiefly for specially selected pupils of high school age.

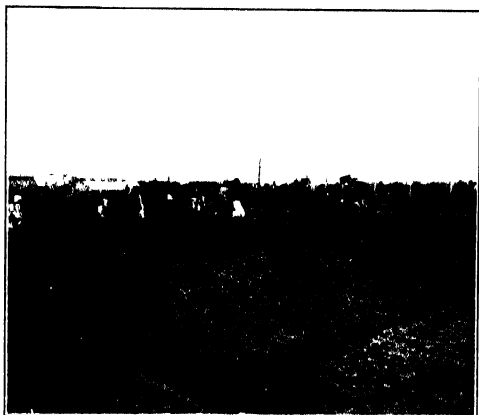
In many cities in the United States, notably at Cleveland, O., children's gardens have been made at the homes of individual pupils, but under the guidance of a teacher who gives general directions at school, and occasionally makes a tour of inspection. On the whole, the results from home gardens have been far more satisfactory than from school gardens, probably because of the great personal interest which children take in home gardens, and because the gardens have a definite influence in stimulating the desire to beautify home surroundings. School gardens are, however, needed for giving practical lessons before the pupils attempt to make gardens at home; and it seems to be the consensus of opinion that schools should maintain gardens of limited size

for teaching purposes while encouraging the development of home gardening as far as possible.

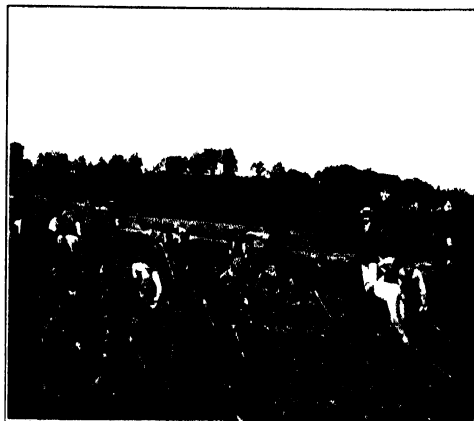
Two general plans have been tried in school gardens: the individual-ownership system, and the community system. Under the first plan the garden is divided into plots which become the property of the individual pupils for a season, and the owners have absolute control of the produce. Under the community system the produce of the garden is either used for lessons in the school or is sold and the proceeds devoted to the school library, a hospital, sick children, or some other altruistic purpose. The first plan is the easier to administer; the second gives greater results. The two plans have been combined in some gardens, for example, by growing vegetables in plots controlled by individuals, and flowers in community plots, in the working of which all pupils cooperate.

Comenius, Rousseau, Pestalozzi, and Froebel recommended the development of children's gardens for educational purposes. In the first half of the nineteenth century the educational authorities of several German states introduced gardening into rural schools, and the movement later extended to many city schools. Berlin has large grounds outside the city limits, and any child may have space for a small garden. Several German cities do not place emphasis upon work by the pupils, but have botanical gardens for instruction by observation and for supplying nature-study materials to the schools. In short, the German city schools maintain gardens for general educational rather than for vocational purposes. Following the example of German gardens, Sweden, Austria, Belgium, Holland, France, Switzerland, and Russia have given official encouragement to school gardens within the past fifty years. In these countries the rural schools have been encouraged to establish gardens, and in the beginning the aim seems to have been entirely vocational. The total number of gardens connected with schools on the continent of Europe is now over 100,000. Switzerland requires special training in gardening in the normal schools, and since 1885 has subsidized elementary-school gardens. For more than thirty years every rural school in Belgium has had a garden, and the training in gardening is believed to have been invaluable in relation to the chief industry of the country. The normal schools of France teach agriculture and gardening, and it is estimated that over 40,000 schools have gardens. It is an open question, however, whether a large proportion of these have been of much value to the pupils. Russia has encouraged gardening for more than twenty years, and many schools assign small gardens to individual pupils. The normal schools teach gardening, and special courses have been given to teachers. In Holland the small children have gardens, apparently intended for nature study, rather than for train-





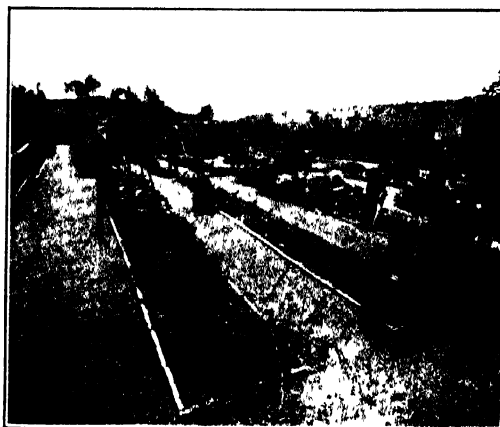
The Colorado State Normal.



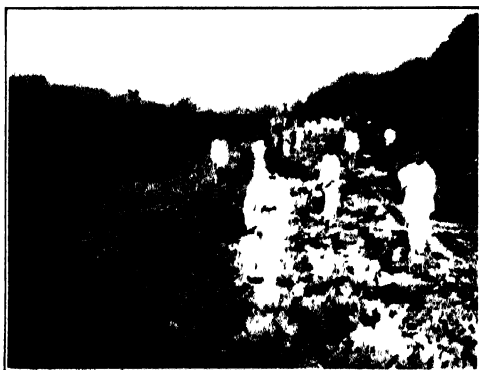
Brooklyn Truant School.



A Girls' School, Leipzig, Germany.



Garden of a Boys' School, Plauen, Germany



School Garden, Batac, Ilocos Norte, Philippine Islands.



Studying Arboriculture and Agriculture, Graumont, Belgium.

# SCHOOL GARDENS.

ing in the business of gardening. Italy has within recent years shown interest in school gardens. Ten years ago there were less than a hundred gardens in Great Britain, and these not officially connected with the school system. Since 1904 gardening has been encouraged by special grants to the schools. Many gardens have been established in connection with elementary day schools, and also in evening schools for pupils who must work during the day. In the day schools the nature study aims seem to prevail, but the gardens are expected to have a vocational influence. England has been often criticized for slow development of school gardens, but it should be noted that a widespread popular interest in home gardening has probably been a good substitute for hundreds of the inefficient school gardens established officially on the continent of Europe.

In Canada interest in school gardens has developed rapidly in the past ten years. In 1905 there were more than a hundred gardens in Nova Scotia under the direction of the superintendent of education for the province. In each of the other eastern provinces five gardens were established in connection with the MacDonald schools in 1904. Many other gardens are now an established part of the school work, and the schools receive special grants from the education departments. There are many school gardens in the Northwest Territories.

Most of the gardens in the United States have been organized during the past ten years. Among the pioneer gardens which attracted general attention were the wild flower garden at Roxbury, Mass., in 1891; the gardens of the National Cash Register Company, at Dayton, Ohio, 1897; at the Hyannis (Mass.) Normal School, 1897; the home gardens at Cleveland, Ohio, 1900; the Hartford (Conn.) School of Horticulture, 1900; at Hampton Institute (Va.), and the Children's School Farm in New York City, 1902. Most cities have school gardens, but they are usually fostered by individuals or organizations independently of official connection with the schools. As examples of such outside encouragement of gardens the following have been prominent: Home Gardening Association of Cleveland, Massachusetts Horticultural Society, Twentieth Century Club of Boston, Woman's Institute of Yonkers, Massachusetts Civic League, Missouri Botanical Garden, National Cash Register Company, Vacant Lot Cultivation Association, United States Department of Agriculture, numerous local agricultural societies, and the Park Department of New York City. In only a few cities have boards of education helped financially. The Philadelphia school system maintains some gardens, but private individuals and organizations outside the system have been active with smaller gardens in that city. Cleveland, Rochester, and a few other cities officially provide funds for gardens as part of the work of schools. Many other cities and towns recog-

nize gardening as part of the course in nature study, but do not provide for the material basis for conducting the gardens needed to carry out the school program. The vast majority of the school gardens in the United States are still officially independent of schools and conducted on the personal responsibility of teachers, principals, and others who are interested in the school garden movement. As an example of good results in spite of lack of official encouragement, New York City has over eighty school gardens, many on school grounds, but conducted by enthusiastic members of the New York School Gardening Association without appropriations from school funds. In fact, most school gardens in the United States outside the largest cities need little financial help from the school authorities, for in most places land is available, the pupils do the work, the seeds cost little and the produce will pay for them, and an energetic director can usually find ways and means for collecting the necessary tools. There is probably an advantage in that gardens without the financial support of schools tend to develop the resourcefulness of the individual pupils and to awaken the interests of their parents and friends. Instruction in methods of gardening offers no special difficulties now that gardening is commonly recognized as a very important phase of nature study and science, and hence properly comes under the direction of teachers of those subjects. The common result is that the garden work is used and correlated in the classrooms much more than would be possible by special garden teachers. The fact is that throughout the United States there is little demand for special appropriations for school gardens, except for modest equipment for tools. Much more important is the official recognition of gardening as a phase of nature study and therefore a legitimate part of the regular work of teachers assigned to the classes in that subject.

The care of school gardens during the long summer vacation is a difficult problem which has retarded the general success of the movement. A hired gardener is undesirable, for in his work the pupils have little interest. School gardens will be most useful if conducted by the pupils and for the pupils of the school. The most satisfactory plan, judged by educational results and pupils' interest, is the committee system. This means that the director of the garden appoints groups of pupils as committees charged with the care of the entire garden for set periods during the vacation, and required to report to the school in September. Some voluntary supervision by interested adult citizens is usually possible, especially where there is some local society which is interested in the garden movement.

With regard to the general educational influence of school gardens, it has been claimed by numerous teachers that many pupils make

more rapid progress in their book studies after being aroused by the garden work. Such increased efficiency has been found to have an indirect moral influence, and in many cities the boys engaged in gardening seem to have lost their former interest in mischief making, perhaps because their time has been occupied with the interesting work of the gardens. Probably a large part of the advantages claimed for manual training as a phase of education applies to school garden work, and there is the additional gain from the garden in that the work is in the open air and combined with nature study. Under such conditions the garden may become a most important agency for healthy recreation, for developing an interest in nature, and for giving the pupil direct contact with a phase of industrial education, which may be of vocational value to some, but of far greater importance to the many, in that it gives them a sense of personal relationship with that vast part of the world's work which is centered around the cultivation of plants for human use. This tendency of gardens to develop a personal interest in plant growing outside of the plot controlled by the pupil is so marked that several societies concerned with the beautifying of cities by encouraging the cultivation of plants in both private and public grounds, wherever possible, have officially recognized school gardens as very important factors in developing personal responsibility for better civic conditions. No doubt a garden can be made very helpful in this direction, but the result will come from the teaching and not from mere digging in the soil. In fact, the value of merely working in the garden has been overestimated, and the future efficiency of gardens as part of general education will depend upon lessons which are drawn from materials and conditions available in well-managed school gardens. The purpose of school-gardens is not simply to raise plants, but rather to use the methods of gardening and the growing of plants as a concrete basis for one phase of education. Judged by this standard, a large number of gardens for children are not yet real school gardens or educational gardens, for efficient instruction is not given the pupils. M. A. B.

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**GARDENS AND GARDENING.** — See **BOTANIC GARDENS; HORTICULTURE, EDUCATION IN; GARDENS, SCHOOL.**

**GARFIELD, JAMES ABRAM** (1831-1881). — Statesman and educator, graduated from Williams College in the class of 1856. He was professor in Hiram College for three years, and president of the college four years. As a member of the Congress of the United States he took an active interest in educational legislation, and was largely responsible for the establishment of the Bureau of Education. His *Speeches on Education* (Boston, 1882) include his most important contributions to the literature of education. W. S. M.

## Reference:—

HINSDALE, B. A. *Garfield and Education*. (Boston, 1882)

**GARLAND, LANDON CABELL** (1810-1895) — College president, educated at Hampden-Sidney College. He was professor of mathematics in Washington (Va.) College, Randolph-Macon College, the University of Alabama, and the University of Mississippi, and president of Randolph-Macon College and Vanderbilt University. Author of textbooks on mathematics. W. S. M.

**GAUDEAMUS IGITUR** — Probably the best known as well as the most frequently sung of student songs in the world. The origin of this famous poem was long in doubt, but painstaking German research has established the fact that in its present form it does not go back much beyond the middle of the eighteenth century. Those who, guided solely by the content of the song, would refer it back to the whimsical laments over the vanity of human wishes and the advice to "eat, drink, and be merry, for to-morrow we die" found in the songs of the Goliards (*q.v.*; see also the article on *CARMINA BURANA*), may find some satisfaction in the fact that the basic element in the *Gaudeamus* has been traced back to a song found in a French Ms of 1267. This is a penitential psalm, in which the following lines occur:—

Vita brevis, brevitatis in brevi finietur;  
 Mors venit velociter et neminem veretur.  
 Ubi sunt qui ante nos in hoc mundo fuerunt?  
 Venies ad tumulos, si eos vis videre,

which will be recognized as parts of the modern *Gaudeamus*. But there seems to have been a number of songs which opened, at any rate, with the word *Gaudeamus*. On this account probably the well-known verses have been referred to a greater antiquity than they deserve.



Sebastian Brandt in the *Ship of Fools* (ch. 108) refers to the *Gaudeamus*, and a woodcut in the edition of 1494 represents the ship of fools and the words *Gaudeamus Omnes* issuing from the mouth of one of the passengers, written in a notation which does not call up the modern tune. Hans Sachs, in a poem written in 1568, also refers to a *Gaudeamus*. But none of these continues with the vigorous and meaningful *igitur*.

The earliest known Latin version (there is a version in German by J. C. Gunther, written in 1717, beginning *Bruder lasst uns lustig sein*) of the modern *Gaudeamus* is found in a (Ms.) copy of student songs in the Royal Library at Berlin, which was written before 1750. The version is as follows.—

Gaudeamus igitur  
Juvenes dum sumus,  
Post molestant senectutem  
Nos habebit tumulus.  
Ubi sunt qui ante nos  
In mundo vixere?  
Ab eas ad tumulos,  
Si vis hos videre  
Vita nostra brevis est,  
Brevi finietur.  
Venit mors velociter,  
Neminem veretur.

On the basis of this the other versions arose, each body of students adding something new or topical, or eliminating something. A Latin and German version is found in a Jena Ms. of 1776, showing that there was reason in the order issued at Halle by the university authorities, forbidding the singing of the song on account of its degrading vulgarity. The verses were rescued from the mire, however, in 1781, by C. W. Kindleben, at one time pastor, university docent, and assistant teacher under Bascdow at the Philanthropinum at Dessau. Kindleben's reputation was not of the best; he lost every position he held through his dissolute ways. But it was this man who cleansed the *Gaudeamus* of its obscenities and published it with a translation in its present form in *Studentenlieder Aus den hinterlassenen Papieren eines unglücklichen Philosophen, Florido genannt, gesammelt und verbessert von C. W. K.* 1781. After the student revival which took place about 1813, the song found its way rapidly into all the student song books and Commers-books, until it became the property of students in universities and schools the world over.

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SYMONDS, J. A. *Wine, Women and Song* (Portland, Me., 1899). Contains an English translation.

**GAUSS, KARL FRIEDRICH** — One of the foremost mathematicians and astronomers of the nineteenth century. He was born on Apr. 30, 1777, at Brunswick, Germany, and died on Feb. 23, 1855, at Gottingen. He was edu-

cated at Gottingen, and in 1807 he became professor of mathematics and director of the observatory in that university. To him more than to any other one person is due the prominence that Gottingen attained in the nineteenth century as the mathematical center of Germany. There was no field of mathematical activity in which he was not interested, and in most of those that were open in his time he was a successful worker. The number of his contributions was very great, notably in the theory of numbers, theory of electricity and magnetism, the interpretation of complex numbers, and mathematical astronomy. D. E. S.

**GAZA, THEODORE** (1400–1475) — Greek scholar and teacher of the Renaissance period, who came to Italy about 1440. Introduced to Vittorino da Feltrc (qv) by Ficelfo (qv), he studied Latin under him and taught Greek and copied Mss. in his school at Mantua. In 1444 he became the first public professor of Greek at Ferrara, and lectured on Demosthenes. In 1457 he was summoned by Nicholas V to Rome, where he taught Greek and assisted in translating some of the Greek classics. In 1455 he translated books for King Alfonso of Naples; he later returned to Rome, which he again left before his death, which occurred in a monastery in Lucania. Gaza wrote a Greek Grammar (*γραμματικὴ εἰσαγωγή*), which Erasmus used at Cambridge and translated into Latin and Budæus used at Paris. Copies of the *Iliad* written by Gaza are still extant one in Florence and the other in Venice. In the controversy on the superiority of Plato and Aristotle, Gaza strongly defended the latter, several of whose works he translated.

#### References:—

- SANDYS, J. E. *History of Classical Scholarship*, Vol. II. (Cambridge, 1908).  
WOODWARD, W. H. *Vittorino da Feltrc* (Cambridge, 1905).

**GELASIUS** — Bishop of Rome (492–496), and author of the *Decretum Gelasii de libris recipiendis et non recipiendis*. The importance of Pope Gelasius in the history of education is due entirely to his famous decree on the canonical books of the Bible and the authoritative and approved writings of the Fathers of the Church. The decree differs from later indexes of books in that it not only gave a list of books which were condemned, but also a list of books which were approved as standards of orthodoxy. The decree was issued at a Roman synod held by Gelasius, but in its present form it contains material much earlier and has been subjected to various interpolations. The final section, however, which gives the list of books to be received or rejected, was, with the exception of manifest interpolations, the work of Gelasius. By passing judgment upon earlier writers determining which should be regarded as setting the norm for orthodoxy, the decree

undoubtedly affected profoundly the course of studies in the Church. Among other effects of the decree was the elimination of the older Alexandrine influence, *e g* that of Clement of Alexandria (*q v*). It did not become generally known in the Church till some time after Gelasius, it was not until two hundred years after its publication that it is quoted, and not until 860 that it was connected with the name of Gelasius. From that time on its influence was constantly felt. J. C. A. Jr

See LITERARY CENSORSHIP.

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HEFLE, C. *Concilengeschichte* Sec 217 (Freiburg, 1855-1890)  
MANZI *Concilia*, Vol VIII (Florence, 1759-1798)

**GEMMA FRISIUS (1508-1555)** — The family name of Gemma the Frisian was Rainer or Regnier. He was born at Dockum, in East Friesland, on Dec 8, 1508, and died at Louvain on May 25, 1555. He was a physician, holding the chair of professor of medicine at Louvain, but he is better known as one of the leading textbook writers of his century in France on arithmetic and astronomy. His most famous textbook is the *Methodus arithmetice practice* (Antwerp, 1540), of which there were at least fifty-nine editions before 1601. He also wrote upon astronomy, and first suggested the idea of finding longitude by the help of a chronometer in his *De principis astronomie* (Paris, 1547). His influence upon arithmetic was more marked than that of any other Latin writer of his century. His son, Cornelis (1535-1577), was professor of medicine and astronomy at Louvain, and wrote on astronomy and philosophy. D. E. S.

**GENERAL EDUCATION BOARD** — An organization chartered by Congress in 1903 and originating with Mr John D. Rockefeller's Committee on Benevolence. The plan of such an organization was designed and adapted to assist Mr Rockefeller in distributing his gifts to education, but it was also intended to meet a wider need and to afford a medium through which other men of means, who desired to promote education in the United States, could do so in a systematic, intelligent, and effective way. The gentlemen forming the first Board were the late William H Baldwin, Jr, Wallace Buttrick, the late Hon J L M Curry, Frederick T Gates, Daniel C Gilman, Morris K Jesup, Robert C Ogden, Walter H Page, George Foster Peabody, John D Rockefeller, Jr, and Albert Shaw. The gifts of Mr Rockefeller to the Board and placed under its absolute control amount to \$32,000,000. Others have contributed smaller amounts, among them a gift of \$200,000 for rural negro education by the late Miss Anna T Jeanes.

The work of the General Education Board now falls into four main divisions: —

1. *The promotion of practical farming in the*

*Southern States* — Through the United States Department of Agriculture, under an agreement begun in the year 1906, the Board has made contributions for this work aggregating \$405,700. The method employed is that of demonstration farms. There are now (1911) 196 men at work supervising demonstration farms, and 19,579 farmers are pursuing agricultural methods under such direction. One hundred and fifty-four thousand farmers are pursuing similar work, influenced by those farmers who are under the immediate supervision of the agents. Nine thousand eight hundred and fifty-nine boys, from twelve years of age and up, under the general designation of Boys' Corn Clubs, are performing practical agricultural demonstration on their fathers' farms, and are making their experiments the basis of agricultural study in the schools.

2. *The promotion of public high schools in the Southern States* — The General Education Board appropriates to each state university or to the state department of education a sum sufficient to pay the salary and traveling expenses of a special high school representative, who arouses and organizes public sentiment favorable to public high schools, and who secures the establishment and maintenance of public high schools. Since the beginning of this cooperation on the part of the General Education Board with state universities and state departments of education, 703 new public high schools have been established, \$6,390,780 have been raised by the people of the several states for buildings and equipment, and the annual sum available for the support of public high schools has been increased by \$1,332,667.

3. *The Promotion of Institutions of Higher Learning* — The General Education Board uniformly makes its gifts for endowment. Appropriations by the Board for higher education have been made as follows: In the Southern States, \$2,309,000; in the Western States, \$2,510,000, in the Eastern and Middle States, \$1,805,000. Total, \$6,624,000. These gifts on the part of the General Education Board make up an approximate total of \$25,406,000, a sum which represents the increase of educational endowment and equipment of the eighty-two colleges and universities in the United States to which gifts from the Board have been made to date (1911).

4. *Negro Education* — The Board has contributed \$473,239.76 to schools for negroes. In this connection it should be said that negro farmers have shared fully in the cooperative demonstration work described above. It is the policy of the General Education Board to work through existing institutions and agencies and not itself to undertake independent educational work. E. C. S.

**Reference: —**

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**GENERAL METHOD.** — Methods of teaching which are fundamental to all the school branches, and therefore in general use, are included under the term "general method." The term is used in contradistinction to "special method," which is applied to a method used only in a single subject. Sometimes "principles of teaching" is used synonymously with "general method," the former implying a treatment in terms of theoretic generalizations or laws, and the latter one in types of practical procedure.

H. S.

See METHOD, TEACHING; SPECIAL METHODS; TEACHING, TYPES OF; TEACHING, PRINCIPLES OF

**GENERAL TERM.** — SEE CONCEPT

### GENERAL THEOLOGICAL SEMINARY

— Established by the General Convention of the Protestant Episcopal Church in the United States in 1817 and incorporated in 1822. Instruction began in New York in 1819. It was removed to New Haven, Connecticut, in 1820, but returned to New York in 1822. It is the only seminary in the Episcopal Church under the control of the General Convention. The buildings include a large chapel, lecture hall, nine dormitories, library, gymnasium, refectory, and nine residences for dean and professors. The halls can accommodate 150 students. In 1911 there were 143 students, fifteen professors and instructors, and one lecturer. It confers no degree on graduation. The degree of Bachelor in Divinity is conferred for graduate work only. The degree of Doctor in Divinity is conferred for work required or *honoris causa*. There are about 1800 graduates, of whom nearly 1000 are living, and about 1000 former students who are not Alumni. C. B. Z.

See THEOLOGICAL EDUCATION

**GENERALIZATION** — The process by which a principle or law is reached, the term is also used to denote the product. The term expresses the use or function of induction, which endeavors, beginning with a number of scattered details, to arrive at a general statement. Generalization expresses the natural goal of instruction in any topic, for it works a measure of economy and efficiency from the standpoints alike of observation, memory, and thought. The number of particulars that can be obtained is limited. When, however, different cases are brought together, — and this bringing together is expressed in a general principle, — a great variety of cases are practically reduced to one case, and further observation is freed to attack new particular things and qualities not yet systematized. Exactly the same holds good for memory. There are a few prodigies who can carry in mind an indefinite number of unrelated details; but most persons need the help of generalizations in order to retain special facts and to recall them when needed. Logically, a prin-

ciple not only sums up and registers the net intellectual outcome of a great many different experiences which have been undergone at diverse times and places, but is an illuminating and clarifying means of interpreting new cases that without it could not be understood.

Because the older deductive, classificatory schemes of instruction began with a statement of the law or principle, educational reformers who were influenced by the scientific movement toward induction were compelled to emphasize the later and derived place occupied by generalization in the intellectual life. Zealots for the new method sometimes swung to the extreme of reaction against universals, and, treating observation and imagination of particulars as an end in itself, neglected the importance of generalization as a normal terminus of study. Another educational error is to suppose that generalization is a single and separate act coming by itself, *after* the mind has been exclusively preoccupied with particular facts and events. To the contrary, generalization is a continuous, gradual movement away from mere isolated particulars toward a connecting principle. A necessary part of the work of instruction is, therefore, to make the conditions such that the mind will move in the direction of a fruitful generalization as soon as it begins to deal with and to collect particulars. The resulting generalization will, of course, be crude, vague, and inadequate, but, if formed under proper conditions, it will serve at once to direct and vitalize further observations and recollections, and will be built out and tested in the application to new particulars. This suggests the final educational principle. A generalization or law is such not in virtue of its structure or bare content, but because of its use or function. We do not first have a principle and then apply it; an idea becomes general (or a principle) in process of fruitful application to the interpretation, comprehension, and prevision of the particular facts of experience. J. D.

See ABSTRACT AND CONCRETE, CONCEPT, EMPIRICAL.

**GENERALIZED HABITS** — See HABIT; also FORMAL DISCIPLINE; ABILITY, GENERAL AND SPECIAL

**GENERIC IMAGE** — When one sees a single object and remembers it, he carries away a more or less complete reproduction of the experience which he derives through contact with this object. The remembered experience is in the form of an image. After contact with a number of different objects closely related to each other in character, memory reflects certain elements and drops others. Those characteristics which are common to all of the specimens stand out with increasing vividness, those characteristics which belong to single individuals tend to be obliterated. There arises in this fashion

a generic image Sir Francis Galton used the figure of a composite photograph in describing these generic mental images The analogy is undoubtedly justified in certain cases, although it is probable that very few such images are used by the ordinary observer in his common experience

C. H. J.

See GENERAL IDEAS; IDEATION; IMAGE; MEMORY; VISUALIZATION.

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HUXLEY, T. H. *Hume* (London, 1881)  
GALTON, F. *Inquiries into Human Faculties*. (Appendix) (New York, 1883)

**GENETIC METHOD** — Mental processes can be studied by a variety of different methods Thus, they may be analyzed or they may be studied with reference to their relation to the general life processes of the individual, or, finally, they may be studied with reference to their development and the development of the individual who possesses them The relative level of evolution reached by the individual may also be studied Whenever the problem of development or evolution is foremost the method of treatment is said to be the genetic method Thus one may study the growth of a tendency on the part of children to use abstract ideas The growth of this tendency is a genetic process, and the study of the habit constitutes a genetic problem Again, one may study the presence of ideas in animals There has been recently an increasing tendency to recognize the fact that psychology can be productively applied to education only through the working out of genetic methods In some cases the term "genetic" has been used in a limited sense to apply to the special problems of child study; but this restriction of the term is misleading, and any form of study of mental development or mental evolution should be included under the term "genetic"

C. H. J.

See CHILD STUDY; PSYCHOLOGY, GENETIC

**References: —**

JUDD, C. H. *Genetic Psychology for Teachers*. (New York, 1903)  
KIRKPATRICK, E. A. *Genetic Psychology*. (New York, 1909)

**GENETIC PSYCHOLOGY.**— See PSYCHOLOGY, GENETIC.

**GENEVA.**— See CALVINISTS AND EDUCATION; SWITZERLAND, EDUCATION IN.

**GENEVA COLLEGE, BEAVER FALLS, PA** — A coeducational institution which was opened in 1849 by the Reformed Presbyterian Church of North America at Northfield, Ohio, and moved to its present location in 1880. Preparatory, collegiate, music, and fine arts departments are maintained The entrance requirements are equivalent to about fourteen points of high school work The degrees of Bachelor of Arts and Bachelor of Science are conferred on those who complete the require-

ments, which include residence for at least three fourths of the college course at an accredited college with the senior year at Geneva. There is a faculty of twenty-three members.

**GENEVA, SWITZERLAND, UNIVERSITY OF.** — Established in 1573, being the outgrowth of the Academy founded by the Republic of Geneva in the year 1559 The theological faculty of the old Academy attained a period of considerable renown under men like Calvin and Beza During the stormy days of the seventeenth century the institution entered upon a decline, but was given a new lease of life as a result of the persecutions of the Huguenots in France, the Academy gradually having become the acknowledged center for the dissemination of Protestant culture in French-speaking territory. From 1798 to 1814 the Academy was in French hands

The present university comprises the faculties of Protestant theology, law, medicine (1876), letters and social science, and pure science, the language of instruction being French Affiliated with the institution are a natural history museum, a botanical garden, and an observatory The library contains over 170,000 volumes and about 1800 manuscripts The University of Geneva is the second largest institution of higher learning in the Swiss Confederation, being exceeded in the number of students only by Berne During the winter semester of 1909-1910 there were enrolled 1915 students, of whom about half were women Of the matriculated students only 23 were registered in the theological faculty, while the medical school attracts the largest number of students, viz., 624, including 372 women As at all of the Swiss universities, the number of non-matriculated students is relatively large, 136 men and 327 women

R. T., JR

**Reference: —**

BORGEAUD, C. *Histoire de l'Université de Genève*, Vol. I, 1559-1798 (Geneva, 1900) Vol. II, 1798-1814 (Geneva, 1909)

**GENIUS** — A term used somewhat loosely to indicate the highest type of human ability Below genius comes the grade of talent, and below talent ordinary ability It is evident, however, that these grades are not enough to indicate very definitely the rank of any individual Galton in his study of hereditary genius distinguishes eight classes above that of ordinary talent Cattell endeavors to determine by a statistical study of biographical dictionaries the thousand most eminent men in history These he ranges in regular order on the basis of the amount of attention to which each was deemed worthy by the various editors. Thus each individual is given a specific place instead of being assigned to a group He concludes that the ten most eminent men are Shakespeare, Mahommed, Napoleon, Voltaire, Bacon, Aristotle, Goethe, Cæsar, Luther, and Plato

Genius is more commonly treated according to the special sort of ability involved, since men may show the highest power in certain fields and be commonplace or even defective in other respects. The leading types seem to be the artistic, the intellectual, and the practical. The artistic type includes literary genius, the intellectual embraces philosophic and scientific power, while the practical covers such fields as statesmanship, business ability, and generalship. It is possible that outside these powers there lies another group, the moral and religious. However, in so far as these gifts involve intellectual qualities, they are allied to the philosophic and artistic types. On the other hand, they are usually associated with intensity of sympathy, a power of self-sacrificing service, and a firmness of adherence to ideals that constitute of them a somewhat distinct kind.

The genius may, from a biological point of view, be regarded as a variant from type. It must be noted, however, that his variation is in the direction of extraordinary new efficiencies. Much has been made by Lombroso and others of the idea that genius is allied with, if not a form of, insanity. It is true that many men of genius have shown signs of insanity. It would seem likely that the marked ascendency of certain powers in genius would involve a lack of balance which might amount or lead to insanity. Especially in the artistic type do we find such abnormalities. Nevertheless, even the artistic genius must show an excellence of judgment in reference to his art which suggests a "method in his madness." In general, the genius owes his success in the field of his pre-eminence to the sanity which he displays therein, although his emotional intensity, his nervous sensitivity, his vigor of imagination, or his power of concentration may lead him into eccentricities or undermine his judgment.

The interpretation of the genius as a degenerate is closely associated with the view that he is insane. The loosening of inhibitions, the emotionalism, and the general neuropathic condition found in degenerates may lead, especially in art and religion, to results that seem to have a touch of genius. At least, they attract attention, and often help the one who employs them to get a following. On the other hand, it is quite certain that, in general, the genius displays variations that are in advance of his type. He is the *superman* rather than the *degenerate*. Like the insane or the eccentric, he defies rule and precedent, yet in the interest of greater rather than less efficiency. His originality is not mere variation, but meets the requirements of judgment.

The studies of Galton and Wood show clearly that genius is inherited. Since, however, it is rare that both parents possess extraordinary power, the children of geniuses show, as a rule, a marked tendency to regress toward mediocrity. The absence of any form of selection that favors the survival of the very talented as

against the common run of men makes it unlikely that this tendency toward regression shall be interfered with. The genius can, therefore, hardly be taken as a prophecy of the type toward which the race is tending.

On the question of the dependence of the genius on his environment we have the common notion that opportunity is essential to greatness, opposed to the view, championed by Carlyle, that genius always creates its opportunities. While it is doubtless true that extraordinary gifts do not insure their possessor his proper rating, still the abilities of men of genius are usually sufficiently broad in scope to enable them to attain distinction along some of the lines of opportunity open to them. There are probably very few "unappreciated" geniuses, and most of those who rate themselves as such are, doubtless, because of their lack of some qualities essential to efficiency, properly characterized as "cranks."

Genius is frequently, if not usually, foreshadowed by precocity. This is especially true of artistic genius. Many of the greatest musicians have, like Mozart, been "infant prodigies." Literary power is the latest among the artistic gifts to display itself, but even here talent may be shown in childhood, as witness Goethe, Victor Hugo, Shelley, and Keats. Sometimes scientific and philosophic or administrative power is evinced in early youth. Newton, Berkeley, Herbart, William the Conqueror, and Alexander the Great are illustrations.

It has been thought that genius does its best work in the earlier years of life. The celebrated statement of Dr. Osler was to the effect that, although many great achievements were accomplished after the age of forty, still, the world would be where it is, if all great men had died at that age. Dr. Dorland's careful study of the history of eminent men shows, however, that the greater part of their extraordinary work was done after this age, and indeed, not a little after the age of sixty.

So far as education is concerned, the problem of training the genius does not differ from that of training any of more than average ability. The tendency toward uniformity in our schools may prove unfortunate for the unusual mind in two ways. It may keep him wasting time with the crowd, when his abilities would, if properly developed, put him far ahead. It may lay so much stress on studies in which he is not capable as seriously to retard the development of his special power. The school reformers are actively endeavoring to break up this mechanical uniformity of studies and of progress through the grades. Many devices are being developed for getting at the individual, for helping him to find his special bent, and for putting him in a position to progress as fast as his talents and energy will permit. All these will assist in the education of the genius, and although he may be less dependent upon environment than are those of inferior ability,

nevertheless, he needs and profits by the proper education. It remains one of the leading problems of the school to discover and properly train the exceptional man. E N H

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**GENLIS, STÉPHANIE FÉLICITÉ DU CREST DE SAINT-AUBIN, COMTESSE DE**—commonly known as **MME DE GENLIS** (1746–1830)—One of the leading French women educators of her day. According to Sainte-Beuve, “She was a woman teacher, she was born with the sign on her forehead.” She was governess in the family of the Duchesse de Chartres. Although an indefatigable critic of Rousseau, she yet constantly gives evidence of his influence. She was the author of *Théâtre d'éducation* (1779); *Adèle et Théodore* (1782), also known as *Lettres sur l'éducation*; *Les Veillées du château* (1784). A prolific writer, she was the author of nearly one hundred volumes. In addition to those noted above, her works on education include: *Discours sur la suppression des couvents de religieuses et sur l'éducation publique des femmes* (1790); *Discours sur l'éducation de M. le Dauphin* (1790); *Leçons d'une gouvernante à ses élèves, ou fragments d'un journal qui a été fait pour l'éducation des enfants de M. d'Orléans* (1791); *Discours sur l'éducation publique du peuple* (1791); *Nouvelle méthode d'enseignement pour la première enfance* (1800); *Projet d'une école rurale pour l'éducation des filles* (1802); *Les Dimanches, ou Journal de la jeunesse* (1816), published for only one year. F E F.

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**GENOA, UNIVERSITY OF**—See ITALY, EDUCATION IN

**GENTRY AND NOBLES, EDUCATION OF**—The close connection between education and politics has been recognized from the time of classical antiquity. Plato in his *Republic* and Aristotle in his *Politics* laid down the principle of the vital importance to the state of the education of children. Throughout the Middle Ages, the education of the actual kings, princes, and other governors of the state was recognized as an essential preparation to the child, who was a prospective ruler. Treatises commonly described the duties of princes, and logically this

led to dealing with the question of preparation for such duties. Thus, Thomas Aquinas wrote the *de Regimine Principum*. Oecleve produced his *Regiment of Princes*. Italy was especially distinguished by its books on political philosophy, in the fifteenth century Pontano writing *de Principe*, Beroaldo the *Libellus de optimo Statu et Principe*, and Francesco Patrizi his *de Regno et Regis Institutione*. In England John of Salisbury wrote his famous *Polycraticus*, and in 1531 Sir Thomas Elyot (*q.v.*) wrote the *Governour*. This last-named work is particularly noteworthy because a considerable portion of the book is taken up with the question of the education of the prospective Governour. This illustrates the connection which was felt by the older writers between education and political philosophy. If the prince or the governor, or by whatever name the ruler was called, had to rise to the responsibility of governing a country, then it is clear that the welfare of the nation is dependent largely upon the excellent training culture, or, in a word, the education of the prince or ruler. So that in the days of an absolute Tudor monarch, Erasmus wrote, as a matter of vital concern, an educational treatise on *The Institution of a Christian Prince*, and throughout the sixteenth, seventeenth, and eighteenth centuries, numberless educational treatises concerned themselves with the education of the prince.

After the devastating Wars of the Roses in England, the power of the old nobility was wrecked, and under the Tudors a new nobility and gentry arose, roughly speaking founded upon personal merit and achievement. The merchant adventurers, sailors, and warriors came into the higher classes concurrently with the development of Protestantism. As the new order of aristocracy came into power in the state, the books on education concerned themselves with the education of nobles. Thus Laurence Humphrey (*q.v.*) wrote his *Nobles or Of Nobility*, and it is interesting to note that he had written it first in Latin (as *Optimates* in 1560), showing that the Renaissance spirit was one which could assume that a politico-educational work to be read by nobles must be written in Latin. The fact that he also wrote it in English shows the advancing place of the vernacular also with the upper and governing classes. But the implication was that, as formerly, the education of the prince was the most important political aspect of education, and the desirability of the education of the nobles as well as princes was recognized as a national asset. In 1555 was published the anonymous *Institution of a Gentleman* (*q.v.*), and the significance is that the “gentleman” was becoming a more noticeable element politically, and, therefore, nationally claimed a higher education. On this theory, the broader the basis of the governing power, the wider will be the demand for education, to meet the required responsibility, until in an age of demo-

cratic government the demand will extend to universal education since, the power being in the hands of the people, there, too, must be placed the education and preparatory instruction to meet the responsibility. Another element in the education must be noted — that the “gentleman” stood in opposition to the “poor student.” Accordingly, sometimes “the gentleman” stood outside the university and public school system, was educated at home by a private tutor, and afterwards, even if he went for a time to one of the universities, went also to one of the Inns of Court, and of course traveled on the grand tour of Europe. The education of the gentleman, therefore, became distinguished by its greater breadth. At the period of the Renaissance, too, the tradition of Italian models set in, as the revival of learning for Europe had its origin in Italy. This was at the very time that the courts of Italy had developed a standard of courtliness and chivalry far in advance of what was found elsewhere. The consequence was that England looked to Italy for the type of nobility and gentlemanliness founded on what obtained at Urbino, at Mantua, and elsewhere. The effect of these courtly ideals in education may be seen in the educational thought of Vittorino da Feltré (*q.v.*) and Guarino da Verona (*q.v.*). These ideals found literary expression in Baldassare Castiglione's *Cortegiano*, 1528 (*q.v.*). Roger Ascham (*q.v.*) in the *Scholemaster* (1570) says of this book, “To join learning with comely exercises Conte Baldesar Castiglione in his book *Cortegiano* doth trewely teach, which book advisedly read and diligently followed but one year at home in England would do a young gentleman more good, I wisse, than three years' travel abroad in Italy.” Castiglione's *Cortegiano* was the climax of books on manners, which were of long standing (see MANNERS AND MORALS). The *Cortegiano* was translated into English in 1561 by Sir Thomas Hoby. Sir John Cheke wrote a letter to Hoby on the use of English in connection with his translation. (See CASTIGLIONE, BALDASSARE.)

After the *Governour* of Sir Thomas Elyot in 1531 the next books to notice are the *Institution of a Gentleman* (1555) and Laurence Humphrey's *Nobles*, 1560 (*q.v.*). In 1561 Sir Nicholas Bacon drew up *Articles for the Education of the Queen's Wards*, and about 1572 Sir Humphrey Gilbert planned his Academy for the Queen's Wards and other youth of nobility and gentlemen. (See *Queen Elizabeth's Academy*, Early English Text Society, 1869.) In 1570 “T. B.” (? Thomas Blundeville, *q.v.*) translated into English John Sturm's *Nobilitas literata or A Rich Storehouse or Treasury for Nobility and Gentlemen*, and in the same year Blundeville translated from the Italian of Alfonso d'Ulloa the *Prince of Federigo Furio, a Spaniard*. It will be remembered that Roger Ascham's *Scholemaster* (1570) and John Lyly's *Euphues* (1577) are largely concerned with the

education of gentlemen. Less known is an anonymous tractate in 1577 entitled *Civile and Uncivile Life: a Discourse very profitable, pleasant, and fit to be read of all Nobilitie and Gentlemen Where in forme of a Dialogue is disputed what order of lyfe best bescemeth a Gentleman in all ages and times, as well for education, as the course of his whole life to make him a person fit for the publike service of his prince and country, and for the quiet and comynesse of his own private estate and callinge*.

In 1595 William Jones translated the treatise of Giovanni Battista Nenna, under the title *Nennio Or a Treatise of Nobility, wherein is discoursed what true Nobility is, with such qualities as are required in a perfect Gentleman*. Nenna maintains that a man becomes noble by the nobility of his mind, and that men and women equally become noble by learning. In 1598 J. Keper translated Count Hanniball Romei's *Courtier's Academy*, the representative book of the court of Ferrara. The later most representative English books are Henry Peacham's (*q.v.*) *Compleat Gentleman* (1622) and Richard Brathwaite's *English Gentleman* (1630) and *English Gentlewoman* (1631), the former dealing with topics from the point of view of the Cavaliers, whilst the latter are permeated with puritanic manners and morals. These ideals were to some extent combined in the *Gentleman's Calling*, 1659, perhaps the most popular book on the training of the religious gentleman which appeared in the seventeenth century. This book was followed in 1673 by the *Ladies' Calling*, which has considerable interest in the history of the education of gentlewomen. There is much controversy as to the author of these books. They have often been ascribed to Dorothy, Lady Pakington, but Mr. Macray in the *Dictionary of National Biography* (in his article on the life of that lady) considers it is more probable that they were written by Richard Allestree, an Oxford tutor.

In 1661 appeared Clement Ellis's *Gentile Sinner, or England's brave gentleman characterised in a letter to a friend both as he is and as he should be*, 2d ed., 1661 (Oxford), from a thoroughly puritan point of view. In 1678 John Gailhard (*q.v.*) wrote his *Compleat Gentleman*, which probably gives the best account of the grand tour as made by gentlemen of the time. About 1728 Daniel Defoe (*q.v.*) wrote his *Compleat English Gentleman*, first published in 1890, edited by Dr. Karl Bulbring, which is noticeable for its readiness to omit Latin from the studies of the gentleman. “You may,” says Defoe, “be a gentleman of learning, and yet reading in English may do for you all that you want.” After the end of the seventeenth century with the beginning of the establishment of charity schools (*q.v.*) and the development of technical and trade schools the extension of the term “gentleman” had widened out greatly, so that the idea of a “liberal” educa-

tion and a gentleman's education became much more approximated.

The distinction between the education of the scholar and the gentleman in earlier times is perhaps best indicated by saying that after the Renaissance the progress of the academic centers was mainly in the direction of the development of the subjects of the medieval *trivium*, viz grammar, rhetoric, and logic, whereas the great intellectual advances of the sixteenth and seventeenth centuries introduced what are called "modern subjects," *e g* mathematics, natural sciences, vernacular languages, foreign and English. These subjects were almost entirely ignored by the universities and grammar schools. Such "outside" subjects, together with physical exercises, such as riding the great horse, fencing, gymnastics, were precisely the subjects studied by the nobility and gentry, as is shown in the proposed curricula of the projected Academies (see GILBERT, SIR HUMPHREY, KINASTON, SIR FRANCIS, GERBIER, SIR BALTHASAR, ACADEMIES, COURTLY). We are therefore driven to the conclusion that it is to the records of the education of the gentleman and the nobleman that we must refer to trace the progress of the growing width of the curriculum rather than to the history of the universities and the grammar schools.

It is important to notice that the development of professional education — *e g* the lawyer, the physician, and the clergyman — was often along the lines of the modern subjects and thus by attraction came into the educational circle of noblemen's studies much more readily than into that of the university man as such, — the physician's studies, for instance, directly affecting the development of botany and zoology, which often were included in the nobleman's curricula. When England became richer after the increase of trade, consequent on the expansion of Queen Elizabeth's reign, the ranks of country gentlemen increased, and open-air pursuits and knowledge similarly developed, nobility and gentry joining in common studies, so that cultured gentlemen of the type of John Evelyn (*qv*) and the members of the Royal Society welded together still further professional and gentlemanly studies, until at last the universities found the pressure of inclusion of modern subjects too great to resist, if they were not to lose the students preparing for professional life.

The importance of the training of the gentleman in history and geography must not be overlooked. It is not only that all the writers on gentlemen's education prescribe these subjects as gentlemen's studies, but the writers and developers of the subjects were for the most part of the gentleman class. Both in history and in geography, also, it is to be noted that the beautiful folios, in which these subjects were printed, especially when illustrated with engraved pictures and maps, were expensive productions and could only circulate amongst men

of means, and of these the nobles and the gentry were the chief book buyers, scholars contenting themselves mainly with Aldine octavos or Elzevir duodecimos, with only occasional folios, and these chiefly of theology or classical writers. Suggestions on the youth's studies by writers like Francis Osborn in his *Advice to a Son*, 1656, J. B. (Gent) in *Heroic Education* (*qv*), and William Higford in his *Institutions*, 1658, illustrate the permeation of the gentry class by that time with a belief in the necessity of knowledge in history and geography.

Two other names deserve mention in the development of the education of the gentleman, — one in England and the other in the United States. Lord Chesterfield (*qv*), (1694–1773) and George Washington (1732–1799). In his famous *Letters to his Son*, Lord Chesterfield lays down the laws of worldly success for the young nobleman or gentleman. The youth's education was to be summed up briefly as good breeding.

Every detail of study, of conduct, of life, was calculated in the interests of worldly success. Samuel Johnson summarized the *Letters* in the criticism, "Take out the immorality and the book should be put into the hands of every young gentleman, for it would teach elegance of manners and easiness of behaviour." (See CHESTERFIELD, LORD.)

The *Rules of Civility* is only a commonplace book exercise of George Washington, written when he was fourteen or fifteen years of age. These *Rules* have been reprinted and edited by the late Mr. Moncreux D. Conway, who suggests that the reading and writing of them probably had effects upon the development and character of Washington. He shows that the *Rules* copied by Washington were the work of a Jesuit, from the College of La Flèche, which was published in 1595, called *Bienséance de la Conversation entre les Hommes*. This was translated into Latin in 1617 by Leonard Périn, and was published in English as *Youth's Behaviour or Decency in Conversation amongst Men*, by Francis Hawkins, in 1646, said to have been translated by him at the age of eight years (See MANNERS AND MORALS, EDUCATION IN). From this book, Dr. Conway urges that Washington was taught that "all good conduct was gentlemanly, all bad conduct ill-bred."

The eighteenth-century training in gentlemanly conduct is probably represented somewhat leniently by the relatively high (!) standard of Lord Chesterfield. The reaction in the earlier part of the nineteenth century is shown by the reintroduction of the highest standards of gentlemanly training in the English public schools. The greatest figure of this period was Dr. Thomas Arnold (*qv*) of Rugby. His standpoint is represented by his *dictum* "It is not necessary that Rugby should have three hundred pupils, but it is necessary that it should have scholars who are Christian gentle-



men" The English public schools since his time have largely developed physical training through games, but whether concerned with intellectual aims or with that of the other features of school life, there can be no question that these schools have been, and are, permeated with the ideals of producing gentlemen, in the sense of requiring the code of honor of "playing the game," in every activity of life In certain respects they have entered on the physical side into something of the old chivalric ideals, and occupy the place in English life to-day which the old Academies of Sir Humphrey Gilbert and Sir Francis Kinaston proposed to do, but failed to effect, for the training of gentlemen, in the sixteenth and seventeenth centuries

F. W.

See ACADEMIES, COURTLY, CHIVALRIC EDUCATION; MANNERS AND MORALS, EDUCATION IN, GEOGRAPHY, HISTORY OF THE TEACHING OF, and the articles on the various writers mentioned.

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## GEOFFREY THE GRAMMARIAN (fl 1440).

— An important figure in the age immediately before the introduction of printing, not because of the scholarliness of the book associated with his name, but because the production of that book showed that the tide was turning, that the desire for learning was once again awakening in England, and that a new educational method was necessary About the year 1440 a friar-preacher anchorite of Lynn in Norfolk, called Geoffrey, issued for manuscript circulation a volume entitled *Promptuarium Parvulorum Clericorum*. It was not the work of a scholar in the real meaning of that term. It was written by one whom the Anglo-Saxon Canons would have termed a "half-learned" person for the use of the still less learned. The book was a kind of English-Latin dictionary in which the English word is interpreted by one or more Latin words whose gender or declension, etc., is noted, while parallel English meanings are given. It is indeed curious that a book which did not pretend to scholarship should, even when the new learning and the new grammars had appeared and in the teeth of the condemnation of Erasmus, have more than held its own. The *Promptuarium* was first printed in 1499 by Pynson.

Julian Notary published an edition in 1508, and Wynkyn de Worde issued no less than seven editions between 1510 and 1528. The book was English-Latin, and for that reason was of real help to beginners. The use of English in a grammar or wordbook was felt to supply a fundamental need, and was rapidly adopted by the new grammarians. Thus John Stanbridge, John Holt, William Lily, and Robert Whyttington led the new movement and adopted the new educational idea evolved by the educational necessities of the "half-learned" monk Geoffrey. In the old grammars or "donats" the use of English was forbidden in school time. It may be said that Geoffrey's work inspired all the school books of the transition period and created a new didactic method.

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**GEOGRAPHY — History of the Teaching of** — The practical and theoretical knowledge of geography extant at any given time constitutes a clear limit to the possibilities of its being taught, but the extreme importance of the practical side has insured throughout the course of history a greater approximation of teaching to the actual knowledge of the age, than in many subjects. Military and naval commanders found it necessary, and administrators required to know it both for home and foreign affairs. The extension of Greek influence through the establishment of colonies, and by enterprising navigation, made at least the Mediterranean Sea well known.

The first to systematize geography as a subject was Hecataeus of Miletus (fl. 520 B.C.), who thus became the Father of Geography as Herodotus was the Father of History. Herodotus, however, by his travels was enabled to introduce casually, into his histories, much geographical information as to continents, rivers, mountains, climate, products etc., of the countries he had visited, as well as descriptions of the tribes of foreign countries. The famous expeditions of Alexander the Great opened up knowledge and experience to Egypt on the south, the Caspian Sea on the north, and Persia on the east, revealing the "wealth of Ormuz and of Ind," and furnishing material for the imagination throughout the centuries. The greatest Greek geographer was Polybius (c. 210-128 B.C.), who traveled in Libya, Spain, and Gaul so as to "remove the ignorance" with regard to those lands. His opinion as to Hannibal's route across the Alps was based on actual travel and inquiries on the spot. He asserted that travel is necessary for the historian and geographer, and he clearly saw and illustrated in his histories the importance of geography, both physical and descriptive, to

intelligent study of history. The subjugation of so large a part of the world by the Romans gave particular impetus to the extension and intensification of geographical knowledge. Cæsar's *Commentaries* offer copious illustrations of the effect of conquests on geographical observation and interest. The explorations of Posidonius the Greek (130-50 B.C.) were of great importance in developing the knowledge of physical geography. But the great work of antiquity is the *Geography* of Strabo (c. 63 B.C.-c. 23 A.D.), which not only gives a complete survey of the geographical knowledge of his times, but also supplies an account of the preceding writers on the subject. Strabo is a truly comprehensive geographer, taking up mathematical, physical, descriptive, and historical aspects. He traces the influence of the physical features of a country on the character of inhabitants and on the course of the history of the country.

The other ancient writers on geography who require mention are Pomponius Mela, Pliny, Dionysius, and Ptolemy. The *de Chorographia* of Mela was a popular account of geography, and important, not for its contributions to learning, so much as from the fact that it remained a scholar's textbook of geography up till, and even beyond, the sixteenth century. Pliny's *Historia naturalis* (79 A.D.) had a section on geography, but it was very much a statistical geography abounding in names, without anything of the philosophical outlook of a Strabo. Dionysius Periegetes (reign of Domitian) wrote a geographical poem. From the point of view of the history of geographical teaching this poem of 1189 Greek hexameters has an importance altogether incommensurate with the commonplace nature of its geographical information. Claudius Ptolemy, who wrote in Greek his famous treatise on geography (c. 150 A.D.) probably at Alexandria, ranks as the greatest mathematical geographer of antiquity, and the ancient view of the solar system as revolving round the earth is known as the Ptolemaic system, in contrast with the modern view called after Copernicus. It was as an astronomer that Ptolemy showed conspicuous ability, and the great vogue of his books secured the alliance of astronomy and geography through the Middle Ages, and part of the Renaissance. It was not till the times of the great discoveries of the sixteenth century that geography became differentiated from astronomy, the combined studies being commonly known by the name of Cosmography. Ptolemy made the great change in map drawing by introducing the system of projection, recognizing the spherical nature of the earth, representing lines of latitude by parallel *curves*, whereas previously they had been denoted by parallel *lines*. (See MAPS.) Besides the treatment of mathematical geography and of maps, the rest of Ptolemy's *Geography* contains tables giving the latitude and longitude of the different places

named in his various maps, and noticing the boundaries of countries, etc. The rest of the work is mainly astronomical.

The most intensive geographer of antiquity was Pausanias, a contemporary of Ptolemy, and author of an *Itinerary of Greece*, which gives a full account of Greek cities and sacred places, and noteworthy points on the routes from one to another of these, together with the legends and memories connected with each. C. Julius Solinus (third century A.D.) wrote a section on geography in his *Memoirabilia*, which had nothing geographically original, and but little that is not contained in Pliny, whence he was known as the "Ape of Pliny." Nevertheless, the writers of the Middle Ages who wrote their encyclopedias, such as Isidore of Seville (q.v.) in his *Origines* (seventh century) and Brunetto Latini (twelfth century) in his *Tesoro*, borrowed directly in their geographical section from Solinus. In the fifth century A.D. Paulus Orosius in his *Histories*, a collection of annals of universal history, wrote an outline of universal geography which was very popular with medieval authors and teachers.

The geographical writers of antiquity, Herodotus, Polybius, Strabo, Pomponius Mela, Pliny, Dionysius, Ptolemy, Pausanias, all of whom wrote in Greek, were lost to the Middle Ages. During the Renaissance period, and none the less because they wrote in Greek, they were restored to general knowledge, and with their renewed study ancient geography became a matter of serious study in the schools, both in the Latin translations and in the Greek original, ancient geography thus found a place in schools long before modern geography.

In the Middle Ages the development of geographical knowledge progressed slowly. Its progress in the period up to the first crusade of 1096 is chiefly connected in the earlier part of the period with the religious cosmographies or geographies, and in the latter part with the explorations, discoveries, and conquests of the Scandinavians. In the earlier period, as far as Christian countries are concerned, the cause of geography was bound up with the pilgrim-travelers, the convent maps, and the religious impulses which suggested the conversion of the heathen. The gain to exact knowledge was not great; the chief result was the development of geographical myth. The introduction of the Scandinavian element into European countries brought a vigor and enterprise, which communicated themselves in every direction, leading both to geographical discoveries as far as America and the Northern seas, and to a rereading and more direct knowledge of that which had already been noted. The work of Arabs in geography, reaching its height in the ninth century, included translations of the old Greek geographers, astronomical calculations, and even observatory work. Arab explorers traversed much of Southern and Central Asia, Northern Africa, and the

Mediterranean Sea coasts From these experiences, with the wonder element thrown in, arose literature such as that of Sinbad the Sailor Chinese geographical enterprise also was noteworthy The Crusades led to all kinds of commercial, diplomatic, missionary, as well as pilgrim, travel, from which an immense acquisition resulted to geographical knowledge and tradition Commerce between East and West Europe, between Mediterranean countries and northern countries, developed into a secular organization of merchandise, which produced an uneclesiastical and more scientific geography Asia was explored by men like the merchant Marco Polo and Friar Odoric in the thirteenth century, and in the fourteenth century the Catalan Atlas (1375) attained a highly creditable form of thoroughness, and from that time the production of more exact maps marked the possibility of the transition of geography into an exact science Civilized Europe in the fourteenth century had discovered the use of compass, astrolabe, time-piece, as well as maps The art of navigation went forward by leaps and bounds Oversea adventure vied with overland enterprise until in the first quarter of the fifteenth century Prince Henry of Portugal promoted geographical journeys, and opened up the era of Portuguese enterprise which culminated in 1486-1499 in the voyage round the Cape of Good Hope to Calicut by Diaz and Da Gama, and the discovery by Columbus of America In 1511 Portuguese navigators had reached by the Eastern route the Molucca Islands, and in 1519 Magellan attempted the journey to them by the Western route Sir Francis Drake circumnavigated the globe in 1577-1580, and Vitus Behring discovered the strait which separates America and Asia Thus by the end of the sixteenth century, the main features of the Earth had been described, the continents had had their contours defined in maps; travels and discovery had made known country after country, people after people, and geography had come to its own, by practical experience Much remained, of course, to be done in the way of filling up, particularly in the seventeenth century, but by the end of the fifteenth century and in the sixteenth century geography had reached the stage of self-consciousness Exploration had provided itself with instruments and methods, so that by that time geography may be said to have become a science in the sense that earth knowledge became an established subject of study by deliberate methods, and the ascertained knowledge thence derived became available for dissemination, and brought the subject into the pedagogic survey, at any rate, for those who were attracted to the study of the advance of civilization In England, from the time of Drake onwards, there was always a school of navigation in training, where students made geography in some form or other the study of their

lives, and there was from the time of the collection of travels of Ramusio in 1550, of Hakluyt, 1598-1600, and Purchas's *Pilgrims*, 1613-1625, a solid body of writers and readers of travels

Though the development of geographical knowledge had steadily advanced throughout the Middle Ages, the literature of the subject is almost a negligible quantity It was inextricably mixed up with biblical, classical, and legendary material Only one book stands out as important, viz., Marco Polo's *Book concerning the Kingdoms and Marvels of the East*

In the early Renaissance period those works only could be regarded as literature which belonged to Roman and Greek antiquity In school teaching, throughout the sixteenth and seventeenth centuries, the study of ancient geography certainly almost entirely absorbed the attention of the teachers, as far as this subject was concerned For the most part, the teachers confined themselves to the texts of ancient geographers, — particularly Pomponius Mela, Ptolemy, and Dionysius Periegetes, and the astronomical work of Proclus Of the ancient geography textbooks, a printed copy of Pomponius Mela was sold in England as early as 1520 In 1585 Arthur Golding translated Pomponius Mela into English, and did the same service for the *Polyhistor* of Solinus Of Dionysius there was an English translation in 1572 by Thomas Twyne A Greek text of Dionysius was published at Eton c 1607 In 1658 a most elaborate edition of Dionysius was furnished *ad usum tyronum* with Greek text and Latin translation and a most voluminous commentary, by William Hill, M A, of Merton College, Oxford, and afterwards schoolmaster at Dublin Philemon Holland's translation of Pliny's *Historia naturalis* was published in 1601, the second edition in 1634, and this was recommended for school libraries by Hoole in 1660 A comparative study of various textbooks and authorities enabled Cluverius in 1624 to produce a geography of ancient Italy, which Hallam describes as "the great repertory of classical illustration in this subject" The only other contemporary author's classical geography that needs mention is Ferrarius' *Lexicon Geographicum, Poeticum, et Historicum*, an edition of which was published in London in 1657 But there were, even at this period, men of larger vision in geographical study In 1511 Erasmus (*q.v.*) advocated the study on account of its value in reading history and the poets The school-teachers, however, supported Erasmus in the view that the chief importance of geography was to illustrate and elucidate classical writers and to provide copiousness of phrase in the descriptions introduced into themes and exercises in Latin and Greek writing In 1523 Vives (*q.v.*) recommended the pupil to read Strabo and Ptolemy, though in reading the latter the lately introduced and more exact maps were to be preferred Vives

however, further wishes the pupil to add the "ancient discoveries" in the East and West "from the navigation of our people" (the Spanish) and the collections of travels of Peter Martyr and of Raphael of Volterra, so that he may be regarded as the first advocate of the teaching of modern geography. In 1531 Sir Thomas Elyot (*qv*) in the *Governour*, requires the pupil to be taught geography, to prepare him for understanding histories. He is an enthusiastic believer in the value of pictures, plans, and maps, and insists that cosmography is a necessary study for "all noble men." In 1560 Laurence Humphrey (*qv*) in the *Nobles*, speaks of geography as a study that brings "great delight and profit." In 1622 Henry Peacham (*qv*) in his *Compleat Gentleman* recommends cosmography as a "science at once feeding both the eye and mind with such incredible variety and profitable pleasure, that even the greatest kings and philosophers have bestowed the best part of their time in the contemplation thereof at home" (See GENTRY AND NOBLES, EDUCATION OF). In the same year Robert Burton (*qv*), in his *Anatomy of Melancholy*, speaks of the pleasure in studying geographical maps and praises those of Ortelius, Mercator, Hondius. His bibliographical list of geographical books includes books of cities by Braunus and Hogenbergius, descriptive works by Maginus, Muster, Herrera, Lact. Merula, Boterus, Leander, Albertus, Camden, Leo Afer, Adricomius, Nic. Gerbelius, etc.; the famous expeditions of Christopher Columbus, Amerigo Vespucci, Marcus Polus, the Venetian, Lod. Vertomannus, Aloysius Cadamustus, etc. He goes on to enumerate the accurate diaries of Portugals, Hollanders, of Bartison, Oliver à Nort, etc.; Hakluyt's *Voyages*, Peter Martyr's *Decades*, Benzo, Lerijs, Linschoten's *Relations*, those *Hodæporicons* of Jod à Meggen, Brocard the Monk, Bredembachius, Jo. Dublinus, Sandys, etc., to Jerusalem, Egypt, and other remote places of the world. Then he names the Itineraries of Paulus Hentzner, Jodocus Sincerus, Dux Polonus, etc. — with the reading of Bellomus, *Observations*, P. Gillius' *Surveys*. He then refers to "those parts of America set out, and curiously cut in pictures by Fratres a Bey." Such a list as that of Burton shows the vast development of geographical literature by 1622, one hundred and thirty years after the discovery of America. Among other prominent advocates of the teaching of geography in schools were Comenius (*qv*) in the *Great Didactic*, Milton (*qv*) in the *Tractate*, and Locke in *Thoughts concerning Education*.

The development of geographical theory might be illustrated by a comparison of the first modern geography in England, viz the *Cosmographical Glasse*, 1559, a very creditable first production, and the *Geography* of Nathaniel Carpenter (*qv*), fellow of Exeter College, Oxford, in 1625. In the latter work we have a comprehensive volume of mathematical geog-

raphy in the first part, while in the second part the connections of geography are carefully traced in other realms of inquiry, and the idea of "human" geography is almost as clearly grasped as in a present-day treatise.

Peter Heylyn had published in 1621 his *Microcosmus, or a Little Description of the Great World*. After spending over thirty years of further work, he produced in 1652 his *Cosmographie, containing the Chorography and History of the whole World and all the principal Kingdoms, Provinces, Seas and Isles thereof*. This is a thick folio, with 1100 well printed, matterful pages, a handsome volume full of history and geography for all the known parts of the world. It takes up almost every phase of geography, in profuse detail. It appeals to those who wish to read the Holy Scriptures by its sacred geography, to astronomers, to physicians (who may learn from geography the different tempers of men's bodies according to the climes they live in), to statesmen, to merchants, mariners, and soldiers. Cosmography, with Heylyn, includes natural and civil history, descriptive geography, and mathematical geography. The frequency of reprints of this huge and costly folio, well supplied with maps and illustrations, shows the vogue of the subject, especially when we bear in mind the costliness of production and the leisure required for reading it. It is a gentleman's book, geography was particularly a gentleman's study, and the reprints of Heylyn in 1657, 1662, 1666, 1670, 1674?, 1677, 1682, 1703, are an indication of the enormous development of the class of "gentlemen" in Tudor and Stuart times.

Returning to the advocates of the teaching of geography, J. A. Comenius in his *Great Didactic*, written about 1631, includes in the curriculum of the vernacular school "the most important facts in cosmography, such as the spherical shape of the heavens, the globular shape of the earth suspended in their midst, the tides of the ocean, the shapes of seas, the courses of rivers, the principal divisions of the earth, and the chief kingdoms of Europe, but in particular, the cities, mountains, rivers, and other remarkable features of their own country."

Sir William Petty (*qv*) in 1647 suggested that in the equipment of his *Gymnasium mechanicum* there should be the fairest globes and geographical maps, "and he wished the institution to be an epitome and abstract of the whole world." In 1649 George Snell in his *Right Teaching of Useful Knowledge* directed that the pupils in the English School should study the "excellent art of cosmography" and "delightful use of topography" and in 1650, John Dury (*qv*) in his *Reformed School*, suggested that an outline of geography ought to be taught in schools. In 1660, in the *New Discovery of the old Art of Teaching Schools*, Charles Hoole suggested that "in the uppermost story of the school there should be a fan,

pleasant gallery wherein to hang maps and set globes, and to lay up such varieties as can be gotten in presses or drawers, that the scholars may know them"

Of actual geography teaching in academic institutions in England the first record naturally enough is that of Richard Hakluyt (*q.v.*) who claimed that he was "the first to show the new lately reformed maps, globes, spheres, and other instruments of this art for demonstration in the common schools" It must be observed, however, that though Hakluyt claims to be the first teacher of modern geography in England, yet in the ordinances of Shrewsbury School, drawn up in 1571 by the bailiffs of the town, provision is made that "from the stock remnant there should be provided a library and gallery furnished with all manner of books, mappes, spheres, instruments of astronomy, and other things appertayning to learning," and in 1596 the school had obtained "Mullinax his territorial globe in a frame with a standing base covered with greenish buckram" In 1597 the statutes of Blackburn grammar school state explicitly that "the principles of arithmetic, geometry, and cosmography, with some introduction into the spheres are profitable" In Laud's transcript of the studies of Westminster School 1621-1628 in the IVth and VIIth Forms: "After supper (in summer time) they were called to the Master Chamber (specially those of the VIIth Form) and there instructed out of Hunter's [*i.e.* Hunter's] *Cosmographie* and practised to describe and find out cities and countries in the mappes" This was the *Cosmographie* (in Latin) of John Hunter, which contained textbook, atlas, and index Instruction was probably given at Winchester College in geography, for in the Bursar's book for 1656-1657 is the item £117 6 for a *Mappa Mundi* It is probable that in all these cases the systematic geography taught was that of ancient Greece and Italy, as illustrative and elucidatory of the classical authors, and for composition writing in Latin prose and verse

It is not improbable that some schoolmasters outside of the systematic curriculum may have been interested in and taught geography, as, for instance, John Langley (*q.v.*), head master of St Paul's School, who is described as a "historian cosmographer and antiquary", William Camden (*q.v.*), whose topographical knowledge of England was unique, head master of Westminster School, Thomas Farnaby (*q.v.*), master of the largest private school in England in the first half of the seventeenth century, who had in 1595 accompanied Sir Francis Drake on his last voyage

Outside the schools, Hakluyt has already been mentioned at Oxford In 1654 John Webster (*Examination of Academies*) says that in the universities geography, hydrography, chorography, and topography were usually taught, and he names the textbook used as that of

Nathaniel Carpenter, but this was probably the mathematical part, rather astronomical than geographical The projectors of academies, Sir Humphrey Gilbert (*q.v.*), in 1572, Sir Francis Knaston (*q.v.*), in 1635, and Sir Balthasar Gerbier (*q.v.*), in 1648, all included cosmography as part of the proposed curriculum

With the great advance of maritime discoveries and with the constant emigrations to New England, a great naval service arose, and the preparation of youths in so much of geography as pertains to navigation became necessary Boys were apprenticed in large numbers to sea captains, serving especially in the Indian navy In 1673 the Mathematical School in Christ's Hospital was founded with a view to preparing boys directly for sea service, in such subjects as mathematics, navigation, etc According to the King's ordinance the Governors were to furnish the necessary "Books, Globes, Mappes, and other Mathematical instruments" At sixteen years of age or before, if the master of Trinity House saw fit, the boys were to be bound apprentice for seven years to the captain of some ship in the royal or merchant service In 1681 the navigation class book was issued It was written mainly by Sir Jonas Moore, assisted by the famous Flamsteed and Halley It was entitled *A New Systeme of the Mathematicks* and contained sections on mathematical subjects, as well as cosmography, navigation, the doctrine of the sphere, astronomical tables, and geography The latter is described as a "description of the most eminent countries and coasts of the world, with maps of them and tables of their latitude and longitude" The geography thus was prevailingly mathematical, and it is interesting to note that one of the Governors of the School, and a member of the Committee at the Visitation of 1697 was Sir Isaac Newton Many public schools arose throughout the country in imitation of the Mathematical School of Christ's Hospital and not a few private schools, where navigation received special attention

In 1674 Joseph Moxon, hydrographer to the King, published the third edition of his *Tutor to Astronomy and Geography*, dedicated to Samuel Pepys, "not as what you need but what may prove an ease to your memory" Though the official hydrographer, Moxon introduces a section on astrological problems The geographical section is certainly mathematical

Geography was taught, curiously enough, by foreign language masters Thus Guy Miège (*q.v.*) in 1678 describes himself as professor of the French language and of geography He speaks of geography as a subject becoming a young gentleman, and says he doubts not the subject "will take root amongst the nobility and gentry of England as it hath in other nations; especially since the war began," and he

offers to teach geography either in French or in English. In 1682 he wrote a *New Cosmography or Survey of the Whole World*. Similarly in 1769, M. Jacques de Lavaud was a teacher of languages and of geography. It seems likely, therefore, that both French and geography received stimulus in their teaching from the Huguenot influence in England.

In the eighteenth century the development of the chronometer introduced more exactitude -- in the fixing of the position of distant places. Surveys of coast lines and interiors become more exact, and measurements of the earth more reliable.

In 1729, the Fishmongers' Company in London presented their grammar school at Holt, in Norfolk, with "a valuable and useful library, not only of the best editions of the Classics and Lexicographers, but also with some books of Antiquities, Chronology, and Geography, together with a suitable pair of globes."

In the century which intervened between Locke and Vicesimus Knox (*qv*) geography in England received attention practically as well as theoretically. This was particularly the case in private schools rather than in the public schools of England. Thus John Randall, who conducted a school at Heath, near Wakefield, in 1744, and afterwards removed to a school at York in 1765, wrote a "system" of geography, a comprehensive dissertation on the creation and various phenomena of "the terraqueous globe," as it consists of "subterraneous waters, mountains, valleys, plains, and rivers," with an hypothesis concerning their causes. It further contains a description of all the empires, kingdoms, etc., of the world, drawn from ancient and modern history, and some of the most celebrated voyages and travels. Statistics are comprehensively given of the "present state" of the various countries and full details offered as to climate, government, laws, policy, trade, revenues, forces, curiosities, population, character, religion, customs, ceremonies. In 1753 another private schoolmaster, J. Burgh, recommends in the study of geography the following textbooks: Randall's *System of Geography*; Harris' *On the Use of the Globe*, the *Geographical Dictionary*; Anson's *Voyages*, and Salmon's *Geographical Grammar*. Of this list, Harris's *Geography* was the book of longest and widest vogue on the subject. The second edition is dated 1712. It proceeds by question and answer, and it is the first school textbook (apparently) of purely descriptive geography, and distinctly an interesting and helpful book for the learner. In 1746 was published the third edition of an *Introduction to Geography* on the same lines as that of Harris, written by J. Cowley, "geographer to his Majesty," a work which is apparently the first general modern geography explicitly stated to be "designed for the use of schools." These textbooks of Harris, Cowley, and Randall are more modern in scope and outlook

than the later *Guides to the Use of the Globes*, the series beginning with that of Daniel Fenning in 1760, and continuing to the more matterful and interesting *Exercises on the Globe* of William Butler in 1814, designed "for the use of young ladies." At the beginning of the nineteenth century, the use of the globe was an acknowledged part of the curriculum of all the private schools and academies for young gentlemen and young ladies, although the teaching was mainly informational, and had little mental discipline in it.

Two points especially should be noted in tracing the history of geography teaching. First, its development has taken place outside of the recognized public schools system, chiefly in private schools. Second, arising in the mixed subject of cosmography it has become differentiated as earth knowledge, and its original partner, astronomy, in the portions which have especial reference to our earth, curiously enough, and not altogether advantageously, has been ousted from the study, even in outline, of the great masses of (at any rate) British children. In the teaching of geography itself, however, within the last decade modern aims and methods have improved almost more remarkably perhaps than in any single subject in England.

F. W.

**Academic Status — Germany** — Geography as a university subject has long had a prominent place in Germany. A long list of eminent names attests to the high position of this science in a nation noted for its scientific achievement. Humboldt, Ritter, Ratzel, and Richtofen stand out prominently among the great geographers that the world has produced, and in the German universities of to-day are included some of the leading geographers of the present time. Geography is a recognized and essential part of the university curriculum, and provision is usually made for the presentation of various phases of the subject by two or more specialists in different parts of the geographic field.

The prominence attained by geography in Germany is the result of a variety of causes, among which is undoubtedly the strong influence of a few powerful men, early in the field, working in a country where centralized authority has had a voice in university development. Doubtless also it is partly due to that keen, clear-sighted recognition of the value of science, in all its phases, which has placed Germany in the front rank in science and has been one of the chief underlying causes for the wonderful industrial development of that country. The scientific spirit, so noticeable throughout the German nation, has encouraged geographical research, thus providing teachers; and where there are inspiring teachers and leaders in research, there are certain to come students to listen and to investigate. There are certainly two other prominent factors which help to explain the importance of geography in the universities of that country. One of these

is the broad intellectual interest of the normal, educated German; the other is the nature of the educational system. Under more or less complete centralized authority a curriculum below the university has been developed in which systematic study of scientific geography has a definite and prominent place. And since the German teacher must know the subject he professes to teach, provision is made in the universities to meet the demand. Further, the breadth of culture among educated Germans is such that it is fully recognized by them that geography is a basal science, an understanding of which is essential to correct interpretation of much of human history and development, and that it is also basal to an appreciation of the distribution of animals and plants and to the industries that depend upon them and upon other products of the earth. Thus it happens that many German students, whose main interest is in other lines, seek a knowledge of scientific geography such as the German university professor can give.

Partly as a result of German influence, geography has now a high place in other continental nations, and what has been said with regard to geography in Germany applies to a greater or less degree to Holland, Switzerland, Austria-Hungary, and France. But in Europe it is almost warranted to state that the importance of geography as a university subject diminishes progressively with the increase in distance from Germany.

*England* — It is a curious fact that in the one nation where the strongest reason for geographic interest would seem to be present — the British — university geography is almost at its lowest ebb. Only within a very few years has any provision whatsoever been made for geography in the great British universities, and then merely in a sort of experimental way in the form of lectureships and readerships, urged and partly supported by geographical societies.

No attempt will be made to consider the question whether the striking contrast between Great Britain and Germany in this respect is in any way ascribable to a difference in scientific spirit or broad scientific culture. There are other more evident and more easily demonstrable causes. One of these is the fact that there is no such centralized educational system below the university; and in the schools geography has no such rank as in Germany. There is, therefore, no such demand for teachers with a university training in geography. A second reason is that the British geologist has taken into his own field some of the best of scientific geography. Therefore some of the most important geographic work published in Great Britain is from the pens of geologists, and is produced as a kind of geological by-product. A third reason for the position of geography in Great Britain, perhaps the result of its world-wide colonial interests, is the fact

that geography there has come to be considered as almost synonymous with exploration. A journey to the Arctic or the Antarctic, a trip across Africa, or an exploration of New Guinea is ranked as more geographical (if we may judge by honors conferred) than an interpretation of a land form, or a scientific study of the geographical relationships of a known area. Geographical publications abound in interesting descriptions of remote regions, little known people, itineraries of journeys, and associated incidents, accidents, and adventures. Such exploratory work while doubtless important, as the accounts certainly are interesting and entertaining, rarely merits the characterization scientific, and is not uncommonly even distinctly unscientific. There is certainly little basis for a subject of this sort to claim a place in the university, and it is by no means improbable that the reputation gained by geography as an essential synonym of exploration is one of the strong reasons why geography has so tardily won a place in the British universities.

Lest this characterization of geography in Great Britain be misunderstood, it may be well to add that there have been scientific geographers of the very first rank. Such names as Lyell, Wallace, and Geikie rank with the world leaders in scientific geography, but they are not, as in Germany, university teachers. The beginning that has been made, notably in the Oxford and Cambridge Schools of Geography, has been admirable and is promising for the future, while the newer universities have also made provision for the higher study of the subject in connection with economics and commercial courses.

*United States* — In America the recognition of geography in the university has been almost as tardy as in England, and for similar reasons. There have been cases where professors of history or of political science, usually with a German university experience, have given brief courses in historical or political or commercial geography to furnish a part of the geographic basis needed by their students. There have been a few cases where chairs of geography were established a generation or more ago, but these instances have been sporadic and have represented no well defined movement toward university recognition of geography.

Perhaps the nearest approach to early recognition of this subject in the university curriculum in the German way was when Guyot (*qv*) was given a chair in Princeton. Agassiz (*qv*) found the American field a virgin one for the introduction of scientific natural history from its European environment, and with his genius, personality, and boundless enthusiasm he laid a foundation upon which the growth of natural history subjects in the American university became assured. Seemingly equal opportunity existed in the field of

geography, and to it Guyot came at Agassiz' suggestion and in 1854 became professor of geography at Princeton, a position which he held until his death thirty years later. Guyot did valuable and important work, but apparently conditions in America were not favorable to vigorous spread of scientific geography; there arose no effective Guyot School and geography in the American university had about the same position at the end of his teaching as at the beginning.

In the meantime, the study of geology (*q.v.*) spread rapidly, and provision is now made for it in every college, while the larger universities have from three to five professors for the subject. This high rank of geology is apparently due in part to the recognized scientific character of geologic study, and in part to the presence of a demand for men with geological training. Geography, on the other hand, has had in America, as in Great Britain, to bear the reputation of being non-scientific, or, at best, little more than a descriptive science. At the same time some of the most thoroughly scientific phases of geography have been annexed by sister subjects, notably by geology. As a result of the confusion thus arising, there has even been a tendency to question whether there is a science of geography, some holding that all that is really scientific in it lies within the province of established subjects, such as geology, zoology, botany, ethnology, history, economics, etc. It is sufficient answer to such a claim to point to the scientific results of continental geographic research, and to the contrast in output on such topics between Germany and England or America, where geography is not so organized as a science.

As in Great Britain, so in America, there has recently come about a change in the status of geography in the university; but the nature and underlying causes of the change have been quite different in the two countries. In Great Britain geography has gone into the university as a result of outside pressure; in the United States it has evolved within the university, primarily as a result of the discovery that much that had previously masqueraded under the term "geology" was really geography, or needed only moderate change to enrich it with the true geographic flavor. Naturally this geography, of geological parentage, is dominantly physical geography or physiography. That it should have made for itself a place in American universities as an offshoot of geological teaching is natural when it is remembered that some of the most significant basal principles of the evolution of land forms have been discovered by American geologists as a by-product of their geological work, — notably by Gilbert and Powell.

To Davis of Harvard, more than to any other one person, is to be credited the evolution of the geographic phase out of the geologic

teaching, and its segregation into a more or less definite branch of science teaching in the American university. Other teachers were, and still are, teaching geography as geology, and some have definitely recognized the fact, — for instance Shaler of Harvard, who in a large part of his broad scientific interest was a real geographer, though he ranked in the university as professor of geology. Having introduced the geographic viewpoint into his teaching as a member of the Harvard Geological Department, and working in the midst of the inspiring influence of his geographic colleague Shaler, Davis has developed an American school of physical geography whose influence has spread throughout the whole field of American education. A generation of physiographers has been reared by the genius and tireless energy of Davis, and, as in the case of Agassiz in natural history, the extent of the influence of the master has been broadened by the work of his pupils and by others less recognizably under his direct influence.

But this peculiar manner in which geography has found a place in the American university has resulted in its occupying a rather anomalous and somewhat narrow position in the curriculum. Ordinarily geography is merely a part of the course offered by the geological department, and the teacher of it may rank as professor of geology, as in fact is the case with Professor Davis himself, who is not professor of geography in Harvard, but Sturgis Hooper Professor of Geology. In some of the better universities and colleges no provision whatsoever is made for any geography excepting such elementary instruction in physical geography as a professor of geology can give in addition to his purely geological teaching. In such cases there is little basis or opportunity for geographic research. A still larger number of the leading universities have one or more men who give their entire attention to geographic subjects in teaching and research; and a few make special provision for other phases of geography than physical geography. Yet, with but few exceptions, this geographic work is offered in the geological department, or in the department of "geology and geography." In a very few cases geography stands as an independent department coordinate with geology, from which it has in most instances been recently divorced.

The evolution of geographic instruction in the American university, in the main on the basis of previous university recognition of geology, has been extraordinarily rapid in the last ten or fifteen years, during which most of it has taken place. Whether similar development will continue for another decade cannot be told; but it is clearly evident that geography has at last gained a position in the American university curriculum from which there can be no recession. Three or four of



the larger universities have set an example of broad policy, recognizing geography fully and providing for the teaching of a number of its important phases, as in Germany. Others, also among the leading universities, have scarcely taken the first step, but it is to be confidently expected that these laggards will not long remain so far behind. The example so long ago set by Germany, and now fully adopted by a few of the more progressive American universities, may fairly be considered the goal toward which the best of our universities will tend.

It is to be noted, however, that scientific geography in the American university is at a disadvantage as compared to its position in Germany. It is not to be expected that university trustees will provide teachers in subjects not demanded by students, nor can they properly make much further provision for the expansion of elementary instruction. To the German university there come students with previous good training in geography, much of it on a par with some of our elementary university geography. There is also a body of earnest students who in their desire to master special subjects correspond more nearly with our small group of graduate students than with our overwhelming numbers of undergraduates. These students are not content with mere elementary work, even though their main interest lies in history or in botany. The point to be noted here is that the teacher of geography in the American university may be obliged to justify his appointment more in elementary courses than in advanced study, — and an examination of some of the courses offered seems to indicate that this is the real condition. If so, we may not hope for the great scientific result in America that recognition of geography in the university has brought in Germany.

Finally, there is the difference in the utilitarian influence in Germany and in the United States. There a demand exists for men and women trained in geography before they are allowed to teach geography. Here pedagogy is not commonly placed ahead of knowledge. The principle that "a person can teach anything if only he is a natural teacher" finds far less encouragement in Germany than in America. Only in our larger cities, and in not all of these, is knowledge ranked with pedagogical power. Moreover, almost equally with England, geography as a school subject is neglected in the United States. A student in his most immature period has a few years of geography study, then comes an intermission, then perhaps a course in physical geography or commercial geography, or possibly no geography at all. The high school geography may be given to almost any one, very likely to the least burdened teacher, possibly of drawing, or Latin, or English. For those who plan to be teachers there is little need of studying uni-

versity geography. This contrasts strikingly with Germany, where there is a well devised course of geography in the schools, and where a geography teacher is supposed to know geography.

The condition in America undoubtedly has had, and still has, a very important influence in retarding the development of geography teaching in our universities. It will continue to be a disadvantage as compared with the conditions in Germany, but there is another phase which is hopeful. With the development of geography in the university curriculum there will doubtless spread an influence down through the grades as a result of which the teaching of the subject will be both extended and improved. Perhaps one of the greatest reasons for the weakness of our school geography is the fact that the subject has not hitherto found adequate recognition in the American university.

R S T.

**University Courses** — In Germany the offerings in geography vary with each semester. For example, there were in the winter semester of 1910-1911 seven courses at Berlin, one at Halle (on Arabian geographies), one at Heidelberg, five at Leipzig.

In the English universities the advance in the study of geography has been due in the main to the development of commercial courses in the newer institutions. At Oxford a School of Geography was established in 1899 with the aid of the Royal Geographical Society, and has a faculty consisting of the University Professor in Geography, an assistant, and lecturers in ancient geography, and the history of geography, an instructor in surveying, and a demonstrator in geography. Diplomas and certificates are awarded in the subject. At Cambridge a Board of Geographical Studies, working in conjunction with the Royal Geographical Society, exists to promote geographical research and study and to arrange courses. There are a University Reader and lecturers in geography. The subject may be offered for the ordinary B.A. degree, the examination covering physical, historical and political, economic and commercial geography, cartography, history of discovery, and elements of ethnology. Diplomas are also awarded by the Board of Geographical Studies. At the University of Manchester courses are given in the faculty of arts by the lecturer in geography, in the scope and meaning of geography, in geography of a special area, political and economic geography, and a practical course and a seminar are conducted, while physical geography is given in the faculty of science together with geology. At the University of Liverpool courses are given by two lecturers in classical geography, general principles, physiography, commercial, historical, and regional geography.

The development of the subject in America has already been dealt with. Here a few

courses and number of instructors in the subject will be given from a few representative universities.

*Harvard* — Professor, assistant professor, and an assistant. For undergraduates Physical Geography — lectures, laboratory work, and field excursions. For graduates and undergraduates Physiography of the United States, Geographic Influences in North America, Physiography of Europe, Geomorphology, Geography of South America, and (for graduates primarily) a research course in Physiography.

*Yale* — Professor and two assistant professors. Undergraduates Physical and Commercial Geography followed by environmental influences on man's activities, Anthropography, Physiography. Graduates Physical Geography, Geography of North America, South America, and Asia.

*University of California* — Three assistant professors and one instructor. Lower Division General physical geography, Introduction to Economic geography, the materials of commerce, Introductory geography, Physiography of the lands, Topography maps and models, Relief modeling, Elementary meteorology, Geography of Spanish America, Historical geography (two courses). Upper Division Historical geography of Modern Europe, Economic geography of the United States, General climatology, Oceanography, California map, Geography of North America, Geographical influences in the Western United States, Climatology of the Pacific Coast, Glacial geography, Geography of California, Geography of Africa. Graduate Courses Physiography of the Pacific Coast, the teaching of physical geography, Special studies in physiography and climate, Commercial resources of the Spanish-American Countries.

*Chicago* — Professor, two associate professors, and an assistant. Undergraduate Commercial geography, Economic geography, Climatology, Influence of Geography on American history, Political geography, Climate and man, Economic geography of North America, Economic geography of Europe. Senior and Graduate Commercial geography, Economic geography of tropical countries, Principles of geography, the geographic problems of the Orient, Cartography and graphics, the historical geography of American cities, the natural resources of the United States, their exploitation and conservation, some principles of Anthropogeography, geographic influences in the history of New England, of the Interior, of the Middle Atlantic States, History of Geography, Research courses. Courses in physical geography are given in the Department of Geology.

*University of Wisconsin* — Given in the Department of Geology. Undergraduate Short course in geography, Physiography and geography, Physical geography for commerce students, Economic geography, Regional geography.

*University of Pennsylvania* — Given in the Department of Economics. Undergraduate Political geography, Economic climatology, Geography of Europe.

### Geography in the Schools — United States.

— Geography has long held an important place in school work in the United States, both in elementary and in secondary schools. Geography has at times been considered by some to be the fundamental subject in elementary schools, about which all other subjects must center (see CONCENTRATION; PARKER, FRANCIS), by others, geography has been and still is considered a catch-all subject which has little inherent strength of its own, but yet must be given some place. By others, and the number is constantly increasing, geography is held to be one of the fundamental subjects of the curriculum, tested as to its worth and capable of being developed by good teaching into one of the most significant of school subjects. Geography as the study of the earth in its relation to man deals with elements of the environment of deep significance to all, and is of great value because of the aid it gives to other subjects in the curriculum.

Geography is no longer generally considered merely an informational subject which permits some attention to necessary, detailed facts to be known by all. Although facts are vital and necessary in the subject, geography, as a

study of relations between the physical environment and life in a causal way, is decidedly a study of principles of great working significance. Geography, rightly taught, imparts to the pupils a knowledge of large relations over the world, which all must know to understand current events, world-movements of people, or the problems of commerce of to-day. Geography teaching, therefore, has for its purposes the imparting of a working knowledge of the principles of geography and training in working with geographic relationships and geographic materials that gives pupils a power to use their knowledge in later life. This viewpoint is fundamental and vital in both elementary and secondary school geography, but as yet secondary school geography is so specialized that these larger purposes are often lost sight of in the endeavor to give training in specialized, scientific thinking in a narrow phase of geography.

**Elementary School Geography** — The character of school courses in geography is now, as it always has been, largely determined by the content of the textbooks in use. In the earlier part of the last century, the school texts were topical in order and were planned to cover the geography of the world in a brief way. Later, the geography course was represented by two books, an elementary and an advanced, or a first and second book, and that plan holds to-day. The plan of the earlier book was to present the larger, more general items of geographic interest, to be followed in the larger book by a more broad consideration of the same topics. These books dealt largely with the facts of political and of physical geography and gave little attention to geographical relationships.

The first departure from the earlier plan was in the Guyot Geographies of 1866, in which emphasis was given to human relations to physical conditions, and in which maps were made of vital significance. Guyot's books were, however, ahead of their time, and the principles of Guyot, now recognized as of great significance, were but little developed by others. (See GUYOT.)

The first great change from the plan of these earlier books was in 1894, following the *Report of the Committee of Ten* (qv) of the National Educational Association. Owing to a renewed interest in physical geography, and to a recognition of the importance of observational work in geography, much emphasis was given to physical geography in all phases of school work. The first geographies which appeared after this *Report* gave a new impetus to school geography and introduced an era of progress of great significance. Although these early books placed great emphasis on physical geography, they did not ignore the life side. The new ideas were grafted on to the old without supplanting it to any great extent. They proved the importance of thought work as

against memory work in geography, and since that time the endeavor has constantly been to make geography more real, more vital, and more thought-provoking to pupils.

The recognition of the well-founded educational principle that pupils' work must be based on previous knowledge in all fields of study, has led in the last decade to the inclusion of home geography as the fundamental phase of school geography work. Home geography is planned to help children in organizing their everyday experiences and to see the simpler relationships of life to its physical environment illustrated in every locality. Simple generalizations, based on these local studies, lay a foundation for extending the children's work so as to include the world whole, which forms generally the second stage in school geography work. The development of the simpler ideas of the world as a globe, and of the distribution of the continents over the world, gives a background for the earlier study of certain of the continents and countries of the world, through maps, pictures, and text. Usually these earlier phases of geography are followed through the fourth, fifth, and a part of the sixth year of school life, up to the time when many pupils leave school.

In the later years the continents, or certain of them, are again studied from a somewhat different standpoint through the sixth and seventh years. This advanced continental work, in which much attention is given to commercial geography, is usually preceded by a study of certain of the principles of mathematical and physical geography, to lay a foundation for a careful causal continental study. In other cases, this work is placed as the climax of the course as a specialized phase of geography. In a few instances, geography, as an all-round subject, is closed in the sixth year. The geography of the later years is very specialized and is devoted to the commercial and industrial aspects.

In by far the greater number of large cities in the country, geography is taught from the fourth to the seventh years inclusive, though there is an increasing tendency to restrict geography work to three or to three and a half years. By far the larger proportion of the time devoted to the subject is given to the study of the regions of the world, since political geography, as it is often called, forms the larger phase of geography that pupils come in contact with in after life. This regional work naturally includes the study of physical and commercial conditions as well as of political conditions, and involves much study and training in the use of maps as well as of text and supplementary materials. Such a course of study is generally followed throughout the country, according to the plan of the texts in use. In an increasing number of places the course of study is now specially planned to meet local needs, and hence the

order of treatment of topics and phases of the subject may vary extensively. In by far too many localities, however, the text forms the only course of study used and the yearly programs are measured in pages of the text.

There has been great progress in school geography teaching in the last few years. Better texts, better maps, better trained teachers, improved training courses in normal schools and some colleges, and a larger supply of valuable and accurate supplementary volumes have all contributed to the improvement of the subject. The greatest weakness in the field at the present time is a lack of first-class wall maps and a dearth of reasonable-priced, accurate school atlases. In these mechanical attributes of good geography teaching, the United States is far in the rear as compared with Germany, France, the United Kingdom, or even with a small country like Switzerland.

The history of the development of elementary school geography in this country has shown that progress has always been made through evolution and not by revolutions in content or plan. It is not likely that the general content of elementary school work in geography, the outgrowth of generations of experience, will be overturned in the future. As old subjects are tested by modern scientific methods and found wanting, they will be replaced by more rational and vital topics. Much progress has been made in eliminating from school work topics in geography that are not pertinent to the needs of pupils, and which are too adult for school use. A conservative public will, however, permit such changes to be made only slowly, while the demand that all that is new and perhaps of little value should be included, is widespread and insistent. The great problem for the future is the judicious modification of the course under the expert guidance of trained and interested geographers and leaders in modern education.

**Secondary School Geography** — Secondary school geography in general falls into three categories, according to whether the work is presented in the earlier or later years of the course. Physical geography is the favored phase of geography in secondary schools and receives the greatest attention in the first or second year of the course. In many schools, particularly those preparing pupils for college entrance examinations, an advanced type of physical geography or physiography, as it is often termed, has a place in the later years of the course. Until within recent years, physical geography has been given a place in secondary schools because of its informational value, and its content was determined from that standpoint. As thus presented, it had no unity and little value as a science. The development of physical geography by American workers in field and classroom has shown the subject to be rich and full as a cultural and scientific study. In consequence, the pendulum has

swung away from the older informational subject toward a newer, rationally organized physical geography

It is now generally recognized that enthusiasm for the newer point of view has carried us to extremes, and that physical geography as such has received an undue proportion of the time that can be given to earth science in secondary schools. If the task of the secondary school is to prepare pupils for after-school life, then obviously the content of geography and other subjects must to some extent be determined by the conditions in the adult world. In these modern days, pupils are going to be confronted in the business world with commercial conditions, and through the press they will constantly be brought in touch with the general geographic conditions of the great nations of the world. The development of modern commerce has, since about 1900, caused an ever increasing attention to be devoted to commercial geography in secondary schools. As a rule, this needed phase of the work has been organized with little attention to its relations to physical geography. Like the latter work, commercial geography is found prominent in both the earlier and later years of the course. The rapid development of commercial geography is indicated by the fact that, while but one book was available for secondary use in 1901, at least ten much-used books exist in 1911.

Commercial and physical geography are so closely related in a causal way that neither can well exist independently in a course of study. Hence the demand has arisen that these phases of the work be coordinated more closely in secondary schools. Two committees, one from the National Education Association in 1909, and the other from the Association of American Geographers in 1910, recommended that the one year to be devoted to geography in secondary schools be divided so that one half the time be given to the essentials of physical geography and one half to commercial and regional geography. This latter recommendation is based on the conviction that pupils ought to study the general geography of the United States and Europe, at least, in the high school, as a contribution to their general training and as a basis for efficient work in history, economics, botany, zoology, and other subjects that deal with facts of distribution. Physical geography as a college entrance subject has never held an important place in secondary schools, and is particularly developed in large public schools or in private secondary schools where funds are available for securing the necessarily inclusive and somewhat expensive laboratory equipment.

*England.*—School geography in England has progressed rapidly in the last few years; though in many ways it is still very unsatisfactory, as it is in America. The modern development of interest in geography, particu-

larly in the higher schools, dates from 1886, when the classic report on geographic instruction was published by the Royal Geographical Society from the pen of Dr J. Scott Keltie, who made a thorough and painstaking study of geography teaching in England and on the continent. In general, the plan of work advocated for the elementary schools of England is similar to that in America, though greater emphasis is given to physical geography in the several standards. The plan of beginning with local, observational geography and working out to the geography of the world, with a special study of selected countries in later years, is followed. A large number of improved textbooks and books on teaching makes effective work possible, and the work of the Geographical Association has done much to arouse teachers to a realization of the possibilities of geography.

In the secondary years much more attention is given to regional geography than in America, and physical geography, as such, has a distinctly subordinate place. The work is, therefore, well coordinated and definite, though its content is largely determined by the examinations set by the larger universities. The outlines in present use show great advances over those of 1885-1886, and indicate how far-reaching in its influence has been the establishment of geography as a university subject in the larger universities and colleges. Inspiration and guidance have come from the leaders in the higher fields of geography teaching and have caused a very significant revival of interest in school geography. Furthermore, the leading business men have realized that England as a commercial nation must give more attention to geography teaching in the schools.

*France.*—Geography in the schools of France runs in cycles, the climax of the two cycles being a study of France and its colonies. Beginners are led through an observational study of the local environment outward to the world whole. This is followed by a study of the continents, and is brought to a summary in the fourth school year in a study of France and its colonies. In the second cycle, which is completed in the eighth school year, the elements of physical geography are followed by a study of America, Australia, Asia, Africa, Europe, and again is brought to a climax in a more advanced treatment of France. This work is largely presented through excellent textbooks which order the content of the course in a definite way. In the secondary school the same idea of cycle is followed. In the first year the history of geography, physical geography, political and commercial geography, and a brief course in geology constitute the outline of work. This is followed in the second year by a special study of France in great detail, and the outlines of cosmography. The character of the geography work in the later years is determined by the special course

of study followed by the pupils and is in no case complete or closely related to the earlier work. Thus geography teaching in the elementary and secondary schools of France is very largely political and regional geography, so arranged that pupils will, as the years pass, become increasingly familiar with the geography of their own country and its economic, political, and physical features.

*Germany* — Probably in no country in the world is geography in schools so well organized and taught as in Germany. Teachers are trained for their work, and the supply of available books, atlases, and maps is without a parallel for quality, accuracy, and usefulness. Excursions have been developed generally as an important phase of school work, and geography is thus a matter of things and not of words or imaginary pictures, as is so frequently the case in America. The general order of the divisions of the course is similar to that in America. Following a study of the home surroundings by observation and of Germany comes a brief treatment of the several continents of the world. This is in turn followed by a study of the continents from the physical standpoint, in the years corresponding to our upper grammar grades. The climax of the work is a course in general geography with special emphasis on physical geography, and of political and commercial geography. As in America, greater emphasis is, in recent years, laid on commercial geography from a broad viewpoint. This plan, roughly outlined, differs little in general plan from that of many years ago. Progress is indicated by change of emphasis of details, rather than in any variation in the larger steps of the course. A pupil who completes the nine years of prescribed work in geography has a good knowledge of elementary geography in all its branches and has learned how to use his knowledge in the specialized later school work, with great profit to himself.

**Methods of Teaching Geography** — Until within a few years geography teaching in American schools, both elementary and secondary, largely followed one method, — the pupils memorized the words of the textbook without, as a rule, any adequate comprehension of the meaning and significance of the material studied. Where maps were involved, these were studied in the same way. Pupils were encouraged to search maps to find obscure and well-known places, with no thought of giving them any training in the use of latitudes and longitudes. Thus they gained no assistance through the exercises that would have helped them to find other places by the same method. In recent years the character of geography teaching, in both elementary and secondary schools, has radically changed, although the old memoriter method still persists in many school systems where the teachers are not trained in modern methods or are out of sympathy with their tasks.

As the former method was characterized by memorizing, the new method is characterized by reasoning. The reasons for geographical facts are studied with the facts and through the facts, and the "casual notion," as it has been so aptly named, is the keynote of geography work. In this study of the relations between human geographic conditions and the underlying physical conditions, much use is made of maps, not merely as sources of information, but as valuable media for depicting geographic features of all kinds. Map hunting has given way largely to map reading, and pupils are taught to use a map as they would their texts, as one of the most valuable bases for study. In the specialized work in secondary schools, great emphasis is given to the map study of land forms, ocean conditions, climatic conditions, and to life geography. The new point of view in reference to geography work, and the realization that ability to work with geographical materials is of greater value than mere information, together with the recognition of the importance of making facts and principles real, has led to the introduction of laboratory work, particularly in secondary school geography. In some cases laboratory work merely consists of the desultory study of graphically presented facts, because the curriculum calls for laboratory work. Under these circumstances laboratory work is often an irrational phase of geography teaching, of little more real educational value than the busy work of the primary grades. In the better schools laboratory work, however, is a vital part of the study and is made the foundation in the first presentation of most new topics. The influence of laboratory work, which calls for the study of things and the graphic representation of things, has had a large effect upon the method of study in elementary schools, where observation of local phenomena, the study of land features, human relations, and industrial conditions, through excursions, together with the study of weather records and similar work in other fields, have become a vital supplement to map and text study.

*Methods in Elementary Schools* — There are many different methods in vogue in elementary schools, either for portions of the course or for the course as a whole. In general, the best method is that which permits the individual teacher to make the best use of his personal powers in securing the progressive advancement of his pupils with the least waste of effort on their part. A skillful teacher makes use of many methods in various stages of the work and does not attempt to organize the course of study about some one plan of procedure. Among the various methods that are used sufficiently to be named, are the observational method, the journey method, the type method, the map-drawing method, the topical method, and the inductive method. Masters of each of these several plans of procedure can

avoid the dangers and develop the strong features of their plans so that the progress of the pupils is secured, but mere followers of a plan, with perhaps little reserve knowledge and a narrow viewpoint, easily become the slaves rather than the masters of the method, and the pupils become the unfortunate victims of misguided enthusiasm.

The *observational method*, the study of things, obviously ought to be followed in school geography teaching at every opportunity, especially in the home geography work of the earlier grades and in the study of the atmosphere, land forms, and local industries. Modern education requires that all subjects be made real to pupils, and in no subject is this need greater than in geography. By emphasizing similarities or contrasts with local features, distant geographic conditions may be made real. This requires observational work at all times.

The *journey method*, whereby countries or portions of a country are studied in the order in which they would be seen in an imaginary journey, is obviously valuable at certain stages. Further, this plan of procedure is interesting to many imaginative children and permits the ready use of supplementary materials. The journey method followed blindly, however, does not readily permit the teaching of a country as a whole and the emphasizing of causal relations. This method, therefore, seems better adapted to the earlier than the later grades of a school course. Such a method of procedure causes knowledge to be related to steamship routes and railway lines, and not to be centered about political areas, as is generally necessary and advisable. It has a special value in the early study of the world whole, and to a certain extent in the later work with the commercial side of school geography.

The *type method* is found in use in various phases in American school geography work. According to this method, one section or area is studied very fully as a basis for comparison; and other areas, similar to the selected type, are passed over quickly. If the selected area is a political and physical unit, a lengthy study of the section may result in an over-emphasis of minutiae, so that the area does not stand out in the pupil's mind for its salient features. If the selected unit area is a section about which some human interest centers, and is not a political or physical unit in itself, it fails to be a geographic unit and hence is a poor basis for comparison. One weakness in the teaching by such types is that political areas are studied incidentally and perhaps are not clearly understood. Yet political areas are foundational in any use that is made of regional geography in everyday life. The great advantage of the type area is that it permits a careful study to be made of a few sections, so that pupils may get a real comprehension of the value of geography and so

that it provokes natural reviews. The latter fact is the strongest argument for following the type method in certain sections of school work.

The *map-drawing method* is now but little used, though a generation ago it was much in vogue. Pupils, by this method, are taught to draw maps by a rule of thumb plan and are trained to visualize their products. For pupils who have a good power of visualization, this method has its value, provided the maps are drawn according to an understandable scale and on a projection that does not too much distort areas.

The *inductive method* has never been much employed in American schools, for the obvious reason that geography deals with many facts beyond the students' experience, and a real comprehension of these impersonal materials can be more readily imparted by a plan that consumes less time.

The *topical method* is generally followed in the upper grammar grades, though the title covers multitudes of sins, in places. The best use of the topical method is found in the later years of school life, when a causal order from causes to consequences can be followed so as to give training in right methods of working and thinking. The topical method in the lower grades generally leads to the blind memorizing of items of information and not to the development of pupils' powers of work.

As a matter of fact, the method followed should vary with the character of the topics under consideration, with the age and abilities of the pupils, and according to the training of the teacher. Pupils in the early years are interested in the life about them and should in general work out in a causal order from the human and life conditions to the underlying physical influences; in the upper grades, the causal order should in general be followed from causes to consequences. Any teacher, however, who at any time finds himself getting into a rut through too slavishly following one plan of procedure, should, for the sake of himself, his subject, and his pupils, at once vary the monotony by changing his method so as to arouse his pupils into activity.

In all school geography work the danger is that the subject will be presented in so fragmentary a way that all the life is taken out of it. The picturesque side of geography should not be neglected, although it should be subordinated to a well-considered plan of procedure. This side can be brought out best through a rational use of pictures, specimens, and supplementary reading. Obviously, the excursion should be an important part of school geography work in this country, as it long has been in many European countries. Public opinion must be trained, however, to the appreciation of the value of excursions, before they can be generally used in large school systems. School excursions (*q.v.*) are

harder to conduct than class recitations, and, unless in the hands of a wise teacher, degenerate into picnics and are of little value.

One important phase of geography teaching deserves emphasis because it runs all through the grades and has been too much neglected in recent years; that is, training in location. Location is essential in geography, but it does not make up the whole subject, as was so largely the case in the days of "sailor geography," with its lists of capes and capitals. Places and features to be studied as to their location may be divided into three classes, which will be found a good working guide to all teachers. The first class would include those names which should be at the ready service of any intelligent person, class two would include those names which ought to be familiar to all through their school work, so that they can be readily found on a map, class three would include those names which are locally significant, but which are not of equal importance in other regions. By judging any name according to its relative importance, according to this grouping, any teacher may readily work out for himself his minimum of location which he will develop in his class.

*Methods in Secondary Schools* — Modern methods in secondary school geography are characterized by an emphasis on laboratory work. In many of the larger public high schools of the country, specially arranged laboratories have been constructed and equipped with extensive collections of maps, models, diagrams, lantern slides, illustrations, and, in some cases, with specially devised apparatus for experimental work in the development of land forms. In schools where the commercial or industrial phase of geography is emphasized, collections showing industrial products and processes have proved most valuable equipment. The laboratory presentation of topics is sometimes preliminary to the textbook and class study, in the larger number of schools, where the program is rigid, the laboratory work is supplementary to the text and class work. This relation ought to vary with the subject under discussion, for obviously some topics cannot be presented half by laboratory methods and half by classroom methods, as would be implied where the subject has two class hours and a double laboratory period a week. Certain topics in geography, as the study of weather, climate, and land forms, can be more readily approached from the laboratory side than can topics dealing with the ocean or the distribution of plants and animals.

Laboratory work may be introductory to topics and consist of well thought out problems presented in some graphic form, or it may be illustrative so as to give definiteness to the class and text work. The excellent supply of maps from the Weather Bureau and the United States Geological Survey makes this work in certain subjects much more feasible

than it was a few years ago. The lack of good laboratory materials in certain of the other fields has meant, in many cases, an over-emphasis of the land features, so that, from text and laboratory, pupils have secured a warped point of view as to the relative value of the several phases of physical geography. Newer methods, better laboratory manuals, wider conceptions of the right content of geography in secondary schools, have all contributed toward the improvement of laboratory work. It is now conceded that laboratory work is supplementary to class and text work, and not coequal in importance at all stages of progress.

In some schools, where the conditions are favorable, field work is carried on for a few weeks during the year, but field work has not developed to the extent that was hoped, owing to the difficulties incident to field trips. Field exercises may roughly be classed in two groups. In the early part of the course pupils may profitably be taken afield for "field sight," — that is, to get a comprehensive view of a landscape, see its parts, the problems it presents in a physiographic and geographic way. Such field exercises form the basis for class and laboratory work in the closed season of winter. In the open spring season the field exercises may be really "field work," where pupils work out simple problems which have been previously approached through the laboratory and text. As yet, however, excursions have not won for themselves a place in either elementary or secondary school geography, and are little used except in the study of industrial geography through visits to manufacturing and distributing plant. (See EXCURSIONS, SCHOOL.)

**Equipment for Teaching** — It goes without saying that in all geography teaching a good textbook is essential. More than one should be used, if possible. The market is now well supplied with good texts for most of the work of elementary and secondary schools. Laboratory guides, supplemental volumes for reference work, encyclopedias, and books of reference are adequate. The great lack is good wall maps, school atlases, and ample illustrative apparatus for elementary schools. The available equipment for secondary work is in some cases overrich, so that teachers have difficulty in selecting that which is most pertinent.

In elementary schools atlases are practically unknown, and wall maps are little seen and less used. Yet wall maps are of fundamental importance in school work. Every classroom above the third grade in elementary schools ought to have as a minimum map equipment a good Mercator map of the world, a political map of the United States, and maps of the continents to be studied in the respective grades. In the upper grades there should also be physical maps of the United States and Europe and political maps of all the continents, not only for use in geography, but in history,

literature, and current events Yet this minimum is rarely found except in the best schools in our larger city systems Outline maps are also a most valuable adjunct to class work and are now available in cheap and reliable form Pictures, lantern slides, stereographs, specimens illustrating products and industries, models, and government publications, in great variety, are now easily procurable They form most valuable aids to geography study and should be used wherever possible, provided they are selected with care and are used, not for purposes of amusing or merely illustrating points, but as really definite parts of class work from which valuable lessons may be drawn in a clear-cut and illuminating way

Many other valuable forms of equipment might be cited, but a small equipment chosen according to a well-ordered plan and used carefully and systematically is better than a mass of unrelated material used just because it is available The problem of how to use illustrative material profitably is more difficult than how to secure it

R. E. D.

See VISUAL AIDS TO TEACHING.

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#### GEOLOGY — Relationship to other fields

— Perhaps no science shares its field with other sciences to a greater degree than geology As the science of the earth, it treats in its own special way subject matter that falls also to one or another of nearly all the sciences for treatment in their special ways Obviously in its function as the history of the earth it becomes the province of geology to treat the collective results of innumerable agencies and processes that enter individually into the fields of other sciences.

If a survey of the whole field of science be taken to bring further into view the genetic relations of the several subjects of study, it will be seen that the history of the realm from which springs the realistic phase of education discloses two coordinate lines of evolution, each of which embraces a series of progressive steps The one series includes (a) the cooperation of chemical and physical agents in the formation of minute integers leading up to molecules; (b) the combination of molecules in the formation of crystalloidal, colloidal, and amorphous aggregates, (c) the assembling of these into the lithosphere, the hydrosphere, and the atmosphere; (d) the coordination of these in the



formation of the completed planet; (e) the correlation of this with kindred bodies into the solar system, and finally (f) the assembling of solar systems into the stellar galaxy. The other series embraces (a) the cooperation of organic agencies in forming and actuating individualized plasms; (b) the union or differentiation of these in the formation of more complex living organisms, (c) the development of a system of transmittal of organic acquisitions, (d) the initiation of reflex and sense action, (e) the development of a system of registry of sense experiences; (f) the development of sense action and mental registry into higher and higher derivatives, until finally (g) they merge into the declared forms of mental, moral, and social phenomena; in other words, into the very working ground of education itself. The word "finally" is intended here to mean only the last stage of human vision, not at all the ultimate in any sense. These two series run closely parallel to one another and are interdependent. They in themselves imply better than a long discussion the relations of earth studies to other studies. To the student of earth history in particular, the genetic connections of the two series are themselves the best expressions of the vital relations of the sciences and serve as the most reliable guide in interpreting and evaluating their educational functions. The natural paths for educational procedure, so far at least as genetic considerations have weight, lie up and down the historical lines, for these disclose the real places that have been taken by the participant factors in the natural order of things. In the details of a formal study there is a choice between starting with the more primitive and the more undifferentiated and thence working toward the more segregated and the more individual, and as an alternative, starting with the last stages, the end products for the time being, and working backwards along the lines of genesis toward the more primitive and the more undifferentiated, but in natural practice — with little doubt the best practice — both courses have been followed interchangeably and often in such close succession as to make the method a type of reversible mental action, an almost spontaneous gliding from antecedent to consequent and immediately back from consequent to antecedent, from parent to offspring and at once back from offspring to parent, and so up and down from one link of the genetic chain to another in either direction, as occasion offers.

It is of course fully recognized that when the historical or genetic factor has little instructional value, which is perhaps only true when it is unimportant to know how the subject or the state under study grows out of or grows into other subjects or other states, the educational process may play more freely to and fro across the lines of natural sequence or in neglect of them. It is of course recognized

that underlying the whole web and woof of antecedents and consequents there are many factors common to several or to all lines of succession and these may be treated to advantage independently, artificially, or "abstractly" and precedence given to their own kinships of qualities rather than their genetic or historical relationships. This mode and the genetic mode are complementary and coordinate, not antagonistic or even competitive.

**The Essential Factors of Earth Study** — The study of our dwelling place involves four main factors: (1) the study of the birth of the earth; (2) the study of its structure and composition, *i.e.* the earth's mechanism, (3) the study of the energies, organic as well as inorganic, that actuate it and the modes of their action, *i.e.* its processes and its dynamics, and (4) the successive interplay of these, *i.e.* its history. From the higher point of view of earth science neither of these factors by itself can yield the highest educational results, for neither leads the mind to all the essentials of a round view. In world study at least it is not enough to know the origin or the mechanism alone, nor the processes and energies alone, there must be a study of the actual workings and, for a rounded, guarded, balanced view, a study of the long chain of blended processes and results actually realized in history.

**Historical** — *The Primitive Stages of Earth Study* — In the primitive education of the various peoples, the crude products of earth study, if study it may be called, had a rather large place in the small total of educational agencies that took part in guiding the primitive ways of life. Such information as was picked up and handed down related chiefly to the immediate needs of life and may be said to have been forced by daily requirements rather than sought for the love of knowing. The additions that were slowly made as time went on more largely took the form of a widening of imperfect knowledge than of a careful sifting of what had been acquired. It is true that then as at all times testing by trial sifted, in some measure, what passed for knowledge, but it was incidental rather than purposeful, and the critical spirit of science was not yet born. The whole was very crude, yet it was very necessary. The primitive school of earth lore was the open school of life's necessities. It was indeed so broad that it was shared by many of the higher animals, each in its own peculiar way, and some of the attainments of these animals in the line of keen geographic sense and acute knowledge of local topography compel admiration.

The earth lore of the human race in these early stages was chiefly of the geographic rather than geologic type. (See GEOGRAPHY.) There was, however, some rude beginning of acquiring knowledge relative to crustal structure and composition. Caverns were explored and occupied, structural material was chosen

and built into shelters and homes, stone was selected and fashioned into weapons and tools, certain ores were discovered and smelted, and the use of metals begun. A crude form of economic geology was thus slowly brought into being and took part in the rude training of the primitive races. There can be no doubt, also, that even the rudest peoples were impressed by earthquakes and volcanoes, by floods and landslides, and more or less by the gentler geological processes, but these impressions seem to have tended rather to weave themselves into fantastic conceptions than into sober inductions of the scientific order. While these beginnings of geologic knowledge can scarcely be classed as science, they cannot be disregarded as elements in the primitive education, for they were in reality germinal. At these early stages there does not seem to have been more than vague imaginings of what the earth as a whole might be, and such speculations as were indulged in respecting its origin were of the mythical anthropic order.

Throughout this primitive stage no other concept than that of a flat earth appears to have had any vogue; and so the belief that the earth was essentially a plain may be taken as the most tangible criterion to set off the primitive stage from the more advanced stage that followed it. It seems strange, and yet is perhaps not so strange as it seems, that the geographic dispersion of the race should have well-nigh wrapped the earth about, while yet the notion that it was flat prevailed. Even within historic times and among the Mediterranean nations of much lauded intellectual attainments it was regarded as a great step toward unity and completeness to be able to map the land as a circular or elliptical plain, girt about by the great river, Oceanus.

*The Stage of Speculative Extension* — When the epoch of the flat earth, the earth of common vision, began to give place to the spheroidal earth, the earth of corrected vision and of scientific imagination, the unscientific imagination came also into play and a whole troop of visionary conceptions of modes of formation sprang into being. There was at first little restraint from chemical, physical, and astronomical knowledge, or from scientific training, and so fantastic speculation ran riot for a time. In this the pre-Grecian peoples indulged freely, while the idealistic trend of the Greek mind lent itself peculiarly to this indulgence. A long line of eminent Greeks drew in turn a varied series of pictures of earth genesis among which the metaphysical were dominant; but still these were stimulative and clustered about some substantial seeds of truth. As early as the sixth century B.C. Anaximander, doubtless working on germinal ideas derived from Thales, set forth his conception of a fluidal evolution of the earth and of the stars. He conceived the earth to be round, and set it in the center of the universe. Mystical as his

view was in most respects, it recognized physical stages in cosmic development and was the germ of a new order of thought. In the same century Xenophanes noted the remains of mollusks and of plants imbedded in rocks and took a step toward fossil biology. This was scarcely a step in paleontology, even in embryonic paleontology, for Xenophanes seems to have had no thought of a series of ancient types leading up to the present types and making up a biologic genealogy. He merely recognized the burial of existing types of life during a previous incursion of the sea. Xanthus, a century later, and Herodotus, still later, recorded other cases of fossil remains and strengthened the theory of former inundations. Empedocles, in the fifth century, studied Etna and noted other signs of internal heat and became the father of all such as believe in a molten interior.

The doctrine of a round earth grew into the creed of a school when the Pythagoreans adopting it gave it a congenial metaphysical basis and made it popular with the Greeks. The sphere is the most perfect of forms, it is therefore the fittest form for the home of man, hence it is the form of the home of man. The Sophists and the Platonists as they came into influence still further pushed into ascendancy the dialectic and imaginative tendencies in earth study, and the scientific mode of proceeding by successive tests, never as yet more than feeble, was overwhelmed. There was some little recovery under the leadership of Aristotle, who combined in a singular way the speculative and the empirical methods. He recognized stages of earth development and some other vital features, but there was little of the spirit or method of modern geology in his treatment of the earth. Theophrastus wrote on minerals, stones, and fossils, and something approaching a text in geological lines began to become available.

A contribution of the genuine scientific type came out of Egypt when, near the middle of the third century B.C., Eratosthenes measured a degree and thus laid the basis for a real estimate of the size of the earth. To this solid contribution he added various hypotheses of the more sober order relative to mountain chains, to the former presence of the ocean above the continents as implied by fossils, to the work of water, and to the phenomena of volcanoes and earthquakes.

The Roman period naturally brought a more realistic spirit and in the course of the wide expansion of the Empire, a larger need for geographic and geologic information. Strabo, Seneca, Pliny the Elder, and Pliny the Younger added largely to the stock of earth knowledge, as well as suggestive interpretations of the more striking of the earth processes. In their treatment of volcanoes, earthquakes, subsidences, and elevations, as well as the work of water, they often touched interpretational

grounds occupied later by the older school of geologists

Marinus of Tyre and Ptolemy of Egypt added much oriental knowledge to the accretions of the Greeks and Romans, and all this material coming later into the hands of the Arabs was partially saved from destruction during the brecciating stages that followed the downfall of Rome, and thus became the possible seeds of a revival of earth study in Europe when it emerged several centuries later from the shadows of the dark ages. In actual fact the revival was probably more largely spontaneous than inherited.

*The Transition to a Truer Basis* — The brecciation of the Roman Empire not only involved the destruction of a large part of the material for education in earth science that had been gathered by the Egyptians, Phœnicians, Greeks, and Romans, but the catastrophe was followed by the rise of a form of scholasticism that came to be a grave obstacle to the resuscitation of earth study on a true basis. The obstacle was not so much a barrier to the regathering of statistical data as a restraint put upon the free interpretation of the processes by which the earth had come to be what it is. To fully appreciate the educational contribution which geology made in rectifying ethical attitudes and intellectual methods, the sterile obstructive nature of the retrocession of the Middle Ages must be duly weighed.

The issue of these ages at first centered on the nature and meaning of fossils, not altogether a new issue, but one revived with new intensity. On the one hand, it was held that the lifelike shapes in the rocks were the products of a *vis plastica*, or of some form of molding force in the earth, or else were a Mephistophelian device for the deception of man; on the other hand, it was urged that they were true relics of former life entrapped in the growing sediments in the natural course of events. It was at bottom an ethical issue, a question as to the integrity and fidelity of the record of creation, if not of the honesty of the creation itself.

Although Xenophanes had recognized the genuineness of fossils in the sixth century B C and had been followed by many others in the classical ages, so great was the retrocession attending the breakup of the Roman Empire and so deep was the neglect into which determinate data had fallen through the establishment of medieval scholasticism, that Leonardo da Vinci in reaffirming the genuineness of fossils was perhaps as much a pioneer in the fifteenth century A D as Xenophanes had been in the sixth century B C and no doubt had greater need of courage. The views of Da Vinci were probably original, at least they were concrete and based on the close and accurate observations of an engineer and an artist. While Da Vinci clearly recognized that fossils implied changes of land and sea and were

marks of former crustal events, it is not clear that he saw in them the record of a succession of different faunas and floras. Besides others, he was followed by Alexander, who had observed fossils in the Calabrian mountains, and notably by Francastorio, who built a strong argument on the fossils of the rocks of Verona.

As soon as the genuineness of fossils had made appreciable headway against the imitators or simulationists, the issue took on a new phase, in which the two parties were those who assigned the fossils to the Noachian deluge and those who held that they recorded a much more ancient history, the diluvialists and the nascent paleontologists. In the belief in a Noachian flood then prevalent there was at once an element of aid and a deterrent. With such a belief, it was not unnatural that fossils should at first be thought to be relics of that flood, and proof of it. Not unnaturally this belief prompted the collection and description of these *diluvii universalis testes* and so added data and broadened interest. At the same time, the belief developed and deeply implanted an erroneous element of interpretation that soon grew to be a formidable barrier to the true view. But with the best minds the very attempt to make the fossils serve as witnesses to the deluge led to observations inconsistent with so recent and so brief an event and turned them toward the true view. Nicolas Steno, in the middle of the seventeenth century, followed a little later by Vallisneri, Moro, and Generelli, gave start to an Italian school working somewhat on modern lines. They are perhaps entitled to be regarded as the pioneers of modern historical geology. In the later part of that century, Robert Hooke of England became the pioneer of an English school of a similar type, and here and there in other parts of Europe there arose centers of like order which spread the leaven of the nascent modern movement, so that by the middle of the eighteenth century the pioneers of the modern school had gained a firm footing. Meanwhile the advocates of mystic simulation or of Mephistophelian purpose had fallen into discredit, but the diluvialists still retained a large and influential following. This school can scarcely be said to have lost a place among contributors to geologic data until the stratigraphic series had been worked out so fully as to leave no question that there had been a long series of successive depositions in which there was imbedded a like succession of faunas, a work which, though much advanced by many workers in the latter part of the eighteenth century, did not become a declared achievement until William Smith of England, Cuvier of France, and others of the early nineteenth century had brought paleontological science into clear definition based on irrefragable evidence. Meanwhile, however, the diluvialists were being gradually replaced by a catastrophic school who assigned the successions of ancient

life to a series of creations following previous general or partial destructions.

While these crucial issues relative to life held the front of the stage, notable advances had been made on the inorganic side resulting in a broader and more specific knowledge of the composition and structure of the rocks. This was in part incidental to the study of the strata and the fossils and in part stimulated by economic considerations, but it arose also in part from a growing desire to know for its own sake. Leonardo da Vinci, Nicolas Steno, and others who had taken leading parts in the organic problem, were large contributors here also. Lehmann, Fuchsel, Arduino, and others assembled and systematized the existing knowledge of minerals, rocks, ores, and structural phenomena, and began tabulations of stratigraphical sequence.

Just at the turn of the century a notable issue arose between those who held that the basal rocks were formed by crystallization from solution in water, the Neptunists, led by Werner, and those who held that they were formed by solidification from the molten state, the Plutonists, led by Hutton. The issue went over into the nineteenth century, opinion drifting toward the Huttonian side.

Concurrent with these special movements on the biological and physical sides, there was also a revival of theoretical effort on somewhat firmer grounds than those that stimulated the Greek speculations. Descartes, Leibnitz, and Buffon gave forth views of the formative stages of the earth, which, though inadequate or erroneous, served to gather the scattered thought of the time into unity, to enlarge the field of view, and to stimulate thought in quarters where the unorganized details failed to awaken interest. These were followed near the close of the century by the speculations of Thomas Wright and Kant and by the definite hypothesis of the Marquis de Laplace that later came to monopolize the term *Nebular Hypothesis*. Thus the latter half of the eighteenth century greatly enriched and gave truer trend to the rather crude rejuvenations of the three previous centuries, and in so doing prepared the way for the more rapid and sounder development of the geologic sciences in the next century.

The nineteenth century was in fact the first round period of really well-organized, wisely directed geologic effort. During the early and middle portions of the century there was a pronounced effort to harmonize the geologic record with the interpretation of the biblical account and with views of creation then widely prevalent. Modified forms of the Laplacian and Kantian hypotheses of genesis came into general acceptance and were woven into these efforts at harmony. The leading dynamical interpretations of the earth were made to conform to the contractional postulates of these hypotheses. The molten earth of Empedocles

was a scarcely questioned tenet and was thought to have a firm basis in the rise of internal temperature, in volcanic phenomena and in the cosmologic hypotheses. The early earth was conceived to have been enshrouded in hot gases of immense volume and density which suffered progressive depletion as time went on. Widespread uniform tropical climates were held to have prevailed in the early ages and to have been followed by more diverse and cooler ones in the later ages. Seasons, aridities, and refrigerations were features of the later periods alone and by forecast were made the forerunners of still more complete atmospheric consumption in the future leading on to a final refrigeration. Geological progress was held to be marked by cataclysms destroying all life, and these to be followed by new creations. It is within the memory of the writer that complete destruction of life at the close of the Paleozoic and of the Mesozoic eras respectively was taught in standard American colleges and by the most authoritative American textbooks. At less important stages partial destructions and corresponding creations were thought to have intervened between these greater catastrophes. All distinct species were then held to be new creations. The whole geological conception was thus made to consist of a series of catastrophes and creations in which the destructional and creative factors played alternate parts. Every tenure of existence was thought to be uncertain and the termination of the whole distinctly foreshadowed.

There was, indeed, some dissent from the catastrophic features of these views appearing now and then far back and growing as time went on. Hutton had urged the profound changes that could be wrought in time by the ceaseless action of the quiet agencies, and Lamarck had urged the divergencies of living forms that might be developed by use. Playfair had helped on the Huttonian views. Lyell near the end of the first quarter of the nineteenth century added further to these views and rounded out the whole into the doctrine of uniformitarianism which successfully contested the field with catastrophism during the second quarter of the nineteenth century and came to be the creed of the dominant school in the latter half of the century.

With the verity of the geological record firmly established, though incomplete, and with the competency of gentle agencies ceaselessly acting sustained by a strong advocacy, the way was prepared for a favorable reception of the doctrine of derivation of plant and animal species through selection when advanced by Darwin and Wallace near the middle of the century. Though this was essentially biological, the establishment of the geologic record was scarcely less than an indispensable prerequisite to any wide acceptance at that time. The profound educational effect of the doctrine of evolution into which this

has grown is perhaps quite as much due to geology as to biology so far as current times are concerned. The revolutionary effects of this doctrine of continuity and derivation in the intellectual world are familiar themes and need not be dwelt on here further than to urge their dependence on the verity of the larger history of which life evolution is a part. The full depth and reach of this revolution as an educational agency has not yet been realized and cannot be fully realized until the further evolutions to which it leads have had time to take tangible form and pass their trial periods.

The opening of the twentieth century has brought some of these further evolutions into tangible stages. These seem to foreshadow the issues of the present century. From the mystical ages down to the close of the eighteenth century, the earth and related bodies were commonly assigned a birth from chaos. During the nineteenth century, belief in a more orderly birth from gaseous or quasi-gaseous semichaotic states replaced these. In the closing stages of the nineteenth century the dynamics underlying all these cosmogonies was challenged and a system of dynamics of the same order as that which is now in control, entitled planetesimal because embodied in minute masses, offered in its stead. So also, instead of the previous assumption that the present solar system is the first and only system of its series, the firstborn of chaos, there was offered the hypothesis that the current solar system is but a rejuvenation of an earlier system back of which may lie a genealogy of systems to which no specific limit was assigned. It carries the conception of a slow-grown solid earth in which a molten earth or a general molten interior may probably never have been a feature. The preferential view is that internal stresses have constantly forced to the surface molten rock with its included gases as fast as formed in working volumes, thus building up the crust and feeding the atmosphere and hydrosphere, while the solidity of the interior is preserved. The atmosphere is made the product of cooperative agencies of supply and consumption whose mutual action maintains an oscillating equilibrium within limits congenial to terrestrial life, a system that presumably may continue to maintain the conditions of life for eons yet to come. This new phase of uniformitarianism opens a forecast of indeterminate duration corresponding to the enlarged retrospect it opens in the rejuvenations of past solar systems. The whole constitutes a further step in the reduction of the catastrophic factors and the extension of quiet persistent procedure. Even the rejuvenation of a solar system is made no more catastrophic than the mutually excitive effects of passing stars.

A second feature, a contribution of physics to geology, is the discovery that some of the atoms of the earth are undergoing spontaneous

disintegration and in doing so are shooting forth particles at prodigious velocities, implying energies of like prodigious order. This has raised the question, as yet unanswered, whether spontaneous change, and perhaps spontaneous organization, are not universal functions of earth matter and of the cosmic matter to which it is related. However this may be, the new phenomena exalt to the limit of man's imagination the activities and energies of common matter. In the light of this, the earth appears to have little need of an inheritance of internal heat, its volcanic displays may be little more than the product of spontaneous disintegration within. The energies of the solar system seem adequate for the greater projections backward and forward which the later cosmology had already assumed on other grounds.

This sketch of the growth of earth science implies the course of education through which the leaders of thought and the world at large have passed in reaching the present stage of world science. It is a concrete mode of indicating the place which this science has occupied in human progress. The phrase "world science" is here used permissively, for it is that rounded conception which embraces the totality of the earth and its inhabitants from the beginning till now, that has taken deep hold on the thought of the world and has influenced its intellectual development. The branches of earth study take their individual places as special sciences under the more comprehensive world study. These special geologic sciences embrace the subject-matter of most of the courses that form the curricula of the schools and require technical pedagogical treatment.

#### Deployment of the Geologic Sciences —

While the very essence of ideal geology is the unitary treatment of the organized totality of earth knowledge, its actual growth as a science and as a school study has diverged widely from this ideal. Particular phases of the subject have been taken up more or less sporadically as conditions invited, and this has given a lack of symmetry to its several stages. The geographic phase was the earliest, and geography might ideally have been extended to embrace the earth's composition, structure, processes, and life history, and so have embodied the whole group of earth sciences and the whole history of the earth, but in fact geographic studies were for ages so largely limited to the surface as it is, and to the present relations of the creatures that dwell on it, that the name came to denote this specifically and the term "geology" was coined to embrace the broader study that arose later.

The geographic mode of treatment is now being extended backward into the "geologic" ages and the old surfaces of the earth are being worked out, and so there is in process of development the new science of paleogeography. This is worked out almost wholly

by methods known as *geologic* and still the results are assembled and interpreted in a *geographic* sense and take that name

So, too, while the earlier geography was mainly descriptive of the earth surface as it is, with the growth of the spirit of inquiry into processes and antecedents, there has come into the later study a search for the origin and meaning of the surface features and so the old form of "geographic" treatment has grown more and more toward the "geologic" treatment, that is, toward the study of processes, former states, underlying material, structure, and historical meaning. And so the two sciences run together and overlap, as they should under the newer view of the true relations of the sciences and of their educational functions. The real fields of science overlap, interdigitate and interfuse, geography envelops the earth *in its way* and geology equally compasses the whole *in its way*; not a little of their common ground is identical, belonging equally to both and belonging exclusively to neither.

The ground where geography and geology most intimately meet is embraced under the terms physical geography and physiography. These terms are in part used synonymously and in part distinctively. When the emphasis is laid on the physical features of the surface as *features*, the better usage places the study under physical geography, when the emphasis is laid mainly on the mode of origin and the processes involved, the study takes on a geological aspect and is best placed under physiography as that term is used in America. With such a distinction in mind, physiography was placed in the geological group by those who were pioneers in the educational use of the term in America, while physical geography naturally retains its place in the geographic group.

Physiography is at once a recent school study and a recent development of geologic science. Powell and Gilbert, pioneers in enunciating the doctrine of the base level and of cycles of erosion, are worthy of being regarded as the fathers of the science, while Davis, Penck, Salisbury, and others have been efficient in developing it. As a means of training, it has the advantage of presenting an available field at the site of every institution, if urban modifications have not destroyed it. The processes that may be studied in action or through their recent results include a large portion of those that enter into stratigraphic and dynamic geology. As respects mental discipline, physiography is a rather rigorous naturalistic study of processes leading on to definite results and forcing rather close interpretations of results in terms of their causes. The actions are measurably complex but not usually so intricate as to confuse careful students. Physiographic study centers on physical processes and touches the biological and the human elements incidentally rather than

primarily. In this limitation it keeps on fairly solid grounds and trains students to firmness of mental action and trustworthiness in interpretation. These are its virtues. Its self-imposed limitation lies in leaving the biological and the human elements to be developed in similar ways on their own grounds. These cannot just yet be treated with the firmness and trustworthiness already attained on the physical side and, if they could, their fusion in a single work under a single title at this stage of educational development would be one of doubtful wisdom. It is therefore a mooted question how far the stronger treatment with its limitations should displace the looser treatment of the broader field pending the development of the biologic and anthropic elements on firmer grounds. The argument from supposed superior interest is scarcely pertinent, for superior interest usually lies where intellectual success finds its most tangible victories. The subject is touched again below.

When inquiry first seriously began to penetrate the earth, it took note of the composition and structure of the crust. This led to some knowledge of sedimentary rocks and to the beginning of stratigraphy and historical geology. It led also to a knowledge of volcanic, plutonic, and other crystalline rocks and thus to the geology of the massive terranes, the chief field of petrologic geology, the complement of stratigraphic geology. It led also to the recognition of bowed, warped, crumpled, broken, and shifted rocks and thus to deformative geology (diastrophism). This embraces the study of mountains (orogeny) and of the more general elevations and depressions (epeirogeny). Inquiry led also to the observation that distorted rocks have usually undergone crystallization and chemical modification and hence to metamorphic geology. The whole subject of geologic structure may be embraced under the sub-science geotectonics, and the whole of formational geology under that of geognosy. Vulcanology grew up naturally as a special phase of igneous geology, and seismology grew as naturally out of the study of rapid earth movements of which earthquakes are the most declared form. All these phenomena involve great energies and thus they tie geology to physics, the common borderland of which is treated under geophysics.

As the studies of the general aspects of rocks were carried down to detail it was discovered that the crust is composed of rock elements, conveniently known as rock species, and that these could be further analyzed into definite minerals, hence arose the science of rocks, lithology or petrology, or, when mainly descriptive, petrography, hence also arose the science of mineralogy, back of which lie closely chemistry and crystallography. Down to the latter half of the nineteenth century the study of rocks and minerals went but little beyond naked eye examinations, mechanical tests for

hardness, cleavage, and other qualities, and simple chemical tests supported in some degree by full chemical analyses, but optical methods were later introduced, particularly the examination of thin slices of rocks under a polarizing microscope, and this led to a much closer study of rocks and minerals and wrought a revolution in the sciences of mineralogy and petrology from which arose the sub-sciences optical mineralogy and optical petrography.

Petrology is almost inseparably connected with other branches of geology and is generally grouped with geology in university curricula. The relations of mineralogy are less declared. It is oftener grouped with geology than any other science, but it is sometimes associated with chemistry, sometimes made a distinct department, and sometimes, though rarely, coupled with physics on account of the optical factors. The best criterion in such cases of composite relationships is the very practical one of letting the source from which springs the largest student interest be the guide. In this respect the advantage lies largely with geology, for it is from geological phenomena that interest in minerals most largely springs, and it is in geology or in mining that mineralogy finds its largest applications.

The industrial and ornamental uses of rocks and minerals early gave rise to rude forms of economic geology and these utilities have steadily multiplied until this phase of geology has come to be one of wide application. It is the basis of governmental geological surveys and these have contributed greatly to the development of the science, not even excepting those of its phases that do not for the time being seem to have direct industrial importance. Through its economic phases, geology becomes related to several of the technological branches, as mining engineering, metallurgy, ceramics, architecture, etc.

The fundamental part that life relies played in the growth of the sciences implies, as suggested in the historical sketch, the educational relations of general geology to paleontology. When well deployed in an institution, paleontology usually falls into invertebrate paleontology, vertebrate paleontology, and paleobotany. The most recent science on the border line of biology and geology is ecology, a composite study of life in relation to its environment. As a study it is close akin to physiography, and the field work of the two is conveniently conjoined where both are well developed in the same institution. Physiography and plant ecology are natural running mates, and when ecology shall be extended to animals and man and treated on a firm basis, physiography, biologic ecology, and anthropic ecology will form a triumvirate of peculiar educational power and will doubtless set at rest the mooted question mentioned above by taking an indispensable position in standard curricula as effective disciplinary, as well as intellectually nourishing, studies.

When paleontology shall have gathered and elaborated adequate data relative to the psychological phenomena of past life, this will quite surely form the basis of paleopsychology, which will bind paleontologic geology to the modern mental sciences and cooperate with them in dealing with the earlier stages of mental, moral, and social development.

The study of the hydrosphere is a vital part of geology, for the activities of water in its various forms are the special characteristic of the present geologic eon. The geology of the hydrosphere grades into the special sciences of hydrology and oceanology, as also into glaciology and into physiography.

The atmosphere has long escaped an adequate treatment as a geological agent, but it is rapidly coming into its place and paleoclimatology and paleometeorology are foreshadowed sciences. Geological evidence of a cogent order is forcing an abandonment of inherited views on atmospheric phenomena and opening a place for these new sciences. It was thought until recently that the earth was enveloped by a thin atmosphere only, beyond which extremely cold and nearly empty space isolated it from its kin of the solar family. Closer inquiry makes it clear that the atmosphere is not so narrowly limited and that there is some exchange of matter between the members of the solar family. While it is not yet clear what quantitative value this exchange may have, it serves to bring the study of cosmologic relations into the present problems of geology, and to suggest that cosmology may come to play, in current issues, a part kindred to the more spectacular function played at the birth of the earth.

**Geology in the Schools** -- While the general geologic knowledge of the earlier ages grew up from the incidental observations of the multitude as they came into contact with the earth, geology as a formal study came into the higher horizons of the schools from the few who patiently worked it out into science, and it has gradually been working downward from higher to the lower horizons. A century ago geology scarcely had a recognized place in even the foremost institutions, save in certain economic aspects in certain schools of mines. Its growth as a distinct school study is almost compassed within the last hundred years, and much the most of the growth falls within the last half century. At first geology found a place only in the last years of study, and it has crept forward in the curriculum only slowly. The chief reason assigned for this retention of a late place is the need of studying so many other sciences before geology is taken up. While there is reason in this, the logic rests upon the doubtful assumption that it is best to proceed from science to phenomena rather than from phenomena to science. It remains to be seen whether the advantages of rotation and reciprocity in cultivating science may not be as conducive

to productiveness as they are in the cultivation of soils. The spread of geologic studies seems to have been more rapid down the upper horizons of different grades of institutions than down the courses of the same institution; and so at present, geology finds a place in the upper grades of secondary schools, while it rarely appears in the first years of the higher institutions. But in some form it now has a place in the best schools from the high school to the university.

*Geology and Physiography in the High Schools —*

A notable percentage of high schools in America are coming to offer courses in which the agents, processes, and stages of fashioning the earth's surface are factors. Whether this is done under the name physical geography, physiography, or geology is of minor importance. The order named seems to be that of predominance so far as the name is concerned. It is impracticable to ascertain precisely how the earth studies are handled on the average. It is safe to say, however, that the genetic phases of surface configuration, the vitalizing element, have rapidly gained in emphasis in recent years. The number of high schools that teach geological history is quite a minor fraction. With the growth of the study of surface fashioning processes, in essence dynamic geology, there has been a tendency to replace other forms of geology with this more special phase, a gain in intensity with a loss in breadth and in the biologic and human elements. This is a step in intensification whose value can only be fully seen when the complementary intensification in the biologic and anthropic factors, the plant, animal, and human ecologies, are brought into working order coordinately with physiography. Plant ecology is already coming into function as a companion study to physiography, and both are well adapted to the earlier years and form an excellent basis for the higher ecologies. These latter are in process of scientific development and will no doubt soon enter upon their early trial periods in the schools. These require greater breadth, equipoise, and maturity of judgment and are better adapted to the later years. They may well follow or go with historical geology, for historical geology brings into view the great facts of past ecological experience. The double couplet, physiography and insentiate ecology, earth history and sentient ecology, together cover in a strong way the ground covered in a more general fashion by physical geography, and constitute its appropriate successors in an effective curriculum.

Physiography and plant ecology converge in the phenomena of the soil, which is a special zone of contact. They come to be particularly intimate in the ecology of soil life, the critical point of advance in agriculture at present. They are the fundamental sciences on which soil science should rest and are therefore the sciences that may well be given in the high

schools as a preparation for agricultural science now pressing for a place in these schools. Animal ecology has a similar relation to the animal industries.

The present status of earth science in the secondary schools is eminently one of transition which, though marked by elements of confusion and some retrocession, is working rapidly toward a vitalization of geography by the introduction of the geologic element all down through the courses, by the introduction of physiography, and by the organization of the ecologies as more thorough treatments of vital phenomena on the earth's surface.

*In Normal Schools —* There is much difference in the work of the normal schools, but the standard state normal schools of America usually give courses in physiography or geology or both, and in some schools other geologic branches of the group are taught. The appointments are generally fair and field and laboratory work are commonly used as vitalizing elements. The introduction of strong courses in physiography and plant ecology in the early years and of historical geology and the higher ecologies in the later years will greatly aid in vitalizing geography and in leading on to the successful treatment of these subjects themselves in the high schools.

*In Colleges and Technical Schools —* Geology has a recognized place in the best colleges of America and in equivalent institutions elsewhere, though there are many weak colleges in which it has little or no place. In the stronger colleges it is deployed into mineralogy, physiography, petrology, general geology, and paleontology. Economic geology is not uncommonly given a place. Laboratory and field work are usual accompaniments. Geology is even accredited as an entrance study to some colleges. All colleges of standing are provided with mineralogical and geological collections. In the best colleges the full services of a professor, sometimes, though but rarely, with an assistant, are given to the geologic group, in many colleges, however, some other work is still associated with the geological.

In the technological schools not associated with universities, the place of the geological sciences varies from an amount comparable to that of the colleges to an amount comparable with the provisions of the better universities. Usually the emphasis is laid chiefly on mineralogy, petrography, and the structural, dynamical, and economic elements of geology. For these branches the appointments are usually good and the work in graphic, dynamic, and geometric lines is usually superior to that of most other institutions.

*In Universities —* The geologic sciences naturally find their largest place and their best deployment in the universities and in the technological institutes of comparable grade.

To form some idea of the relative place which the geologic sciences have attained in



the standard universities, a series of comparisons has been made between the sizes of the staffs of the several universities of the largest and of the medium types, and the total number of students in these institutions. It would be more satisfactory to compare the courses and the number of students in geology with the courses and students in other subjects, but the data are not available. In comparing the statistics relative to the staffs, teachers of mineralogy, petrology, paleontology, and geophysics are included with those of geology proper, except where these subjects are taught in other than the geologic senses, but teachers of geography are not included. The number of students used is, in all cases, the total attending the university. The data used were compiled chiefly from Trubner's *Minerva, Jahrbuch der gelehrten Welt*, for the year 1910-1911, with such revisions and additions as could be made from the official publications of the universities and from personal information. The results are to be regarded as a representative rather than as an exact exhibit.

In the comparison of the largest universities, an attendance of 3000 students was taken as the lower limit. Of this class there are 43 universities, distributed as follows: United States 16, Russia 6, Austro-Hungary 4, Germany 4, Great Britain 4, Italy 2, Spain 2, Argentina 1, Canada 1, France 1, Japan 1, and Roumania 1. In respect to total number of geologic teachers (those of professorial rank in parenthesis), the order is: United States (57) 96, Austro-Hungary (20) 26, Germany (17) 28,

Russia (12) 21, Great Britain (9), Roumania (5), France (4) 5, Argentina (3), Canada (3), Italy (2) 7, Japan 5, Spain (1) 2. The average number of geologic teachers per university is: Germany 7, Austro-Hungary 6.5, United States 6, France 5, Japan 5, Roumania 5, Italy 3.5, Russia 3.5, Argentina 3, Canada 3, Great Britain 2.25, Spain 1.

For the medium class, universities whose students range between 2000 and 3000 were selected. These serve better than the previous class to illustrate the development of geological instruction in the smaller countries and in universities located in the smaller cities where urban influences are less pronounced. There are 30 universities of this class distributed as follows: Germany 7, United States 6, France 4, Austro-Hungary 3, Belgium 2, Italy 2, Russia 2, Canada 1, Great Britain 1, Greece 1, Sweden 1.

In the aggregate number of geologic teachers (those of professorial rank in parenthesis), the order is as follows: Germany (19) 28, Italy (5) 15, France (10) 11, United States (9) 10, Austro-Hungary (7) 9, Russia (3) 6, Belgium (5), Canada (2), Great Britain (1), Greece (1), Sweden 1.

The average number of geologic teachers per university in this class is as follows: Italy 7.5, Germany 4, Austro-Hungary 3, Russia 3, Belgium 2.5, France 2.5, Canada 2, United States 1.7, Great Britain 1, Greece 1, Sweden 1.

The combined data for the two classes of universities, which embrace all that are attended by 2000 or more, are shown in the following table —

COMPARATIVE TABLE OF GEOLOGIC STAFFS OF UNIVERSITIES HAVING 2000 STUDENTS OR MORE

I	II	III	IV	V	VI	VII	VIII	IX
COUNTRY	POPULATION	NO OF UNIVERSITIES	TOTAL NO UNIVERSITY STUDENTS	NO OF GEOLOGIC PROFESSORS	TOTAL GEOLOGIC TEACHERS	AV NO PER UNIVERSITY	RATIO OF TEACHERS TO TOTAL STUDENTS	RATIO OF GEOLOGIC TEACHERS TO POPULATION
Austro-Hungary	27,995,000 (1907)	7	31,147	27	35	5	1 890	1 799,857
Belgium . . .	7,386,000 (1908)	2	5272	5	5	2.5	1 1054	1 1,477,200
Canada . . . .	7,185,000 (1909)	2	5280	5	5	2.5	1 1058	1 1,437,000
France . . . .	39,252,000 (1906)	5	27,882	14	16	3.2	1 1743	1 2,453,250
Germany . . . .	63,800,000 (1909)	11	46,379	36	56	5.1	1 828	1 1,139,286
Great Britain .	45,208,000 (1909)	5	13,752	10	10	2	1 1375	1 4,520,800
Italy	34,269,000 (1909)	4	14,588	7	22	5.5	1 663	1 1,557,682
Japan	49,769,000 (1909)	1	5649		5	5	1 1130	1 9,953,800
Roumania . .	6,700,000 (1908)	1	3878	5	5	5	1 776	1 1,340,000
Russia .	126,169,000 (1908)	8	37,564	15	27	3.4	1 1391	1 4,672,926
Spain . . . .	19,712,000 (1908)	2	9845	1	2	1	1 4923	1 9,856,000
Sweden .	5,377,000 (1907)	1	2056	1	3	3	1 685	1 1,792,333
United States	90,000,000 (1910)	22	87,433	66	106	4.8	1 825	1 849,056
Totals .	516,543,000	73	278,164	206	301	4.1	1 897	1 1,666,268

The average geologic staff for the 73 universities is 4.1. The largest staff numbers 17. The average ratio of geologic teachers to students in the whole 73 universities is 1:897. The best ratio in a single university is 1:250. The ratio in the university that has the largest staff is 1:412.

An inspection of similar data for previous years shows that there has been a very rapid increase in the provisions for geological instruction, particularly in the United States.

**Educational Methods** — Geological education takes on two distinct phases, (1) instruction at the institution and (2) training in the field. The intramural work takes the form of lectures, class discussions, quizzes, conferences, personal work, seminars, and clubs. Lectures hold a large place and must apparently continue to do so in those branches where the material of instruction is not yet well organized. Systematic quizzes are used by many teachers as a supplement to lectures. Class discussion and group conferences are felt by many to be the most efficient mode of training when the subject matter is in suitable form. Conferences are particularly applicable to map study where only small groups are permissible. Personal instruction where the work can be made individual, as in laboratory, experimental, and thesis work, is widely employed. Seminars for advanced work and clubs for reports of individual work, critiques, discussions, lectures not in course, especially lectures by visiting geologists, are valuable adjuncts. Courses in drawing and in graphic work are given in some universities. (2) Field work is a distinctive feature of the most effective geologic training. This falls into two classes, the circum-institutional and the remote. The first is often immediately associated with the classroom courses and is then arranged so as to fit in with the program of the latter. It is also arranged independently into systematic courses occupying certain days of the week. Occasional excursions, not exceeding a day's duration, fall into the circum-institutional class. The distant field work is handled in a more varied way. Often it consists only of special excursions of a few days' duration, which are stimulative but not adapted to close training. Of the more systematic work a three-course system is perhaps the best representative in actual use. (1) In this, the first course is shaped to follow the earlier classroom courses. It consists of a systematic study of a selected area in the manner of official geological surveys, and is followed by a report on the work by each student participating. The time ranges from a month upward, and the area is preferably one of the quiet type, not too plainly exposed, nor too intricate, suited to promote careful search for data and yet to yield decisive results to diligent students. (2) The second course consists preferably of work on a larger, more complex, and more impressive area suited to develop

larger and more intricate conceptions, and to be the basis of reports of a broader type. Both these courses are under the immediate direction of competent leaders, and the numbers participating are limited to those whose work can be individually supervised. (3) The third course is individual, and is often the basis of the Doctor's thesis. The selection of the area, the plan of work, the choice of problems, and the style of report are chosen by the student under the criticism of the specialist in the line chosen, original independent work being here the chief end sought. The report is expected to be elaborate and presumed to be representative of the student's best capabilities.

Special courses in topographic and geologic mapping are given in the best institutions, sometimes in connection with these field courses, and sometimes independently. Special paleontological or other specific field courses are sometimes given. Incidentally, field work is often done in vacations in connection with official or other geological surveys.

The advanced work in geology is chiefly done in the graduate schools. In the standard institutions it involves at least three years' work in addition to the more general and elementary work of the undergraduate courses. Theses of three kinds are prepared, though rarely all in the same institution, one preliminary to the Bachelor's degree at the close of the undergraduate course, one preliminary to the Master's degree after one or more years of graduate work, and one prerequisite to the Doctor's degree for which three years of graduate work is usually required.

**Appliances** — Equipment for geological work centers upon an effort to bring nature as close to the student as possible, and, next after field work, three classes of appliances are resorted to: (1) actual samples, (2) models, and (3) photographs. Collections more or less varied and extensive are common possessions. Practice varies in the emphasis laid on museum exhibits and on classroom and laboratory collections respectively; a merely synoptic exhibit in the museum, to give distinct impressions of the types, and large working collections and illustrative collections in drawers and in the classrooms and laboratories are urged by some experienced teachers. A museum so located that the students are naturally brought into constant contact with it is also urged. Models play a large part in a satisfactory equipment, especially relief models and raised maps. Photographic art has made valuable contributions here as in other sciences, ample collections of photographs systematically arranged for study, photographic wall exhibits and transparencies, and especially lantern slides with lantern fixtures ready for prompt use as required are indispensable adjuncts.

For special classes of work the requisites for efficiency generally possessed by the standard

universities include: For mineralogical, petrologic, structural, and paleontological work, laboratories and laboratory appliances, embracing working collections, models, testing tools, blowpipe outfits, chemicals, rock-slicing machines, microscopes, goniometers, photographic and other appliances; for map study, conference tables and map stacks in cases that facilitate access; for classroom work, wall exhibits of maps, sections, photographs, transparencies, globes, plain and in relief, with ample lantern outfit; for museum study, exhibit collections and drawer collections in various lines; for all classes of study an ample library well supplied with maps and preferably organized as a departmental library, well situated in the midst of the geologic rooms and used as the students' working home

**Educational Literature** — The available literary material in the geological sciences has been greatly enriched in recent years. Revisions of standard works have been frequent and new treatises have been added at short intervals. The formulated literature of the science in its more general aspects does not lag far behind the science itself. These formal educational works are supplemented by geological journals, some of which are published under the auspices of educational institutions and are edited with a special view to educational service. Bulletins giving the results of researches are published by some universities. In the broader educational sense, the numerous official surveys are effective agencies and their reports are a leading source of working material. Some of these reports are especially shaped for educational purposes. So, too, the geological societies, both in themselves and in their publications, are great educational aids, especially in that they are a means of education of the educators, a function of the most radical value. T C C

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**GEOMETRY.** — Etymologically the word means earth measure, from the Greek  $\gamma\eta$ ,  $g\tilde{e}$ , earth +  $\mu\acute{\epsilon}\tau\rho\nu$ , *metron*, measure. It has come, however, to mean the general science of form,

the words "surveying" and "geodesy" being applied to the measuring of the earth.

**History of Geometry** — The earliest documents relating to geometry come to us from Babylon and Egypt. Those from Babylon are written on small clay tablets, some of them about the size of the hand, these tablets afterwards having been baked in the sun. They show that the Babylonians of that period knew something of land measures, and perhaps had advanced far enough to compute the area of a trapezoid. For the mensuration of the circle they later used, as did the early Hebrews, the value  $\pi = 3$ . A tablet in the British Museum shows that they also used such geometric forms as triangles and circular segments in astrology or as talismans, and a stone astrolabe in the same collection shows that they knew something of angle measure.

The Egyptians must have had a fair knowledge of practical geometry long before the date of any mathematical treatise that has come down to us, for the building of the pyramids, between 3000 and 2400 B. C., required the application of several geometric principles. Some knowledge of surveying must also have been necessary to carry out the extensive plans for irrigation that were executed under Amenemhat III, about 2200 B. C.

The first definite knowledge of Egyptian mathematics is based on a manuscript copied on papyrus, a kind of paper used about the Mediterranean in early times. This copy was made by one Aah-mesu (The Moon-born), commonly called Ahmes ( $q v$ ), who probably flourished about 1700 B. C. The original from which he copied, written about 2300 B. C., has been lost, but the papyrus of Ahmes, written nearly four thousand years ago, is still preserved, and is now in the British Museum. In this manuscript, which is devoted chiefly to fractions and to a crude algebra, is found some work on mensuration. Among the curious rules are the incorrect ones that the area of an isosceles triangle equals half the product of the base and one of the equal sides, and that the area of a trapezoid having bases  $b$ ,  $b'$ , and the nonparallel sides each equal to  $a$ , is  $\frac{1}{2} a (b + b')$ . One noteworthy advance appears, however. Ahmes gives a rule for finding the area of a circle, substantially as follows. Multiply the square on the radius by  $(\frac{25}{8})^2$ , which is equivalent to taking for  $\pi$  the value 3.1605. This papyrus also contains some treatment of the mensuration of solids, particularly with reference to the capacity of granaries. There is also some slight mention of similar figures, and an extensive treatment of unit fractions, — fractions that were quite universal among the ancients. (See FRACTIONS.) Herodotus tells us that Sesostris, king of Egypt, divided the land among his people and marked out the boundaries after the overflow of the Nile, so that surveying must have been well known in his day. Indeed, the *harpedonaptæ*, or rope

stretchers, acquired their name because they stretched cords in which were knots, so as to make the right triangle 3, 4, 5, when they wished to erect a perpendicular. This is a plan occasionally used by surveyors to-day, and it shows that the practical application of the Pythagorean theorem was known long before Pythagoras gave what seems to have been the first general proof of the proposition.

From Egypt, and possibly from Babylon, geometry passed to Asia Minor and Greece. The scientific study of the subject begins with Thales (*qv*). How elementary the knowledge of geometry then was may be understood from the fact that tradition attributes to him only about four propositions. The greatest pupil of Thales, and one of the most remarkable men of antiquity, was Pythagoras (*qv*). In geometry he is said to have been the first to demonstrate the proposition that the square on the hypotenuse is equal to the sum of the squares upon the other two sides of a right triangle. The proposition was known in India and Egypt before his time, at any rate for special cases, but he seems to have been the first to prove it. To him or to his school seems also to have been due the construction of the regular pentagon and of the five regular polyhedrons. Pythagoras is also said to have known that six equilateral triangles, three regular hexagons, or four squares, can be placed about a point so as just to fill the  $360^\circ$ , but that no other regular polygons can be so placed. To his school is also due the proof for the general case that the sum of the angles of a triangle equals two right angles.

For two centuries after Pythagoras geometry passed through a period of discovery of propositions. The state of the science may be seen from the fact that Oenopides of Chios, who flourished about 465 B.C., and who had studied in Egypt, was celebrated because he showed how to let fall a perpendicular to a line, and how to make an angle equal to a given angle. A few years later, about 440 B.C., Hippocrates of Chios wrote the first Greek textbook on mathematics. He knew that the areas of circles were proportional to the squares on their radii, but was ignorant of the fact that equal central angles or equal inscribed angles intercept equal arcs. Antiphon and Bryson, two Greek scholars, flourished about 430 B.C. The former attempted to find the area of a circle by doubling the number of sides of a regular inscribed polygon, and the latter by doing the same for both inscribed and circumscribed polygons. They thus approximately exhausted the area between the polygon and the circle, and hence this method is known as the method of exhaustions. About 420 B.C. Hippias of Elis invented a certain curve called the quadratrix, by means of which he could square the circle and trisect any angle. This curve cannot be constructed by the unmarked straightedge and the compasses, and when we

say that it is impossible to square the circle or to trisect any angle, we mean that it is impossible by the help of these two instruments alone.

During this period the great philosophic school of Plato (429–348 B.C.) flourished at Athens, and to this school is due the first systematic attempt to create exact definitions, axioms, and postulates, and to distinguish between elementary and higher geometry. It was at this time that elementary geometry became limited to the use of the compasses and the unmarked straightedge, which took from this domain the possibility of constructing a square equivalent to a given circle ("squaring the circle"), of trisecting any given angle, and of constructing a cube that should have twice the volume of a given cube ("duplicating the cube"), these being the three famous problems of antiquity. One of Plato's pupils was Philip-pus of Mende, in Egypt, who flourished about 380 B.C. It is said that he discovered the proposition relating to the exterior angle of a triangle. His interest, however, was chiefly in astronomy. Another of Plato's pupils was Eudoxus of Cnidus (408–355 B.C.). He elaborated the theory of proportion, placing it upon a thoroughly scientific foundation. It is probable that Book V of Euclid, which is devoted to proportion, is essentially the work of Eudoxus.

The first great textbook on geometry, and the greatest one that has ever appeared, was written by Euclid (*qv*). In his work Euclid placed all of the leading propositions of plane geometry then known, and arranged them in a logical order. Most geometries of any importance written since his time have been based upon Euclid, improving the sequence, symbols, and wording as occasion demanded.

The Greeks contributed little more to elementary geometry, although Apollonius of Perga (*qv*), who taught at Alexandria between 250 and 200 B.C., wrote extensively on conic sections, and Hypsicles of Alexandria, about 190 B.C., wrote on regular polyhedrons. Hypsicles was the first Greek writer who is known to have used sexagesimal fractions, — the degrees, minutes, and seconds of our angle measure. Zenodorus (180 B.C.) wrote on isoperimetric figures, and his contemporary, Nicomedes of Gerasa, invented a curve known as the conchoid, by means of which he could trisect any angle. Another contemporary, Diocles, invented the cissoid, or ivy-shaped curve, by means of which he solved the famous problem of duplicating the cube; that is, of constructing a cube that should have twice the volume of a given cube.

The greatest of the Greek astronomers, Hipparchus (*qv*, 180–125 B.C.), lived about this period, and with him begins spherical trigonometry as a definite science. A kind of plane trigonometry had been known to the ancient Egyptians. The Greeks usually employed the chord of an angle instead of the

half chord (sine), the latter having been preferred by the later Arab writers. The most celebrated of the later Greek physicists was Heron of Alexandria (*qv*), formerly supposed to have lived about 100 B.C., but now assigned to the first century A.D. His contribution to geometry was the formula for the area of a triangle in terms of its sides  $a$ ,  $b$ , and  $c$ , with  $s$  standing for the semiperimeter  $\frac{1}{2}(a + b + c)$ . The formula is  $\sqrt{s(s-a)(s-b)(s-c)}$ . Probably nearly contemporary with Heron was Menelaus of Alexandria, who wrote a spherical trigonometry. He gave an interesting proposition relating to plane and spherical triangles, their sides being cut by a transversal. For the plane triangle  $ABC$ , the sides  $a$ ,  $b$ , and  $c$  being cut respectively in  $X$ ,  $Y$ , and  $Z$ , the theorem asserts substantially that

$$\frac{AZ}{BZ} \cdot \frac{BX}{CX} \cdot \frac{CY}{AY} = 1.$$

The most popular writer on astronomy among the Greeks was Ptolemy (Claudius Ptolemæus, *qv*, 87-165 A.D.), who lived at Alexandria. He wrote a work entitled *Megale Syntaxis* (*The Great Collection*), which his followers designated as *Megistos* (greatest), on which account the Arab translators gave it the name *Almagest* (*al* meaning "the"). He advanced the science of trigonometry, but did not contribute to geometry. At the close of the third century Pappus of Alexandria (*qv*) wrote on geometry. Only two other Greek writers need be mentioned. Theon of Alexandria (370 A.D., *qv*), the father of the Hypatia (*qv*) who is the heroine of Charles Kingsley's well-known novel, wrote a commentary on Euclid to which we are indebted for some historical information. Proclus (412-485 A.D., *qv*) also wrote a commentary on Euclid, and much of our information concerning the first Book of Euclid is due to him.

The East did little for geometry, although contributing considerably to algebra. The first great Hindu writer was Aryabhatta (*qv*), who was born in 476 A.D. He, or a later namesake of his, gave the very close approximation for  $\pi$ , expressed in modern notation as 3.1416. He also gave rules for finding the volume of the pyramid and sphere, but they were incorrect, showing that the Greek mathematics had not yet reached the Ganges. Another Hindu writer, Brahmagupta (born in 598 A.D., *qv*), wrote an encyclopedia of mathematics. He gave a rule for finding Pythagorean numbers, expressed in modern symbols as follows.—

$$\frac{1}{4}\left(\frac{p^2}{q} + q\right)^2 = \frac{1}{4}\left(\frac{p^2}{q} - q\right)^2 + p^2.$$

He also generalized Heron's formula by asserting that the area of an inscribed quadrilateral of sides  $a$ ,  $b$ ,  $c$ ,  $d$ , and semiperimeter  $s$ , is  $\sqrt{(s-a)(s-b)(s-c)(s-d)}$ .

The Arabs did much for mathematics, translating the Greek authors into their language and also bringing learning from India. Indeed, it is to them that modern Europe owed its first knowledge of Euclid. They contributed nothing of importance to elementary geometry, however. The greatest of the Arab writers was Mohammed ibn Musa al-Khowarazmi (820 A.D., *qv*), who lived at Bagdad and Damascus. Although chiefly interested in astronomy, he wrote the first book bearing the name *algebra* (*Al-gebr w'al-mugabala*, Restoration and Equation), composed an arithmetic using the Hindu numerals, and paid much attention to geometry and trigonometry.

Euclid was translated from the Arabic into Latin in the twelfth century, Greek manuscripts not being then at hand, or being neglected because of ignorance of the language. The leading translators were Adelhard of Bath (1120, *qv*), an English monk, Gherardo of Cremona (1160), an Italian monk; and Johannes Campanus (1250), chaplain to Pope Urban IV. The greatest European mathematician of the Middle Ages was Leonardo of Pisa (See FIBONACCI, LEONARDO). He was very influential in making the Hindu-Arabic numerals known in Europe. He wrote extensively on algebra, and was the author of one book on geometry, but he contributed nothing to the elementary theory. The first edition of Euclid was printed in Latin in 1482, the first one in English appearing in 1570.

There has of late arisen a modern elementary geometry devoted chiefly to special points and lines relating to the triangle and the circle, and many interesting propositions have been discovered. The subject is so extensive that it cannot find any place in our crowded curriculum, and must necessarily be left to the specialist. Some idea of the nature of the work may be obtained from a mention of a few propositions.

The bisectors of the various interior and exterior angles of a triangle are concurrent by threes in the incenter or in one of the three excenters of the triangle.

The common chord of two intersecting circles is a special case of their radical axis, and tangents to the circles from any point on the radical axis are equal.

If  $O$  is the orthocenter of the triangle  $ABC$ , and  $X$ ,  $Y$ ,  $Z$  are the feet of the perpendiculars from  $A$ ,  $B$ ,  $C$  respectively, and  $P$ ,  $Q$ ,  $R$  are the mid-points of  $a$ ,  $b$ ,  $c$  respectively, and  $L$ ,  $M$ ,  $N$  are the mid-points of  $OA$ ,  $OB$ ,  $OC$  respectively, then the points  $L$ ,  $M$ ,  $N$  —  $P$ ,  $Q$ ,  $R$  —  $X$ ,  $Y$ ,  $Z$ , all lie on a circle, the "nine points circle."

**Reasons for Studying Geometry** — It has always been held that geometry is studied because of a peculiar training and pleasure that this science gives, and that other sciences do not give, at least in the same degree. With the investigations of modern psychologists there has come a doubt as to the value of the

training that it gives, and this has led many emotional followers of new doctrines to proclaim that geometry has no such claim upon the pupil's time as the advocates of this value assert. Modern educators do not claim, however, that geometry has no value *per se*, but rather that the methods of presenting the subject that have obtained in the past can be improved, and that certain of the values formally claimed for it do not exist. To this the more thoughtful teachers of the subject have long since assented. For example, it was poor policy to memorize all of geometry, for this plan took away the pleasure of the study, and it did not give the pupil any power that he could carry over into other lines of work, save as he acquired facts which he could have obtained as well without the labor of memorizing the proofs of Euclid.

The advocates of a substantial geometry, as opposed to the mere acquisition of a few rules of mensuration, claim that the study of geometry brings great pleasure and an inspiring mental uplift, when the subject is properly presented. They place it in this respect upon a plane similar to that upon which the study of literature and music rests. They further claim that through geometry a student acquires a knowledge of space relations that he does not acquire from other subjects, which knowledge he carries over into the study of the graphic and plastic arts, of geography and astronomy, and of the science of mechanics. They also assert that geometry is the only subject in the secondary curriculum that gives a specific training in deductive logic, and that this training gives a habit of thought that is carried over into other lines of mental activity. And finally they claim that habits of persistence, of using only the necessary steps in an argument, of holding to that which is true, of seeking for exact truth, and of arranging work in logical order, are instilled by the study of geometry, and that these habits are unconsciously transferred to other fields of work. In other words, they claim that the pleasure and the profit of approach to exact truth give a power that makes the pupil stronger in his other activities. This claim is sanctioned by the opinions of most people who have studied geometry under a worthy teacher, and no investigations thus far made have shaken it. The statement that geometry has no value as a mental discipline is usually found to mean that there is no such thing as mental discipline as defined by the antagonist, to which most people would heartily agree.

#### Development of the Teaching of Geometry.

— Little is known of the teaching of geometry in very ancient times, but its nature can be inferred from the teaching that is still seen in the native schools of the East. Here a man, learned in any science, will have a group of voluntary students sitting about him, and to them he will expound the truth. Such schools

may still be seen in India, Persia, and China, the master sitting on a mat placed on the ground or on the floor of a veranda, and the pupils reading aloud or listening to his words of exposition.

In Greece it was taught in the schools of philosophy, often as a general preparation for philosophic study. Thus Thales introduced it into his Ionian school, Pythagoras made it very prominent in his great school at Crotona in southern Italy (Magna Græcia), and Plato placed above the door of his *Academia* the words, "Let no one ignorant of geometry enter here" — a kind of entrance examination for his school of philosophy. In these gatherings of students it is probable that geometry was taught in much the same way as that already mentioned for the schools of the East, a small group of students being instructed by a master. But with these crude materials there went an abundance of time, so that a number of great results were accomplished in spite of the difficulties attending the study of the subject. It is said that Hippocrates of Chios (c 440 B.C.) wrote the first elementary textbook on mathematics and invented the method of geometric reduction, the replacing of a proposition to be proved by another, which, when proved, allows the first one to be demonstrated. A little later Eudoxus of Cnidus (c 375 B.C.), a pupil of Plato's, used the *reductio ad absurdum*, and Plato is said to have invented the method of proof by analysis, an elaboration of the plan used by Hippocrates. Thus these early philosophers taught their pupils, not facts alone, but methods of proof, giving them power as well as knowledge. Furthermore, they taught them how to discuss their problems, investigating the conditions under which they are capable of solution. This feature of the work they called the *diorismus*, and it seems to have started with Leon, a follower of Plato. Between the time of Plato (c 400 B.C.) and Euclid (c 300 B.C.) several attempts were made to arrange the accumulated material of elementary geometry in a textbook. Plato had laid the foundations for the science, in the form of axioms, postulates, and definitions, and he had limited the instruments to the straightedge and the compasses. Aristotle (c 350 B.C.) had paid special attention to the history of the subject, thus finding out what had already been accomplished, and had also made much of the applications of geometry.

Of the other Greek teachers there is but little information as to methods of imparting instruction. It is not until the Middle Ages that much is known in this line. Whatever of geometry was taught seems to have been imparted by word of mouth in the way of expounding Euclid, and this was done in the ancient fashion. The early Church leaders usually paid no attention to geometry, but as time progressed the *quadrivium*, or four sciences of arithmetic, music, geometry, and astronomy,

came to rank with the *trivium* (grammar, rhetoric, dialectics), the two making up the seven liberal arts (*q.v.*). All that there was of geometry in the first thousand years of Christianity, however, at least in the great majority of Church schools, was summed up in a few definitions and rules of mensuration. Gerbert (*q.v.*), who became Pope Sylvester II in 999 A.D., gave a new impetus to geometry by discovering a manuscript of the old Roman surveyors and a copy of the geometry of Boethius (*q.v.*) who paraphrased Euclid about 500 A.D. He thereupon wrote a brief geometry, and his elevation to the papal chair tended to bring the study of mathematics again into prominence.

Geometry now began to have some place in the Church schools, naturally the only schools of high rank in the Middle Ages. The study of the subject, however, seems to have been merely a matter of memorizing. Geometry received another impetus in the book written by Leonardo of Pisa (see FIBONACCI, LEONARDO) in 1220, the *Practica Geometriae*. Euclid was also translated into Latin about this time (strangely enough, as already stated, from the Arabic instead of the Greek), and thus the treasury of elementary geometry was opened to scholars in Europe. From now on, until the invention of printing (*c.* 1450), numerous writers on geometry appear, but so far as is known the method of instruction remained much as it had always been. The universities began to appear about the thirteenth century, and Sacrobosco (*q.v.*), a well-known medieval mathematician, taught mathematics about 1250 in the University of Paris. In 1336 this university decreed that mathematics should be required for a degree. In the thirteenth century Oxford required six books of Euclid for one who was to teach, but this amount of work seems to have been merely nominal, for in 1450 only two books were actually read. The universities of Prague (founded in 1350) and Vienna (*Statutes* of 1389) required most of plane geometry for the teacher's license, although Vienna demanded but one book for the bachelor's degree. So, in general, the universities of the thirteenth, fourteenth, and fifteenth centuries required less for the degree of master of arts than is now required from a pupil in American high schools. On the other hand, the university students were younger than now, and were really doing only high school work.

The invention of printing made possible the study of geometry in a new fashion. It now became possible for any one to study from a book, whereas before this time instruction was chiefly by word of mouth, consisting of an explanation of Euclid. The first Euclid was printed in 1482, at Venice, and new editions and variations of this text came out frequently in the next century. Practical geometries became very popular, and the reaction against

the idea of mental discipline threatened to abolish the old style of text. Such writers as Finæus (1556), Bartoli (1589), Belli (1569), and Cataneo (1567), in the sixteenth century, and Capra (1673), Gargioli (1655), and many others in the seventeenth century, either directly or inferentially took this attitude towards the subject.

The study of geometry in the secondary schools is relatively recent. The Gymnasium at Nuremberg, founded in 1526, and the Cathedral school at Wurttemberg (as shown by the curriculum of 1556), seem to have had no geometry before 1600, although the Gymnasium at Strassburg included some of this branch of mathematics in 1578, and an elective course in geometry was offered at Zwickau, in Saxony, in 1521. In the seventeenth century geometry is found in a considerable number of secondary schools, as at Coburg (1605), Kurpfalz (1615, elective), Erfurt (1643), Gotha (1605), Giessen (1605), and numerous other places in Germany, although it appeared but rarely in the secondary schools of France before the eighteenth century. In Germany the *Realschulen* came into being in the eighteenth century, and considerable effort was made to construct a course in geometry that should be more practical than that of the modified Euclid. At the opening of the nineteenth century the Prussian schools were reorganized, and from that time on geometry has had a firm position in the secondary schools of all Germany. In the eighteenth century some excellent textbooks on geometry appeared in France, among the best being that of Legendre (1794), which influenced in such a marked degree the geometries of America. Soon after the opening of the nineteenth century the *lycées* of France became strong institutions, and geometry, chiefly based on Legendre, was well taught in the mathematical divisions. A worthy rival of Legendre's geometry was the work of Lacroix, who called attention continually to the analogy between the theorems of plane and solid geometry, and even went so far as to suggest treating the related propositions together in certain cases.

In England the secondary schools, such as Rugby, Harrow, and Eton, did not commonly teach geometry until quite recently, leaving this work for the universities. In Christ's Hospital, London, however, geometry was taught as early as 1681, from a work written by several teachers of prominence. The highest class at Harrow studied "Euclid and vulgar fractions" one period a week in 1829, but geometry was not seriously studied before 1837. In the Edinburgh Academy as early as 1835, and in Rugby by 1839, plane geometry was completed.

Not until 1844 did Harvard require any plane geometry for entrance. In 1855 Yale required only two books of Euclid. It was therefore from 1850 to 1875 that plane geometry took its definite place in the American secondary school.

**Present Status of the Teaching of Geometry** — Plane geometry is now commonly taught in the United States in the tenth school year, the second year of a four-year high school. This is usually followed by a half year of solid geometry, frequently elective. It is not the universal custom to finish all of plane geometry in a single year, although this is done in many of the best schools, and it probably represents the future curriculum as to the amount of time to be allowed to the subject. There is at present a tendency to reduce the number of basal propositions and to increase the number of exercises, so as to give a student more opportunity for independent work. The Eastern colleges do not require solid geometry for entrance to the arts course, while the Western ones frequently do require it. This means that more work is covered in plane geometry in the secondary schools of the Eastern states, the amount of time spent on the entire subject of geometry being about the same. From every standpoint it would be better that a pupil should sacrifice some of plane geometry for the purpose of having an introduction to solid geometry, if he could acquire the latter only in this manner.

Certain attempts have been made to teach algebra and geometry simultaneously, or even to fuse them into a single subject. This has usually met with only sporadic success. That the foreign schools have usually run geometry over several years, as opposed to the American plan, is liable to be misunderstood. Where serious demonstrative geometry has been begun early and extended over several years, the results have not been satisfactory. Usually the early geometry has been mere mensuration, a subject that is taught in the American arithmetic, and that is coming to be very satisfactorily taught. It may therefore be said that in America geometry extends over several years, culminating in a year or a year and a half of serious demonstrative work. As to the fusing of the two subjects of algebra and geometry in one, this seems destined to meet with success only in schools in which nothing but a little practical geometry is studied.

The question of the nature of the textbook is one that is periodically agitated. Several types have been suggested: (1) A book with the basal proofs substantially in full, to serve as models, and a large number of well-graded exercises for original work; (2) a syllabus of basal propositions; (3) a book of suggested proofs, heuristic in nature. Of these the first has been the one almost universally used, the objections to it having little force with a good teacher, and the other forms being useless with a poor teacher.

**Reforms and Improvements.** — Numerous reforms and improvements are being suggested for the treatment of geometry at the present time, and a few of these will be mentioned. (1) That geometry and algebra be fused into

a single subject, an effort that takes no account of the fact that the two subjects are distinct in purpose, in results, and in difficulty, and that each has a peculiar interest that is lost when it sacrifices its individuality. (2) That the two subjects be taught simultaneously, two days of one and three of the other during each school week. This has often been tried in the United States, but in the main with unsatisfactory results. Psychologically the argument is that the pupil is not mature enough for this plan, his interest being better maintained by concentrating his energy on either the one or the other. The argument that he would see the relation of one science to the other better by the simultaneous than the tandem arrangement is offset by the custom of the best teachers to bring into algebra as much of the mensuration learned in arithmetic as possible, and to introduce into geometry as many applications of algebra as seem adapted to this purpose. (3) That geometry be converted into an applied science, joining the general industrial movement of the present. This would mean that geometry would cease to exist, since the applications of the subject are merely the rules of mensuration learned in arithmetic, and learned by a natural form of induction. If geometry were abolished it would be possible to introduce other lines of mathematics, such as trigonometry (which requires only very little geometry), calculus (which requires practically no geometry beyond elementary mensuration for a large number of its applications), and some little work in the practical problems of vector analysis. For the great majority of students this seems unwise, since they have little interest in these applications, but in certain forms of technical high schools such an arrangement may prove necessary. (4) That algebra be taught for a half year, followed by geometry for the same length of time, and this by another half year of algebra, followed again by a half year of geometry. This plan has certain advantages over the year arrangement, but as yet it has to justify itself, the general feeling being that the pupil would lose more in immediate interest in a topic than he would gain in sustained interest in mathematics as a whole.

While these suggestions for reform are open to question, other reforms are meeting with general acceptance and are improving the current teaching of geometry. (1) It is universally agreed that Euclid is undesirable as a textbook for beginners, and, even in England where it has so long been the standard, it is now superseded by books more suited to the youthful mind. (2) The propositions of the textbook are coming to be considered more in the light of basal truths, and the proofs as models, and the serious work of the pupils is coming to be more and more in the realm of exercises. (3) The exercises are coming to be more carefully grouped and graded.



(4) Such legitimate applications as can be found, and as give interest to the study of geometry, are being sought for and introduced  
(5) More attention is being given to geometric design, so long as this does not detract from the scientific work. (6) In brief, serious effort is being made to make geometry more interesting and useful, and to recognize its game element and its utility, without destroying the values that have long made it a recognized standard subject in the curriculum

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**GEOMETRY, ANALYTIC.** — See ANALYTIC GEOMETRY

**GEORGE III** — See LANCASTER, JOSEPH

**GEORGE JUNIOR REPUBLIC, FREEVILLE, N.Y.** — An organization of boys and girls modeled on the government of the United States. It arose out of the summer camps first begun in 1890 by Mr William R George, who had for several years studied the "boy problem" among the New York street urchins. One experience after another with the worst type of city boys who regarded charity as their right, who had no moral sense, whose chief aim was to secure something for nothing, led Mr. George from one system of control to another, until he recognized that boys, and girls too, must own something which they valued, that the basis of government is property, that there should be nothing without labor, and that

this small community must learn to govern itself. The permanent Republic was launched in the summer of 1895, five boys remaining with Mr George after summer camp. This number gradually rose until now the village numbers about 150 citizens. In 1896 the George Junior Republic Association was incorporated and a farm was purchased. The government was placed in the hands of the community, a president, vice-president, judge, chief of police, secretary of state, and secretary of the treasury, and a legislature were elected, important practical questions arose and were settled, such as the question of currency, woman's suffrage, and trusts. When it was found that the members of the legislature were not always disinterested, a monthly town meeting was substituted. In all other respects the village is a copy in miniature of the outside world with its trade, commerce, and industries. The citizens are drawn from all classes; boys and girls committed by sentence of a court, wayward juveniles sent by their parents, boys and girls who come voluntarily to the Republic to find there a start which is so difficult for them outside. But there are no distinctions of class, all must work to support themselves or be maintained in the workhouse or jail, where they are compelled to labor. The chief industries of the Republic are farming, carpentry, plumbing, printing, baking, road-mending and building, laundry and domestic work for the girls. The community is housed in ten cottages and hotels, and is provided with board and lodging according to their means. There is a special currency and a bank, the savings may be redeemed in United States currency on leaving the village. A school is maintained which provides instruction up to college entrance requirements. There is a chapel in which each denomination has its own service. An interesting feature of the Republic is the court in which offenders are tried by a jury of their peers, the judge is an elected officer. Law-breakers may be fined or imprisoned in the jail which adjoins the court. Mr George attributes the success of the experiment to the absence of an adult-manufactured system. Those characteristics which mark boy and girl life generally are seized upon as the foundation. There is no adult interference with the exception that the larger industrial undertakings are in the charge of adult and experienced helpers, while the spirit of home life is introduced into the cottages by the presence of adult proprietors. The institution is maintained through payment for board by parents, guardians, societies, or county officials, annual contributions, a small endowment, payment towards teachers' salaries from the State Education Department, and income from sales of products made by the citizens. The success of the institution is evidenced by the fact that of those who have been through the Republic only about two per cent have turned

out to be failures, while the rest are to be found in all walks of life, a few having proceeded to Cornell, Harvard, Columbia, and other colleges.

In 1908 the National Association of Junior Republics was formed to encourage the establishment of republics in other parts of the country. The Carter Republic at Redington, Pa., and the National Republic at Annapolis Junction, Md., may be mentioned as carrying out work on the same principle as the George Junior Republic.

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**GEORGE WASHINGTON UNIVERSITY, WASHINGTON, D C** — The successor of the Columbian College of the District of Columbia, an institution chartered by Congress on Feb. 9, 1821. On March 3, 1873, the name was changed to the Columbian University and on Jan. 23, 1904, to The George Washington University. The old Columbian College was organized and controlled by the Baptist denomination. In 1898 the sectarian control was modified, the president and two thirds of the trustees remaining Baptist. In 1904 with the adoption of its present name the institution became nonsectarian. Its present board of trustees is a self-perpetuating body of twenty-two members, divided into three classes, seven trustees being elected each year. The university has a department of arts and sciences — consisting of the graduate school, the College of Arts and Sciences, the College of Engineering and Mechanic Arts, the College of the Political Sciences, and Teachers College — and professional departments of law, medicine, and dentistry. Also it embraces the National College of Pharmacy and the College of Veterinary Medicine, institutions organized under its charter as separate corporations with independent financial foundations but educationally parts of the university. The endowment of the university has through past administration been greatly impaired, the loss in it being now covered adequately but unproductively by a deed of trust on the medical school and the hospital buildings. The university is therefore to a great extent dependent financially on tuition fees and subscriptions pledged by friends. The instructing staff, 1910-1911, numbered 176, but in many instances members of it give only part time to the university. The students, 1910-1911, were 1277, divided, including 13 duplicates, as follows: Graduate School 54, College of Arts and Sciences 281, College of Engineering and Mechanic Arts 176, College of the Political Sciences 77, Teachers College 93; Depart-

ment of Law 343, Department of Medicine 98, Department of Dentistry 40, National College of Pharmacy 63, College of Veterinary Medicine 65.  
 C. H. S.

**GEORGETOWN COLLEGE, GEORGETOWN, KY** — A coeducational institution established in 1829 under the auspices of the Kentucky Baptist Education Society. Preparatory and collegiate departments are maintained. The entrance requirements are equivalent to some twelve points of high school work. Degrees of Bachelor of Arts and Bachelor of Science are conferred on completion of the requirements, which include at least one year of work in residence. There is a faculty of twenty members in the college.

**GEORGETOWN UNIVERSITY, WASHINGTON, D C** — See JESUS, SOCIETY OF, EDUCATIONAL WORK OF

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**GEORGIA, STATE OF** — The southernmost of the original thirteen states. Ratified the Federal constitution in 1788. It is located in the South Atlantic Division, and has a land area of 58,980 square miles. In size, it is nearly equal to the six New England States. For administrative purposes it is divided into 145 counties, and these are in turn divided into cities and school districts. In 1910 Georgia had a population of 2,609,121, with a distribution of 44.4 persons per square mile.

**Educational History** — In laying out the original towns, considerable bodies of land were set aside by the trustees of the colony for the support of church and school. Schools were maintained by the trustees and charitable friends of the colony, at Savannah and elsewhere. In 1754 the crown took over the colony and agreed to continue the "allowance heretofore usually given by the trustees to a Minister and two school-masters." The agreement so made was kept until the Revolution, the only case on record where the Parliament of England supported schools in the colonies. The most notable educational activity in the colony was the orphan house founded in 1739 by the evangelist George Whitefield (*q.v.*), upon which he had expended by 1764 some £12,000 sterling. This institution was in avowed imitation of Francke's orphan house at Halle, and in it were taught such trades as carpentering, weaving, and tailoring.

The Society for the Propagation of the Gospel (*q.v.*) also gave some assistance to schools in the colonial days.

The first educational interest of the state as such was in a system of county academies. The constitution of 1777 provided that "schools shall be erected in each county, and supported

at the general expense of the state as the legislature shall hereafter point out." As soon as the Revolution was ended, the legislature chartered (1783) academies for three of the counties, giving to each a landed endowment, and granted further "one thousand acres of vacant land for erecting free schools" in each of the remaining counties. The "free schools" here contemplated were of the county academy type. In 1792 the land endowment was changed to £1000 worth of confiscated property; a provision which remained in force until 1835.

The county academies were, in 1785, formed into an administrative system under the newly created state university. In 1784 (Feb. 20) a state "college or seminary of learning" had been chartered and endowed with 40,000 acres of land, being thus the first chartered of American state universities (See GEORGIA, UNIVERSITY OF). In 1785 this charter was enlarged so as to include "as parts or members of the university all public schools instituted or to be supported by funds or public moneys." The *Senatus Academicus* of the university was required to advise "not only upon the affairs of the university, but also to remedy the defects and advance the interests of literature through the state in general." In pursuance of this end it should "recommend what kind of schools and academies shall be instituted, agreeably to the constitution, in the several parts of the state, and prescribe what branches of education shall be taught and inculcated"; should "also examine and recommend the instructors to be employed in them, or appoint persons for that purpose." The president of the university was required to visit the schools regularly and "examine into their order and performances." This plan, remarkable both for its inclusiveness and for its centralization of authority, was in these respects never much more than a legislative dream. The university did not begin work until 1800, the county academies were too widely scattered and the frontier spirit of freedom too strong to allow a central body to exercise real control. By 1820 thirty-one academies had been chartered. In 1821 an "academic fund" of \$250,000 was set aside, the income of which should be divided among the counties. The quota of any county should normally go to the county academy, but it might by special enactment be divided among certain authorized academies in the county, or be given to elementary education (poor school fund). The effect of this "academic fund" appears in the fact that during the next ten years more than three times as many academies were chartered (107) as in the preceding forty years; while the next decade (1830-1840) saw this number more than doubled (256). The "academic fund" was in 1837 transferred to the "common school fund," and the chartering of academies shows an immediate decline. Some of these academies from the first had "female departments," and beginning

about 1825 a number of distinctly "female academies" were chartered. In the smaller places, however, coeducation was the rule. A curriculum of 1806, probably typical of the best, included "English, Latin, and Greek, writing, arithmetic, geography, astronomy, mathematics, and Roman antiquities." Later, elementary education received increased attention in the academies, which thus formed until the Civil War the chief dependence of the state for education.

Prior to the Civil War free schooling was for the most part, confined to the poor and given to them as a charity from state and county "poor school funds." In 1817 \$250,000 was set aside by the state "for the future establishment and support of free schools throughout the state." The next year lots 10 and 100 of each "surveyor's district" in about one third of the state were reserved "for the education of poor children." In 1822 the income from these funds was directed towards paying the tuition of any poor child in whatever school he might chance to be. Special schools were neither established nor contemplated. The working of this plan was at no time satisfactory, and many efforts were made to improve it. When the "surplus revenue" was received from Congress in 1836, one third (about \$350,000) was set aside for school purposes, and a committee was appointed to visit the various sections of the country "particularly the New England states" and report a plan of "common schools." As a result there was adopted in 1837 a thorough system of schools, free to all white children and supported from the income of a "common school fund" (of nearly \$1,000,000), this to be supplemented by a county tax (amendment of 1838), if locally desired. Whether the scheme was too radical a step or whether the panic of 1837 was too disastrous, does not now appear; but in 1840 the "common school" system gave place to a renewal of the "poor school fund" plan. This was improved in 1843, 1849, and in 1852.

Parallel with this general state law were to be found various local efforts. Savannah from 1818 and Augusta from 1821 had "free school societies affording education to the children of indigent parents." These were supported in part by state and county funds. Glynn (1823) and Emanuel (1824) counties had free schools for needy children, Gwinnett (1826) "for the education of the youth of the county." McIntosh county in 1830 had a free moving school. The "academy funds" were in several instances used in connection with such free school systems. These local efforts continued more or less sporadically until the permanent establishment of a common school system in 1870.

In 1845 and again in 1856 efforts were made before the legislature to establish a general system of free schools; but not before 1858 was any real progress made. In that year there was elected as governor a man from the plain people

through whose influence the school fund was much enlarged with provision for its further increase, and an annual appropriation of \$100,000 was made "for the education of the children of this state." This marks the disappearance of the word "poor" from his legislative enactments. By this act each county was to adopt its own school plan; and a county tax was authorized. The next year county boards of education were provided to disburse the funds and examine teachers. As a result of these acts a number of counties organized common free school systems. The war of course stopped this development; but the constitutional convention of 1861 added to the general educational provision, which has been in force since 1798, a clause authorizing the General Assembly "to provide for the education of the people." This clause was retained in the constitution of 1865 (contrary to the statement in Barnard's *American Journal*).

Immediately after the war and before the radical Reconstruction was begun, the legislature adopted (1866) an act establishing a "general system of Georgia schools" in which was provided a state "superintendent of public education," free schooling for all white children, local taxation to supplement state funds, and in general, all the machinery for an efficient public school system. The scheme was to go into effect in 1868. Before that time Congress overturned the existing state government, and placed in power the radical reconstructionists. In 1868 the constitutional convention (more than half of whom were Southern whites) adopted without division an explicit provision for "a thorough system of general education to be forever free to all children of the state." For the first time in the state schooling was provided for the negro.

In 1869 the State Teachers' Association was formed, and this body practically outlined the school law of 1870, which was the first public free-school law passed under the new constitution. The new school system did not escape the mismanagement which characterized the reconstruction period, the school funds were diverted and spent, a large debt was contracted, and as a result, the schools were closed during the year 1872. In 1872 the school law was revised and amended, and this law has formed the basis of the present school system for the state. In 1877 another new constitution was adopted, and, in this, still more explicit instructions were laid down with reference to education. New provisions with reference to state and county taxation for schools were inserted, separate schools for the two races were required, the local school systems in existence were legalized, and an additional mandate was laid upon the legislature to provide "a thorough system of common schools," "as nearly uniform as practicable," for the education of the children of the state. Side by side with this general school system, established by

the law of 1870, there has grown up a series of special school systems, regulated and controlled by local laws. Chatham County (in which is Savannah) was the first to have a separate system, followed closely by the city of Columbus, both being created in 1866. In the same year as the new school law, 1870, Atlanta was created a special school system, Richmond and Bibb Counties following in 1872, Glynn County in 1873. Other cities followed, until practically every town of any size has its local system. Local taxation elsewhere practically forbidden, was possible in these local systems and has been the chief incentive to their formation. Some of the best schools of the South are to be found in the counties and cities of Georgia operating under local and independent laws.

In 1887 the school law was revised, and a number of important changes made. The preparation of all questions for teachers' examinations was placed with the State School Commissioner; the election of teachers by county boards was changed so as to give them discretionary power in elections, instead of being required to elect those nominated by the district trustees, the boards of district trustees were abolished, and the county was made the unit in administration. The state appropriations have been gradually increased until now \$2,500,000 is annually disbursed from the state treasury. In 1891 a State Normal School was established by legislative act, and county teachers' institutes were created. In 1903 the State Board of Education was created a State Textbook Commission as well, with power to adopt a uniform series of textbooks for the schools of the state. In 1904 the state constitution was amended so as to make feasible the levying of county and district school taxes, and this permission has been made use of by many of the counties and districts since that time. In 1906 eleven agricultural high schools were established, one in each congressional district, for instruction in agricultural science. In 1906 the school districts were re-created and trustees appointed, and, in 1905, local district taxation for schools was established for the first time.

In 1910 constitutional provision was, for the first time, made for the state support of secondary education. The next year (1911) provision was made for state inspectors of elementary schools; and the state school board was changed from an *ex officio* body of statehouse officers to a body appointed by the governor, while the power of the board was much increased.

**Present School System.** — The school system of Georgia, as at present organized, is as follows: At the head of the system is a State Board of Education and a State Superintendent of Schools. The State Board of Education is a body composed of the Governor, the State Superintendent of Schools, and four others appointed by the Governor. The Governor is president, and the State Superintendent of

Schools is the chief executive officer of the Board. The Board regulates the supervision of all schools in the state, supervises all certification of teachers for all public schools, provides the course of study for all common and high schools receiving state aid, adopts uniform textbooks, and acts as a court of final appeal from the decisions of the state superintendent. Counties, cities, and towns that levy a local tax for schools and maintain a term of eight months are exempt from the provisions of the law requiring uniformity in textbooks. The State Superintendent of Schools is elected by the people for two-year periods and receives a salary of \$3000 a year. He has "a general superintendence of the business relating to the common schools of the state," and is "charged with the administration of the school laws." He prepares blank report forms, visits the different counties, and examines into the administration of the school law, delivers popular addresses in the interests of education, and makes an annual report to the General Assembly. He is also a member of the State Geological Board. There are three state school supervisors appointed by the state Superintendent, who under his direction hold teachers' institutes, grade papers for state licenses, and "aid generally in supervising, systematizing, and improving the schools of the state."

In each county there is a county board of education and a county superintendent of education. The County Board, except in the four special systems of Bibb, Chatham, Richmond, and Glynn, consists of five freeholders appointed by the grand jury of the county, for four-year terms, and removable for cause by the county judge. They receive \$2 per day for their services, and are required to lay off their counties into school districts, to establish at least one school for white and one for colored children in each, to employ the teachers for the schools, to fix the time and length of the school term, and to act as a judicial tribunal for school affairs in the county. The board may also disapprove of any district trustee elected, and order a new election. The county superintendent of education, is chosen by popular election from among the citizens of the county, for a four-year term, and acts *ex officio* as secretary of the board. He acts further as a medium of communication between state and district officers; must visit each school in the county at least once every sixty days; acts as the agent of the county board in purchasing furniture and supplies; makes an annual report to the grand jury and a monthly report to the State Superintendent of Schools; issues certificates to school trustees; and examines teachers for licenses. The minimum salary for this office is \$600 per annum, but the county board may make such additional compensation, "as may be in their judgment proper and just." County boards

may employ him to take the school census, for which he may be paid \$2 a day.

Each county, not under local laws, is divided into school districts of at least sixteen square miles, though smaller districts may be laid off if conditions require it. For each district, three trustees are elected for three-year terms, one each year. In incorporated towns, five trustees are elected for three-year terms. These boards of trustees are to supervise the school operations in their districts, may make recommendations to the county board as to their choice for teachers, and must make an annual report to the county board. In districts which vote a local district tax, the boards of trustees may make all rules and regulations for the government of the schools, may build and equip their schoolhouses, subject to the approval of the county board, and may fix the salaries of their teachers. Any city of over 2000 inhabitants may organize an independent school system and report direct to the State School Commissioner, and any county may be so organized by an act of the General Assembly. Such independent systems make their own course of study, and may by permission of the state board certificate their own teachers.

**School Support.**—The state appropriation constitutes about 65 per cent of the total school revenue for the state, and is apportioned to the counties and local systems on the sole basis of the number of children 6–18 years of age. In each county not operating under special laws, an election to vote a county tax may be called by a petition signed by one fourth of the voters, and a two-thirds majority of those voting enacts the tax. The county board determines the amount, not to exceed five mills. By a similar petition and election, any district may vote a similar district tax, the local board of trustees determining the amount up to five mills. A considerable amount is still contributed from private sources, and in some districts a species of the rate tax is still allowed, by common consent, in the form of a small incidental fee to cover the cost of school supplies, fuel, and janitor service, though pupils who are unable to pay are excused from the fee, and the courts do not recognize the right of the districts to exact the fee.

**Educational Conditions** — Of the population of 1910, 45.1 per cent were negroes and 99 per cent were native born. But three states (Louisiana, Mississippi, and South Carolina) have a larger percentage of negroes in the total population. In one half of the counties the blacks outnumber the whites, and in one fourth of the counties they outnumber the whites two or more to one. The percentage of children, 5–18 years of age, in the total population (33.4 per cent), is high, being larger in but four states, and all of these in the South. While the state has made rapid advances in manufacturing within recent years, it is still

largely an agricultural state, as 84.4 per cent of the total population live in rural districts, and but 11 per cent in cities of over 8000 inhabitants.

In illiteracy, Georgia stood sixth in 1900 in its percentage of the total population, ten years or over, who were illiterate. By race, the state stood third in illiteracy for the negro population and ninth for the white population, and by percentage, 11.9 per cent of the whites and 52.4 per cent of the negroes were illiterate. There was little difference in illiteracy between the sexes. But 1.1 per cent of the total population of the state was of foreign birth.

Outside of the towns and cities, the state has little material equipment for the work of education. The average value of all publicly owned schoolhouses in the state during the last year for which statistics are available was about \$1800. Much of the money for repairs and for new buildings in the rural districts is raised by private subscription. The school term, too, is commonly lengthened by the same means, many communities providing what are called long-term schools by private subscription. The subject matter of instruction embraces agriculture, civil government, and physiology and hygiene, in addition to the common school branches. The State Board of Education adopts a uniform system of textbooks for the schools of the state, but counties, cities, and towns that levy a tax for graded schools and maintain an eight-months school are not required to use the uniform series. Each county board is authorized by law to establish one or more manual labor schools, but such schools must be self-sustaining. As in Alabama, the elementary school system of Georgia is just now being rounded out and classified.

**Teachers and Training** — For the training of future teachers, the state maintains or helps to maintain four institutions, one of which is for the colored race, and there are also three private normal and industrial schools, all of which are for the colored race. Of the state schools, the Georgia Normal and Industrial College for whites at Milledgeville, and the Georgia State Industrial College for negroes at Savannah, are partly normal and partly industrial institutions, and of a type common in the South. The law of the state still authorizes two forms of teachers' contracts, one the usual form by the month, and the other where payments are made to private school teachers who take public school pupils at a certain rate based on enrollment and attendance, and thus conduct a long-term school. The wages of the teachers are low.

**Secondary Education.** — Georgia has its high school system better developed than any of the neighboring Southern States, the state reporting 231 public and 48 private high schools. Of the public high schools, 12 were in cities of 5000 inhabitants or over, while 219 were in smaller places. Six of the total number of

high schools were for the colored race. The state has recently (1910) authorized state aid to high schools, such aid having been expressly forbidden by the Constitution of 1877. With the development of the agricultural and natural resources of the state, and the consequent increase in the amount of money available for education, conditions may be expected to improve very rapidly.

**Higher and Technical Education** — The University of Georgia (*qv*) at Athens, founded in 1784 and opened in 1800; the Georgia State College of Agriculture and Mechanical Arts, also at Athens, and opened in 1872; the Georgia School of Technology, at Atlanta, opened in 1888; and the North Georgia Agricultural College at Dahlonega, opened in 1872, stand at the culmination of the public school system of the state. The Georgia State Industrial College, at Savannah, offers somewhat similar instruction for the colored race. Georgia has a large number of colleges, nearly all denominational, some of them for the negro race, which offer preparatory and collegiate instruction. Few of them have much endowment or high standards. The state also maintains the Georgia Academy for the Blind, at Macon, the Georgia School for the Deaf at Cave Spring, the Georgia Normal and Industrial College for girls, at Milledgeville; and eleven district agricultural schools for the teaching of the elements of agriculture. The Normal and Industrial College is one of a type of institutions found in the South, which offers training to girls along vocational, industrial, normal, and musical and artistic lines.

W H K and E P. C

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**GEORGIA, UNIVERSITY OF, ATHENS,**

**GA** — The earliest state university in the United States, chartered in February, 1784, while the University of the state of New York received its charter in May, 1784. By the amended charter of 1785 all public education in Georgia was made a part of the University (see **GEORGIA, STATE OF**). The early studies provided in the University were mainly literary, and only the arts degree was conferred. The land grants made by Congress in 1862 made the establishment of the Georgia State College of Agriculture and the Mechanical Arts and the provision of modern scientific studies possible. In 1867 the Lumpkin Law School was incorporated as a department of the University;

the North Georgia Agricultural College followed in 1872; and in 1873 the Georgia Medical College at Augusta became a department of the University. The following institutions are also branches or departments of the University: Georgia School of Technology at Atlanta, 1885; Georgia Normal and Industrial College for Girls at Milledgeville, 1889; Georgia Industrial School for Colored Youth at Savannah, 1890; and the State Normal School, near Athens, 1895. More recent extensions are the School of Pharmacy, 1903; the Summer School, 1904; Georgia State College of Agriculture; the School of Forestry, 1906; and the School of Education, 1908. Franklin College is the college of arts. The government of the University is in the hands of a Board of Trustees appointed by the Governor. The support comes from state taxation, federal grants, and private gifts. The University campus extends over an area of 132 acres, and the University farm covers 830 acres. The main building equipment comprises fifteen buildings. The admission requirements are fourteen units, four conditions being allowed. The degrees of Bachelor of Arts, Bachelor of Science, Bachelor of Science in Civil Engineering or Agriculture, Bachelor of Law (after a two years' course), are conferred on completion of the appropriate courses. Degrees are also conferred by some of the affiliated institutions, as the North Georgia Agricultural College, the Medical College, the Georgia School of Technology. The enrollment of students at Athens in 1910-11 was 940, distributed as follows: graduate school, 7; college, 180; science and engineering, 176; agriculture, 223; law, 55; pharmacy, 19; summer school, 337. The University at Athens has a faculty of 46 members, of whom 25 are professors and 9 adjunct professors. David Crenshaw Barrow, LL D., is the chancellor.

**GERBERT, or GERBERTUS** — One of the most remarkable scholars of the Middle Ages, and a man who had a marked influence upon mathematical instruction. He was born at or near Aurillac, about 950. Richer, his pupil and friend, to whom we are indebted for most of our knowledge of his life, speaks of him as an Aquitanian, and relates that as a child he entered the monastery of Saint Gérald. Other writers speak of his family as being related to royalty, but in spite of careful research his parentage still remains obscure. He seems to have been a brilliant student, and one of agreeable manner and without forwardness. In 967 Borel, Comte d'Argel, lately become lord of Barcelona, visited Aurillac and saw the youthful Gerbert. The abbot, informed by Borel that Spain at that time had a number of distinguished scholars, confided Gerbert to him in order that the boy might acquire the learning of that country. Borel gave Gerbert into the charge of Hatton, Bishop of Vich, under whom, Richer tells us, "he made rapid progress,

particularly in mathematics." Gerbert remained three years in Barcelona, and in this time he may possibly have learned the Hindu-Arabic numerals (see NOTATION), since he knew something of them later in life. After this sojourn he accompanied Borel and Hatton to Rome, where in 970 he was presented to Pope John XIII. The Pope was so pleased with the young monk's proficiency in music and astronomy that he spoke of him to Otho I, a monarch with great interest in education, although himself illiterate. Through these circumstances and by means of his natural abilities, Gerbert obtained the favor of both Pope and emperor, and in 972, at his request, he was allowed to go to Rheims with the archdeacon Garamnus in order to study logic under this scholar. The diocese of Rheims at that time possessed 700 cures and 23 monasteries, the most important of the latter being that of St Denis. Here it was that Gerbert carried on his later studies, and here he made a brilliant reputation as a teacher. His chief work in the lecture hall was in rhetoric, but he acquired a great renown as an arithmetician from his use of a special form of the abacus (*qv*), a form that may have been invented by him. He also used certain numerals known as the apices (see NOTATION), forms that are often attributed to Boethius (*qv*). He also had a great reputation for his work in astronomy, which subject he taught at Rheims. After a brilliant period of teaching in this monastery he was made abbot at Bobbio (982), one of the most important church positions in Italy, and nine years later (991) he became Archbishop of Rheims. In 998 he became Archbishop of Ravenna, and a year later he was elevated to the papal chair as Sylvester II. He reigned as Pope only four years, dying on May 12, 1003. His mathematical works include a treatise on the abacus, a work *De numerorum divisione*, and a work *De geometria*. D E S

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**GERBERT, MARTIN, BARON OF HORN-NAU AND PRINCE-ABBOT OF ST BLAISE** (1720-1793) — One of the most learned and saintly Roman Catholic prelates of the eighteenth century. He was educated at the Jesuit College at Freiburg and in the cloister of St. Blaise and enriched his mind by varied culture and by travels, from which he brought back abundant spoil of Mss from the libraries of Europe. Historical research, especially in

music, was his favorite pursuit. He formed relations with learned societies everywhere, and made many important discoveries in this field. His treatise *De Cantu et Musica* was published in two volumes in 1774 and has ever since formed the basis of all musical scholarship. The *Scriptores Ecclesiastici de Musica Sacra* (1784) created a sensation in the musical world and was of the highest value for the study of music. It was a collection of all the ancient authors who had written upon musical subjects from the third century to the invention of printing and whose works had remained in manuscript and were for the most part unknown. W. R.

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**GERBIER, SIR BALTHAZAR** (?1591–1667)

— Painter, architect, and courtier. He devised schemes for the education of noblemen and gentlemen's sons in an Academy in Bethnal Green. Gerbier was a Dutchman and came to England in 1616 and entered the service of George Villiers, afterwards Duke of Buckingham. In 1631 Gerbier was King Charles I's agent at Brussels and in 1641 Master of the Ceremonies. He issued prospectuses, June 28, 1648, and in 1649 on June 18, August 4, October 31. The prospectus for June 28, 1648, is addressed to "all Fathers of Noble Families and lovers of Virtue," in which he stated he was founding an Academy in which would be taught French, Italian, Spanish, German, and Low Dutch, both ancient and modern histories, jointly with the constitution and government of the most famous empires and estates of the world. Courses were given in experimental Natural Philosophy, mathematics, including arithmetic, bookkeeping "by double parties," geometry, geography, cosmography, perspective, and architecture, practical mathematics, to include fortification, besieging, and defending of places, fireworks, ordering of battalia, and marches of arms; music, playing of all sorts of instruments, dancing, fencing, riding the erect horse, together with the new manner of fighting on horseback. Permission was also to be made for teaching drawing, painting, limning, and carving. Gerbier announced that he was himself preparing treatises for the study of modern languages. He was also prepared to lodge the sons of gentlemen in his own house at Bethnal Green. He thus promises to parents an education for their sons at home in England, similar to what they could get in academies abroad and the avoidance of the "dangers and inconveniences" of education abroad, "in these evil times." In the prospectus of August 4, 1649, Gerbier provides a time-table. The regulations are modeled to some extent on those of Sir Francis Kinaston's (*q v*) *Musaeum Minervae*. On December 21, 1649, he issued a notice that ladies might attend his lectures, and adventurer as he was, he is probably to be

credited with being the first in England to encourage the idea of men and women attending academic lectures together. F. W.

See GENTRY AND NOBLES, EDUCATION OF; ACADEMIES, COURTLY

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**GERMAN INFLUENCE ON AMERICAN EDUCATION** — German educational ideas and methods have profoundly influenced all parts of the American system of education, but especially its top and its foundation, the university and the elementary school, including the kindergarten, both of which have been either created or fashioned on the model of the corresponding German institutions.

This influence has been exerted through five different channels, which, of course, frequently run into one another and cannot be entirely separated, namely, (a) through the work of German-Americans and of German-American schools; (b) through American students educated in German universities (see *Rep. U. S. Com. Ed.*, 1897–1898, Vol. I, pp. 610–613); (c) through reports on German education published by American and other visitors of German schools; (d) through the study of German pedagogy, psychology, and philosophy on the part of Americans in this country; and (e) through the work of German lecturers brought over either as exchange professors or by invitation of such bodies as the Germanistic Society of America (*q v*).

Of these, the direct influence of German-Americans and of the German-American schools has been comparatively small, certainly not so great as might have been expected, considering the numerical proportion of the German element, which is estimated at about 27 per cent of the total population. The chief reason for this lack of direct influence lies probably in the difference of language, which separated the German-American schools from the main current of national education, and also in the fact that nearly all of these schools were either private or parochial schools. Still a large number of German-American teachers have played an important part in American education. Among these are Franz Daniel Pastorius (1651–1719), the first German teacher in America, the founder of Germantown; Carl Follen (1795–1840), the first professor of the German language in Harvard; Francis Lieber (1800–1872), who introduced gymnastic training into Boston and afterwards became one of the greatest jurists of America, H. E. von Holst, the author of the *Constitutional History of the United States*; William N. Hailmann, superintendent of public schools at La Porte, Ind. (1883–1894), afterwards national superinten-



dent of Indian Schools; and many others. What was perhaps the earliest book of a pedagogical nature to appear in this country was from the pen of a German, Christopher Dock (*qv*), a master of one of the early Pennsylvania schools (See PENNSYLVANIA, STATE OF, PAROCHIAL SCHOOL SYSTEM).

Among the first American students matriculated in German universities were George Tichnor, Edward Everett, George Bancroft, and Joseph G. Cogswell, all of whom studied in the University of Göttingen. Everett was the first American who received a Ph.D. degree from a German university (1819). Previous to this, Benjamin Smith Barton, of Lancaster, Pa., had obtained the degree of Doctor of Medicine from the same university (1799). Bancroft and Cogswell founded (1823) the Round Hill School, near Northampton, Mass., the first school in this country thoroughly impressed with the German ideas. During the remaining part of the nineteenth century and up to the present an increasing number of American students have pursued advanced studies at Göttingen, Berlin, Halle, and later on also at Leipzig, Bonn, Heidelberg, Jena, and other German universities. Hundreds of these have become professors in American colleges and have transplanted German ideas of advanced instruction and German methods of research upon American soil. Through their students in the graduate departments of universities and colleges this influence has been very widely extended. The foundation of Johns Hopkins University in 1876 marks an epoch in American university education. This institution was, in its fundamental ideas, largely modeled on the pattern of the German university, and most of its early professors had been students in Germany (See COLLEGE, AMERICAN, UNIVERSITIES, AMERICAN).

The most important reports on German education which influenced American schools were those of John Griscom (*qv*) (1819), Alexander D. Bache (*qv*), and C. E. Stowe (*qv*) (1833), but particularly that of Victor Cousin (*qv*) (1831), which was translated into English, and published in the United States in 1835. The American publication of Cousin's work proved to be of enormous influence on education in the Middle West. Equally important was the famous *Seventh Annual Report* of Horace Mann (1843), which, among other things, called special attention to the methods of the Prussian normal schools.

The study of German literature and philosophy among English-speaking peoples may largely be traced back to the influence of Coleridge and Carlyle. In America these studies received an impetus through Emerson, Theodore Parker, Margaret Fuller, Frederick H. Hedge, Henry Barnard, William T. Harris, Elizabeth Peabody, Charles De Garmo, and others. Barnard, in his *Journal of Education*, published translations from Karl von Raumer's

*History of Pedagogy*; Harris studied the philosophical system of Hegel and the pedagogical philosophy of Karl Rosenkranz. Miss Peabody became an enthusiastic follower of Froebel and founded (1867) the American Froebel Union; Charles De Garmo, the McMurrays, and others, introduced American teachers to the pedagogy and philosophy of Herbart.

The custom of bringing over German lecturers on educational subjects is of recent origin, so that the results of this activity still lie with the future. Yet an important influence may be expected at least in two directions, namely, towards vocational training, through the work of the Munich school superintendent, Dr. Georg Kerschensteiner, and towards the improvement in teaching modern foreign languages through the inspiration given by Dr. Max Walter, director of the *Musterschule* in Frankfurt a. M. F. M.

See under separate titles for further account of the persons mentioned in this article, esp., PESTALOZZIAN MOVEMENT IN AMERICA, MANUAL LABOR INSTITUTIONS, FELENBERG, FROEBEL, KINDERGARTEN; COLONIAL PERIOD IN AMERICAN EDUCATION; etc.

**GERMAN INFLUENCE ON ENGLISH EDUCATION** — At the time of the Reformation, German influence, commingled with that of Erasmus, Calvin, and Sturm, made a deep and lasting impression upon the course of study in English schools and upon the English idea of the relation between the state and education. Luther's *Schrift an die Rathsherren aller Städte Deutschlands, dass sie Christliche Schulen aufrichten und halten sollen*, written in 1524, had its echo in the preamble to the Chantry Act passed in the first year of King Edward VI (1547), and in the Constitutions and Canons Ecclesiastical of the Church of England, 1603, especially Canons LIX and LXXVII-LXXIX. There are traces of the same influence in English Poor Law administration as early as the reign of Elizabeth and prior to the Poor Law Relief Act of 1601, which first recognized the public obligation to supply elementary education in the case of the children of the destitute poor. In the curriculum of the English Grammar Schools the educational influence of Melancthon (*qv*), combined with that of Maturin Cordier (*qv*) of Geneva, is clear, especially in the emphasis which was laid upon religious instruction as a dominant feature in the course of training.

The influence of Protestant Germany was deepened in English education in the seventeenth century by the study of the works of Comenius (*qv*), and especially of his *Great Didactic* (first published in Latin, 1657), and of the *Januae Linguarum Vestibulum* (English translation, 1647) and *Orbis Pictus* (1657). At the invitation of his friend, Samuel Hartlib, Comenius visited England in 1641, and, if the

disturbed political condition of the country had not prevented it, might well have been engaged to take a leading part in the reorganization of English education. Comenius's work was well known to Milton, and he is referred to in the latter's *Tractate on Education* (1644) as "a person sent hither by some good Providence from a far country to be the occasion and the incitement of great good to this island." The Civil War, however, and the reactionary tendencies of the Restoration period prevented the influence of Comenius from bearing full fruit in the educational life of England.

In the last years of the seventeenth century, 1698-1699, Dr Bray (*qv*) and his associates established a *Society for Propagating Christian Knowledge* (*qv.*), one main purpose of which was "to set up catechetical schools for the education of poor children in reading and writing, and more especially in the principles of the Christian religion." In the movement for the reformation of English morals and for the establishment of charity schools (*qv.*), the influence of the German Pietists was strong. August Hermann Francke (*qv*) was asked to send over two Germans to help in the setting up of Charity Schools, and these two visitors attended a meeting of the Society on May 11, 1699, to give an account of the school which had been erected at Halle by A. H. Francke, who was at the same meeting chosen a corresponding member of the Society.

The educational efforts of John Wesley (1703-1791), especially during the years 1742 onwards, were greatly influenced by what he saw among the Moravians during his visit to Herrnhut in 1738. The Moravian polity, influenced by Pietism (*qv*), made the Orphan House, which aimed at giving a Christian education to boys and girls, an essential part of the organization of the Church. From 1760 Moravian schools in England have exercised a quiet but beneficial influence in English education.

The next great wave of German influence came into English education through S. T. Coleridge, who, in 1830, in his essay on *The Constitution of the Church and State according to the Idea of Each*, echoed the teaching of Fichte (*qv*) that the aim of statesmen should be "to form and train up the people of the country to obedient, free, useful, and organized subjects, citizens and patriots, living to the benefit of the state and prepared to die in its defence." Throughout the great speeches on education made in the English Parliament by Brougham (*qv.*), Roebuck, and others during the years 1833-1835, German precedent for compulsory education was quoted as a convincing proof of the practicability of making elementary instruction obligatory by law. After Coleridge, Thomas Carlyle (*qv*) did much to familiarize the English public with German ideals of state-organized education, especially in *Past and Present* (1843) and in *Latter-Day Pamphlets* (1850). It was, however, through Albert,

the Prince Consort (who married Queen Victoria in 1840), that enlightened German ideas as to the action of the state in public education became most widely extended in England. During the twenty-one years of his residence in England, Prince Albert succeeded, with the help of Lyon Playfair and others, in developing the State Department of Art and Science and in promoting wise extensions of state activity in elementary and technical education.

The success of the Prussian army in the war with Austria in 1866 drew attention to the military and social value of the intelligence and discipline which had been diffused throughout the German people by the elaborate organization of state-aided schools. The impression thus produced upon the public mind was one factor which led to the carrying of the Elementary Education Act in 1870 and to the subsequent adoption in 1876 of the principle of compulsory education (See ENGLAND, EDUCATION IN).

Since that time German influence in English education has been persistent and penetrating. At every point German methods have been investigated and German precedents quoted. Of all English writers, Matthew Arnold (*qv*) was the most successful in attracting the attention of responsible English administrators and statesmen to the value of the German methods of educational organization. Since 1880 German influence has consequently been noteworthy in English policy as regards secondary education, technical instruction, and university development. The latest illustration of the same influence is found in the movement for the enforcement of attendance at continuation schools, part of the Scottish Act of 1908 having been avowedly modeled to some extent on German precedent, and the latter being constantly quoted in favor of the adoption of a similar policy in England.

In four respects German influence has been especially strong in English education: (1) From the Reformation to the present time it has tended to strengthen the view that religious teaching should be part of the regular curriculum of state-aided elementary and secondary schools. (2) Throughout the nineteenth century it has supported the idea that the state should take an effective and, indeed, determinative, part in the regulation of all grades of national education. (3) It has stimulated in the highest degree the scientific study of methods of teaching and of the philosophy of education. (4) It has secured general acceptance for the view that the state can help in developing the economic prosperity of a nation by the systematic encouragement of technical and commercial instruction. M. E. S.

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**GERMAN LANGUAGE AND LITERATURE IN THE SCHOOLS** — See MODERN LANGUAGES AND LITERATURES IN THE SCHOOLS.

**GERMAN WALLACE COLLEGE AND NAST THEOLOGICAL SEMINARY, BEREA, OHIO** — See DEUTSCHE WALLACE KOLLEGIUM

**GERMANISTIC SOCIETY OF AMERICA, THE** — Organized in New York City in 1904 to promote the knowledge and study of German civilization in America and of American civilization in Germany, by supporting university instruction in these subjects, by arranging public lectures, by publishing and distributing documents, and by other means adapted to the ends for which the Society is established. In accordance with this program a lectureship on the History of German Civilization has been maintained at Columbia University since 1905, while during the first term of the academic year 1907-1908 a similar course of lectures was delivered at Yale University. Other German scholars and authors invited by the Society to lecture in New York and other cities before colleges and universities and German societies include Professor Friedrich Delitzsch, Berlin; Dr Ludwig Fulda, Berlin; Professor Otto Hoetzsch, Posen; Professor Hermann Anders Krüger, Hanover; Dr Carl Hauptmann, Mittel-Schreiberhau, Professor Max Friedlaender, Berlin, Professor Rudolf Lehmann, Posen; Ernst von Wolzogen, Darmstadt, Professor Wilhelm Paszkowski, Berlin; and Rudolf Herzog, Rheinbreitbach. Similarly a number of American scholars have lectured in Germany under the auspices of the Society and of the Prussian and Saxon Ministries of Public Instruction. In addition a large number of single lectures and courses of lectures on German literature, music, education, art, history, politics, etc., have been provided in New York City (including Brooklyn), both in German and in English. In 1908 the Society inaugurated a series of publications, which include

lectures delivered by Professor John W Burgess, Columbia, on *Germany and the United States*, and on *The German Emperor and the German Government*, and by Dr Carl Hauptmann on *Das Geheimnis der Gestalt*. The publication of a quarterly journal devoted to the interests of the Society and to the promotion of the aims mentioned above is contemplated. The first president of the Society was President Nicholas Murray Butler of Columbia University (1905-1907), who was succeeded by Professor John W Burgess (1907-1909), and Edward D Adams, Esq (1909-1911), donor of the Deutsches Haus at Columbia University and Professor William H Carpenter of Columbia University (1911- ) R. T., Jr.

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**GERMANY, EDUCATION IN. — GENERAL CHARACTERISTICS.** — The German educational system, more than that of any other country, has been formed on the one side through the definite plans of the governing body and on the other through the ideas of philosophic thinkers, and has always remained in a condition of progress and development, although it has often been criticized as torpid. There have appeared in this country neither such absolute centralization nor such sudden transformation as in France. The importance of the German educational system rests mainly on the elementary schools, the gymnasiums, and the universities. But besides these many other types of educational and training institutions have been developed and at present are increasing, while influences from abroad are constantly being felt and followed. Multiplicity of types and a variety of finer distinctions between them are promoted by the existence of the German states side by side, for they are entirely independent in their domestic affairs. It is true that the smaller states have frequently followed the example of the largest federal state, Prussia, but generally this has not been done without considerable departures. Hence an understanding of the German system has by no means been acquired after a glance at the Prussian, and there is as little justification for thinking that a knowledge of the Prussian schools of one particular type has been obtained after observation of one individual instance, — a mistake which is easily made by foreign visitors. Even where the regulations are at bottom similar, individual institutions may show considerable divergence from each other according to the personality of the directors and teachers, or their particular tradition, or the spirit of the locality and its people. At present also the bodies controlling education are explicitly favoring greater independence in the indi-

vidual schools. The period of greatest uniformity has passed for Germany, while in France this ideal is still maintained to a large extent. The establishment of uniform types of schools is never prompted merely by the desire for control; rather is this based on a belief that the ideal has been discovered and a desire that this ideal should be put into practice everywhere. Owing both to external (economic and other) and internal reasons some hesitation is apparent in relation to the new movement. Foresight and discretion are particularly necessary in the face of the ever increasing clamor which with passionate excitement demands the complete overthrow of the present organization. Further, the feeling that the youth of the nation should not be lightheartedly made the subject of experimentation must meet with approval. Moreover it is an undeniable fact that Germany owes the importance which she has gained in recent times in part to the character of her educational system. Not rigidity, but flexibility; not lighthearted destruction, but thoughtful reorganization, these may be said to characterize the fundamental attitude of educational administration in Germany.

**HISTORY** — While a correct appreciation of the educational system of the present is impossible without a knowledge of its history, but the briefest outline will be given here with reference to the titles under which the subjects are discussed. In the Middle Ages education and culture in Germany, as in all other European countries, lay in the hands of the Church; this period is described under Middle Ages and the various topics to which cross reference is there made. This education was accompanied in the case of the upper classes of society by another training for physical and military ability and excellence, and at the height of the medieval period the ideal of chivalric training was introduced from France, an aim which included polite conduct, feeling for the social accomplishments, an understanding of poetry and music. (See CHIVALRIC EDUCATION.) For the people as a whole, that is the lower class of society, beyond the general religious and moral influence, nothing was done (See, however, the CHARLEMAGNE AND EDUCATION for the period of revival which included the Germans.) For the simplest needs of economic life writing and ciphering were taught in private schools, while on the other side out of a number of the most important ecclesiastical institutions of learning there grew the universities which, however, bore no national character, but reproduced a fairly similar type in France, Italy, Spain, England, and Germany, and in consequence of the universal prevalence of Latin were visited by members of the different nations. (See below GERMAN UNIVERSITIES.)

For the close of the Middle Ages the discussions under SCHOLASTICISM, RENAISSANCE PERIOD, HUMANITIES, CICERONIANISM, and

especially the REFORMATION AND EDUCATION relate to Germany. Also the history of Universities (*qv*) is closely related to the Teutonic peoples. The development during the Reformation is further discussed under Luther, Melancthon, Sturm, and other leaders.

An opportunity for the founding of a large number of important schools in the century of the Reformation was afforded by the dissolution of wealthy monasteries by the authorities which had adopted Protestantism. Several of the schools organized at that period attained considerable reputation, educated men of renown, and in a modified form are still in existence; examples are the *Klosterschulen* (see *Cloister Schools*) in Wurtemberg and the *Fürstenschulen* (*qv*) in Saxony. At the same period, too, the ruling princes began to undertake the task of educating their subjects, not as might be thought merely from ideal motives, but with the not unpraiseworthy object of insuring for their countries capable officers, judges, preachers, and teachers. Hence in the course of the sixteenth and seventeenth centuries there were issued in the different states of the Empire well-planned school ordinances; in other words, a definite, universal organization of the school system, including courses of study and instructions on method, took place. Saxony, Brunswick, Wurtemberg, and Saxe-Gotha deserve special mention here. (See ERNEST THE PIOUS, GOTHA, SCHOOL REFORM IN.) The amount of industry applied by teacher and taught in schools of that period to the attainment of the established humanistic aim, the number of periods, and the extent of the reading, can cause nothing but astonishment. The educational actions in Catholic Germany during this period is also treated under JESUS, SOCIETY OF, EDUCATIONAL WORK OF, and related topics.

In the seventeenth century the eccentric Wolfgang Ratke (*qv*) and the broad-minded and keen-sighted J. Amos Comenius (*qv*), who proposed entirely new ideas and plans for the aims and methods of instruction, restored the vernacular to its more important place, sought more correct, psychological foundations, made learning easier for the young, and hoped with some assurance to help towards a humanity that would be more valuable. These practical efforts were influential only for a brief period and over a small section of the German schools.

From the humanistic pedantry a departure was made towards the end of the seventeenth century in the direction of versatility and practicality of social requirements by the educational system of the so-called *Ritterakademien*, that is, institutions for the sons of the nobility. (See ACADEMIES, COURTLY.) Here instruction was given in several modern languages as well as a variety of recent sciences and many chivalric and practical accomplishments, generally in a cursory and superficial manner.

The majority of these institutions, however, did not enjoy a long existence. But their aims were partially and gradually adopted in the other institutions for higher education, while even the educational organizations of the Pietists (*qv*) (c 1700), especially the school system established at Halle by A H Francke (*qv*), now included a variety of *real* knowledge, offered an opportunity for learning different types of manual and industrial occupations, introduced easier methods to facilitate the learning of Latin, made room for exercises in the vernacular, and, as is to be expected, made religious and moral education the main object. From this point *Real* schools were developed since about the middle of the eighteenth century, the earliest of which in a modified and improved form still continues to exist in Berlin. (See HECKER) The pedagogy of the Pietists equally promoted opinion in favor of the right of the lower classes to education.

After compulsory school attendance had already been introduced in the seventeenth century in some of the small Thuringian states, as, *eg* in Saxe-Gotha, such compulsion was definitely imposed from 1713 in the rising state of Prussia by the energetic, yet reckless king, Frederick William I. Under his greater successor, Frederick the Great (*qv*), the elementary school made hardly any progress. There was a feeling for a long time that duties of an elementary school teacher should be intrusted to anybody of the most modest personal education, such as artisans, or non-commissioned military officers, while instruction was limited to the elements of reading, writing, and arithmetic and questions on the Catechism. The view that religious knowledge or even only verbal formulæ are a guarantee for Christian feeling and God-fearing conduct was only gradually superseded, or perhaps has not yet altogether disappeared. The first actual normal school was established towards the end of the reign of Frederick the Great at Halberstadt in 1778, and that through the efforts of a private person, the noble philanthropist and friend of youth, Eberhard von Rochow (*qv*), who found a supporter of his principles in the Minister of State, Freiherr von Zedlitz (*qv*), whose highly meritorious activity was devoted to the perfection, internally and externally, of the whole public educational system. Both men were influenced by the new spirit of Philanthropism (*qv*) which in its turn had partly been aroused by Rousseau (*qv*), but in several points had deviated widely from his views. With a new view of the aims and means of education not only the founder of the movement, J B Basedow (*qv*), established an institution at Dessau, styled the *Philanthropinum* (1774), but a number of similar institutions followed, and there was no lack of active followers (See CAMPE, SALZMANN, etc.). With Rousseau they shared the belief in the original goodness of human

nature; they desired to subordinate the importance of instruction to that of an education for other valuable qualities, recognized the natural rights of youth, and hoped to dispense almost entirely with pressure, compulsion, and punishments. In the spirit of the time they saw in happiness the true end of all human education. Quite in opposition to Rousseau, however, they always thought of the ability of their pupils in reference to the enlarged society, and social usefulness was to be combined with happiness. Throughout they also stood for authority and obedience. But while they turned all learning to play, swept away all real difficulties from before their pupils, were satisfied with all kinds of superficial knowledge, were willing to stimulate by a system of external rewards, they in no way promoted true character-formation, and called out the strongest opposition, while their institutions only attained a slight importance. It must at once be said, however, that several of their principles have recently again come to the front and receive wide recognition.

The most determined opponents of the Philanthropists were the representatives of the New Humanism, who then won a decisive influence over the organization of higher education, which continued for a long time (See NEO-HUMANISM). The earliest leaders in this movement, including, from about 1730 on, J. M. Gesner, Ernesti, Heyne (*qv*), also had their broad pedagogic convictions and desired to win over the student body by beauty of content in the subject-matter, that is, essentially the classical antiquities. From this time on, it remained the program of the new humanistic educators to inspire enthusiasm for the language, literature, thought, and character of antiquity, and to promote the moral development of their pupils by the study of a nobler human type. In this attitude the great poets, as for example, Herder (*qv*), were either in agreement with or even anticipated the philologists, as Fr August Wolf or Friedr Thiersch. Influential statesmen, too, adopted the same views, and a particular instance is William von Humboldt (*qv*), who about 1810 directed the Prussian educational system, and together with several important councillors exercised the decisive influence in the organization of the gymnasiums. And yet the philologically trained teachers, to whom instruction in the classics was intrusted, failed in the subsequent period to arouse that expected enthusiasm, since they restricted their pupils too much to the linguistic difficulties. Nor could the view that the ancients presented the highest type of humanity be maintained according to the modern conception of Greek and Roman antiquity.

Equally significant was the influence exercised on lower education in Germany at about this time (1800) by the great-hearted Swiss, Pestalozzi (*qv*). His efforts, although applied

only in small private undertakings, were very soon recognized and fully appreciated by representatives of the Prussian state and were adopted as the standard for the internal organization of their elementary schools. With this there began not only a new and better period for these schools, not only were their services increasingly valuable, not only did the new and idealistic class of elementary school teachers arise in the one state, but this state, Prussia, where at the same time that new class of high school teachers had arisen, acquired a position as leader and guide of Germany, while Germany itself in the subsequent period stood out as the country of the most intensive pedagogical interests and the most consistent educational organization. Many differences remained in the last few centuries between North and South, and particularly between Protestant and Catholic territories, but in the educational sphere there gradually appeared a satisfactory assimilation. The Roman Catholic Church, indeed, has never ceased to claim all school education for herself and her ministers, and the German governments have never ceased to admit to the Christian churches a right to share within well-defined limits in the supervision of the schools and to utilize the assistance of their representatives. But on the whole the schools have more and more become a matter for the state alone, even in cases where the maintenance and direct support were undertaken by individual communities.

The external organization of the lower as well as the higher schools (the latter being styled in South Germany "middle schools" with reference to the Universities which are the real "high schools") continued in the course of the nineteenth century to be carried on predominantly on the plan that typical forms must so far as possible be made universally binding, with the result that flexibility in the individual schools, teachers, and even pupils was temporarily checked. It is noticeable, however, how this whole tendency is gradually giving place since the last century to another which is opposed to it. The number of educators who took part in perfecting the system has always been great at this period and the investigation for better methods has scarcely ceased for a single moment. The strongest impulse in this direction was afforded by Herbart's (*q.v.*) pedagogy (first published in 1806), even though his psychological principles have been shattered since then and their too mechanical formulation, which was the work of his disciples, especially Ziller (*q.v.*), is at present being attacked or rejected on all sides. But the careful research into the teaching and learning processes which since that time is being pursued with still greater psychological thoroughness is the undoubted contribution of this great educator.

So far as the further development of the

external organization is concerned the elementary schools with universal compulsory attendance have not only been increased from decade to decade, but have been more carefully articulated into classes, the hitherto poor material conditions of the teachers have been improved, the training of teachers in numerous normal schools and the preparatory institutions preceding them have been perfected, and a large variety of schools for pupils deficient in some personal equipment have been erected. New cultural subjects have been added to the simple, traditional elements in the curriculum of the ordinary elementary schools, and in recent years the care for the further education of pupils from the age of fourteen, the leaving age for the elementary school, up to sixteen or eighteen, is a matter of considerable discussion and experimentation. Attendance at continuation schools has already been made compulsory in many places, since intellectual and moral neglect, particularly at this age, is fraught with much danger to national life.

For higher education it was particularly significant that the transition from the gymnasium, which had gradually increased to nine classes, to the university was since the end of the eighteenth century (1788 in Prussia) made dependent on an exacting leaving examination (*Maturitätsprüfung*) and has so remained. Further, there was introduced a difficult examination *pro facultate docendi* (1810 in Prussia) which called into existence a well-defined and trustworthy profession of high school teachers. For the supervision of the teachers and administration of school affairs the government bodies established their own, purely state authorities, as for example the *Ober-Schul-Kollegium*, since 1825 *Provinzial-Schul-Kollegien* (Provincial School Boards) with a comparative amount of independence under the Minister of Instruction. Lastly, certain state privileges, especially the right to one-year service in the army (*einjähriger Militärdienst*), were attached to attendance at certain types of the higher schools. That this last provision contributed largely to uplift general education in the nation is undeniable. It embodies, moreover, a democratic principle, since no distinction of rank or wealth is considered in connection with that privilege, which may be attained by any person through individual merit.

The curriculum, the selection of subjects, the amount of time to be devoted to each in each grade, the regulation for the decisive examinations, have all naturally been frequently revised and altered in the course of time, as changes in the sciences, cultural life, and needs of the time demanded. The last regulation of the courses of study in Prussia dates from 1901. The other German states approximate Prussia in their organization. A controversy extending over several decades centered round the relation of the *Real* schools (that is, schools

with a modern curriculum, modern languages, natural sciences, etc.) to the schools which had their origin in the humanistic period, the *gymnasiums*; although these have in the course of time adopted subjects of more modern content, they are particularly marked by their serious study of Greek as well as Latin, having recently dropped the early rhetorical-stylistic aim of the study of Latin. *Real* institutions, with an equally long curriculum of nine years, were first recognized in Prussia as *Realschulen*. *I. Ordnung*, or *Realgymnasien*. Since 1901 the *Gymnasium*, the *Realgymnasium*, and the *Oberrealschule*, with a Latinless nine-year course, receive fundamentally the same recognition. All these types of schools are regarded as general educational institutions rather than as preparatory schools for any special professional course, and the ever-increasing simpler *Realschulen*, with a six-year course for pupils between nine and fifteen, show the same tendency. It is especially difficult for Germans to think of any educational ideal that is not general and valuable in itself. The utilitarian standpoint meets with only slight recognition anywhere. Hence the formal side of education is regarded as more important than the material equipment for life, while linguistic and grammatical instruction has ceased to be regarded as the sole means for developing the powers of the pupils.

All the higher schools in common pursue with the same objects the study of German (linguistic and literary) and history, while religious instruction is everywhere obligatory. It is demanded in certain quarters that the last should be left to the religious corporations, but the feeling neither of the authorities nor of the teachers is favorable to such a view.

The multiplicity of institutions for instruction and education has increased rapidly in the last decade. The increasingly popular *Reform Schools*, with the postponement of Latin by several years, are only one type. Although coeducation of boys and girls has up to the present not been introduced in most German states, the question of an equal and comprehensive education of the female youth has been seriously discussed and curricula and courses of study have recently been prepared to meet the situation, so that this side of national education seems to have a brilliant future. Another entirely recent tendency is the reestablishment of boarding schools (*Internate, Aluminate*) to be connected with the higher schools, or at least to adopt their curricula and to bear a different character from the earlier boarding schools of an institutional character or the French *lycées*. Most of these institutions up to the present are private undertakings. But all private establishments for education and instruction are under state supervision. The idea of national education must outweigh that of individual education. Individual powers must be developed, but at the same time

altogether in the interests of the nation as a whole.

And nationalism no longer means the obstinate and unquestioning acceptance of traditional peculiarities. Attention is in recent years being frequently directed to foreign countries and the good points in England and America in particular are studied with a view to some extent to their adoption. Thus some experiments have been made in self-government of pupils. A wider power of election is to be permitted to students, at any rate in the upper classes of the higher schools. By the side of gymnastics, which have long ago found a home in Germany, athletics and manual instruction have been increasing. But caution and discretion in the recognition and adoption of new ideas remains the principle with educational authorities in Germany. Hence they have rarely been compelled to retrace their steps.

There has been no lack of alternation between more liberal and more conservative points of view in the last century. At times some very reactionary measures were in force, as in 1850, for the training of elementary school teachers, while at the present moment from the socialistic standpoint very revolutionary demands are being made. Hence the proposal for a uniform school (*Einheitsschule*), with one and the same foundation equally obligatory on all children of the nation, and the free access to all educational institutions for the able,—demands against which strong reasons have been brought. On the other side an attack is made on class instruction which favors only the mediocre, and special schools are now and then demanded for the specially gifted in order to create a national *élite*.

To hold that the German system is at a standstill, or to form the idea of a rigid organism from isolated impressions or exaggerated judgments, it must again be emphasized, would be particularly unjustifiable. It is merely that the present advance is less noisy than elsewhere. The protests against present conditions, which at the moment are raised excitedly in certain quarters and especially in the daily press, are going too far. With unfounded optimism there is talk of the value of unchecked, unregulated development of the immature person, while the effect of the present system is regarded with unjustified pessimism. Confidence in these schools, whose value was previously accepted without question, has disappeared because families were too long kept at a distance from them, and the establishment of confidential relations between teachers, parents, and scholars forms one of the greatest tasks of the future. On the other hand criticism is frequently due to the subjective instability and nervous discontent of educated people of to-day, and serious charges are brought against present education in the family. But each individual thinks that he ought to judge of the



scope of education on a basis of disposition, casual experience, and ideas of the moment

It must, however, be recognized that the task of the future is to provide for the introduction of the field of educational science more generally in the highest educational institutions, the training grounds for the most intensive thinking (See EDUCATION, STUDY OF.) At the same time it is regarded as an equally important need of the educational system to place a professional expert at the head of the whole department which up to the present has been under a Minister merely as one section of his work. But that desires are unfulfilled and that important demands for the future remain, is not a sign of an actual standstill. The great problem of education is always unending and ever gives rise to new questions. That the highest object must under all circumstances be the training of the will is self-evident. But by which system this can best be attained may be left as a subject of competition between the nations

W. M.

**PRESENT SYSTEM.**—As in America, the control of education is constitutionally in the hands of the individual states and is almost entirely removed from the imperial or federal government. The Imperial Chancellor, as representative of the Empire, has only the right of defining the qualifications for the privilege of the one-year service in the army and to bestow to individual schools the right of granting such certificates. For this purpose he is supported by the Imperial School Commission, consisting of about seven members as representatives of different states, and holding a short business meeting usually once a year. Its functions are inconsiderable. The Cadet Corps, which always include a higher school, are under the control of the Emperor as supreme head in military affairs. Thus there is no uniform and unifying imperial authority in German school affairs, and the German educational system is far more varied than appears to a foreigner on a brief visit. The extent of this diversity cannot be wholly presented in this account, which will be devoted primarily to a survey in outline of the school system of the largest federal state, Prussia, and only incidentally to that of other states. Further, Germany does not possess a bureau of information such as the United States Bureau of Education, and it is difficult or even impossible to afford a complete description of the present situation.

While in America there is an educational ladder leading directly from the primary school to the university, no German state has a uniform school system in this sense. On the contrary, two systems must be constantly distinguished, the lower or elementary school system and the higher school system. A transference from one to the other is only possible at one point, viz. after the third or fourth school year. All other types of schools or curricula

are connected more or less closely with these two.

**Legislative Principles.**—As will have been noticed above an imperial educational code does not exist, although the Imperial Law on Child Labor in industrial occupations, March 30, 1903, refers indirectly to education. In addition there are agreements between the federal states for the mutual recognition of examinations, particularly the *Abiturentenexamen* (q.v.) for entrance to the universities. These agreements, which have been entered into by a majority of the states, have at any rate in higher education as unifying an effect as imperial laws, much in the same way as the College Entrance Requirements Board in America.

In the individual states education is regulated either through a comprehensive education code (*Schulgesetz*), as in Saxony and Württemberg, in which case the lower and higher systems are generally treated in separate laws and occasionally only one system is dealt with uniformly; or the most important sections are embodied in special laws while the rest is supplemented by the government through ordinances, as particularly in Prussia. But with the rapid and progressive development of Germany, even where uniform educational laws exist, special laws and various ordinances are necessary to adapt the school system to the changing conditions. Elementary education is based on laws more than higher education, which more frequently, and especially in Prussia, is regulated by ordinances. The following questions are the subjects of legislative enactment in almost all the states, the training, appointment, and conditions of service of the teachers, their pay, pensions, and provision for their dependents, the maintenance of schools, school inspection and attendance, as well as the denominational organization of schools.

Prussia has no school code. The legislative foundations of her school system, apart from a few earlier regulations for individual sections of the kingdom, are contained in Articles 20-25 of the Constitution of January 31, 1850, which run as follows:—

(20) Knowledge and its dissemination are free. (21) Satisfactory provision for the education of youth shall be made through public schools. Parents and their representatives must not allow their children or wards to be without such instruction as is prescribed for the public elementary schools. (22) Every one is free to give instruction and establish educational institutions, provided he has proved his moral, intellectual and professional fitness to the proper state authorities. (23) All public and private educational institutions are subject to the inspection of authorities appointed by the state. Public teachers have the rights and duties of civil servants. (24) In the organization of public elementary schools denominational conditions must be considered so far as possible. Religious instruction in the elementary schools is under the direction of the religious corporations concerned. The management of the external affairs of the public schools is in the hands of the community. The state with the legally regulated participation of the communities appoints teachers from a list of suitable candidates. (25) Funds for the erection, maintenance, and extension of public schools are raised by the communities, and where inability to do so is proved the state may give supplementary aid. The duties of third parties based on special titles remain as before. The state guarantees the teachers a fixed income according to local circumstances. Instruction in public elementary schools is free.



In addition the *Law for the Maintenance of Public Elementary Schools of July 28, 1906*, which includes far more than the title implies, is of importance. Its contents are as follows: (1) Maintenance of schools. (2) Distribution of the cost of elementary schools; maintenance of the schoolhouse; building fund; state support. (3) School property; aid from other sources. (4) Denominational conditions. (5) Administration of elementary school affairs and appointment of teachers. (For the foreign observer sections (4) and (5) are particularly noteworthy.)

Higher education in Prussia is regulated by ordinances or decrees of the Minister or through the supreme decree of the King, while Saxony, for example, has a law also for higher education. (See Lexis, Vol III, p 65; Von Bremen; Morsch.)

**Administration of Education — Central Authorities** — The supreme direction of the internal organization of the schools is in all the states in the hands of state authorities; in Prussia this is provided by Article 23 of the Constitution mentioned above. This power no longer rests as previously with the church, nor, as is general in America, with the local communities. In no state has there yet been developed a central authority whose only concern is school matters. Generally public worship, occasionally a still wider sphere of duties, as, for example, justice in Baden, are under the charge of the same minister; sometimes, as in Hesse, education falls to the share of the Minister of the Interior; a simpler organization is, of course, possible in the smaller states (Hesse has a little over one million population).

The highest authority in Prussia is the Ministry for Public Worship and Education; in Bavaria the Ministry of the Interior for Public Worship and Education; in Württemberg the Department for Ecclesiastical and School Affairs. When the Prussian ministry became independent in 1817, it was still quite possible to supervise the whole field assigned to it. This is no longer possible at present, and since 1911 the Department for Public Health has become a separate body, while the demand for a separate Ministry for Education is constantly becoming stronger. At the head of this office stands the Minister, usually called *Kultusminister*, who is supported by the Under-Secretary as his deputy. The ministry is divided into three departments: (1) Department for ecclesiastical affairs. (2) First department for education (higher and girls' schools). (3) Second department for education (elementary schools). A ministerial director stands at the head of each department. Further there are attached to the office from thirty to thirty-five special councillors and from ten to fifteen assistants. The majority of these officials so far, always including the Minister himself, are jurists or administrative officials. The organization in the other states is much simpler. In several of these, as

in Bavaria and Baden, almost all the councillors are jurists. In addition to the routine administrative duties various conferences take place in the ministry, at which questions are determined not by majority vote, but by the decision of the presiding official. Responsibility, however, is formally borne by the Minister, to whose notice important matters are accordingly brought for his personal decision. Since the Minister cannot supervise the details of his wide field, and frequently has not the necessary acquaintance with persons or the professional knowledge, an extraordinarily wide influence is often exercised by the experienced directors, although the scope of their duties is entirely dependent on the will of the Minister. As an instance may be mentioned the late Fr Althoff (*q v*). Where wider changes are contemplated, the Minister summons a consultative conference to which leaders in all walks of life are invited. Such conferences, for example, took place in 1907 on the reform of the education of girls, as well as in 1890 and 1900 on the reform of higher education.

**Intermediate Authorities** — In the larger German states there are between the central board and the individual schools state intermediate boards, which, although differing everywhere in composition and functions, always have the constitution of boards. Examples of these are in Bavaria the Supreme School Council (*Oberste Schulrat*), in Württemberg the Superior School Council (*Oberschulrat*), in Prussia the Provincial School Boards (*Provinzial-Schulkollegium*). As a rule the members are not elected, but appointed by the central authority, and number variously from five to ten or more. The composition of these boards shows great variety. In Bavaria the board includes two university professors, two professors of technical high schools, five directors of classical gymnasiums, two directors of realgymnasiums, a rector of a real-school, one superior medical councillor. Baden shows a similar constitution. In the free town of Hamburg, which in other ways also possesses a very peculiar school organization, there are lay representatives on this board as well as on the communal education committees. But in Hesse and, particularly, in Prussia, neither university professors nor laymen nor practical schoolmen sit on this board, although a number of members have been in the teaching profession. The sphere of duties of these authorities is as varied as their composition. In Bavaria the Superior School Council has only the management of the internal affairs of the higher schools, while everything of an external character comes under the control of the county administration. In Württemberg only the higher schools are under the intermediate board, while elementary education is administered by the ecclesiastical authorities. In Baden the Superior School Council has charge of both higher and elementary education, including the administration of external as well

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as internal affairs. In these states the intermediate authorities are in intimate relations with the ministry, and with the exception of Bavaria a number of the members belong to both boards. Decisions are reached in Baden and Württemberg by resolution of the intermediate authority, but are subject to the decision of the Minister.

The intermediate authorities in Prussia are organized on a different plan. They are entirely separated from the central board, and between individual institutions and the central authority, the Minister, there are no direct business relations. On the whole, their organization follows that for the administration of internal affairs. The Prussian monarchy is divided into twelve provinces, each under a president. Each province is subdivided into from two to six counties under a county president; the office which administers these districts is known as the County Government (*Regierung*). The county is further divided into town communities, under a mayor, and districts under a chairman (*Landrat*); these districts are again made up of rural communities under an overseer, and estates also under a similar official. The duties of intermediate authorities for lower or public elementary education are undertaken by authorities for internal administration, that is, the County Government (*Regierung*), a department of which is devoted to ecclesiastical and educational affairs. The County Government has the supervision of all school activities, while external administration falls to the share of the community authorities with the approval and confirmation of the county government. The officials of the County Government for the inspection of elementary schools are the District School Inspectors (*Kreisschulinspektoren*), the majority of whom up to the present are clerics primarily and exercise their inspectorial duties incidentally, although the number of definitely professional inspectors is gradually increasing, especially in the towns. Under the District School Inspector stands the Local School Inspector (*Ortsschulinspektor*), an office usually exercised by the pastor or priest of the place, or by the principal for his own school. The principal is the director of the individual schools, in so far as they consist of several classes, and under him are the teachers.

The intermediate authorities in Prussia for higher education, including also normal schools and preparatory training institutions, and, in Berlin only, the elementary schools, are the Provincial School Boards already mentioned, of which there are twelve, one for each province. They are presided over by the Chief President of the respective provinces, who is assisted by a varying number of councillors who have been in the teaching profession. These officials exercise the inspection of higher schools, which are occasionally visited also by ministerial councillors. On the whole, however, the super-

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vision of higher schools is of little value, and inspections take place comparatively rarely, with the result that each school enjoys a great deal of freedom. The duties of the Provincial School Boards are described as follows by Morsch (p. 343), and include:—

(1) All matters bearing on the educational aim of the institutions, (2) the examination of organizations and statutes of schools and educational institutions, (3) the examination of new and the revision and confirmation of already existing ordinances and regulations no less than the provision of suitable recommendations for the removal of abuses and defects which have crept into any educational or school system, (4) examination of school textbooks in use, the decision as to which are to be dispensed with or introduced with the previous approval of the superior ministry, (5) examination of new textbooks, (6) another and more influential means of school inspection is the *Abiturienten-Examen*, at which a commissioner from the Provincial School Board is generally present, (7) the appointment of commissioners to hold the *Abiturienten-Examen*, and inquiry into the transactions of the examination commission in the schools, (8) the supervision, direction, and inspection of schools which lead to the universities, (9) the appointment, promotion, discipline, suspension, and dismissal of teachers in these institutions.

Further to these boards is assigned the supervision of all the external administration, the finances and budget, which in schools maintained by communities are administered locally. Each higher school is administered by a Director, who is assisted by the *Oberlehrer*. The private higher schools, of which there are only a few, are subject to state supervision equally with the public schools.

All these above-mentioned authorities are state officials. In addition there are local or communal bodies, parts of the local administration of communities. Here the multiplicity of deputations, commissions, governing boards, councils, committees, etc., is so great, and their constitution so diversified and frequently so complicated, that any attempt to describe them would be futile, even if the material were available. In general it may be said that only the external administration is the business of the community, such as the erection, equipment, and superintendence of buildings, the sanitary arrangements, financial management, rarely the questions of discipline in the schools, although all these activities are always subject to the approval of the superior state boards. The most important right of the Prussian community is the selection and nomination of the whole teaching body, but here, too, the appointment of every teacher must be confirmed by the state. Towns with larger systems appoint a school superintendent as a professional adviser. This office will increase in importance with the rapid growth of German towns, and the significance which such a position can attain in the hands of an energetic man is shown by the example of Kerschesteiner in Munich. The local bodies do not have the rights of supervisors over teachers and school directors. The higher institutions of learning maintained by the state, of which there are quite a number, are naturally not subject to local control.

**Teachers and Conditions of Service.**—Teachers, whether male or female, whether in

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state or communal schools, have in Germany the position and character of civil servants, whose rights and duties are definitely laid down by general service regulations. Accordingly, they receive their appointments only on the basis of the state-regulated preparation, of which evidence must be given by a state examination (towns have not the right to hold examinations); they have a definite career, definite titles which express their duties or position within the official organism; their position is for life and not terminable by notice, they receive a definite, annually increasing salary; they are entitled by law to a definite pension and to provision for their dependents on their death. The titles and career of teachers in Prussian elementary schools are as follows: immediately on their appointment they are called Teachers, if they have charge of a small school of one or two grades, Principal Teachers, on appointment after the appropriate examination to the direction of a larger elementary school, they are called *Rektor*; finally they can become District School Inspectors. Up to the present female teachers do not advance to higher positions. In the higher schools after the state examination during the period of preparation the title is Candidate for Higher School Appointment, between the period of preparation and appointment they are known as assistant teachers (*Wissenschaftlicher Hilfslehrer*), in the nineties this period was quite long, often up to ten years, but in recent years appointment has followed immediately after the preparatory period as a general rule; after appointment they are called Teachers (*Oberlehrer*), of whom the older members receive the title of Professor, which, however, does not carry with it any other duty or a higher salary. The teacher may rise to the principalship of a higher school with the title of Director. Further they can become Provincial School Councillors, or Special Councillors in the Ministry. A change of career, which is so frequent among teachers in America, is very rare in Germany. This is due to the many rights which the official has and acquires, as well as to the exclusive and specialized preparation for every profession.

Every official may resign his position, but surrenders all the rights which go with it. No official may be given notice, dismissed, or retired on a pension except after a disciplinary inquiry. Disciplinary courts of first instance are the direct superior authorities for officials of the middle class, including the *Oberlehrer*, while for the higher officials, including directors, there is a special court in Berlin; neither of these are the ordinary courts. When proceedings are brought against an official merely for a breach of duty, in so far as it does not trespass the penal code and is only subject to the superior authorities, the case is withdrawn from the ordinary courts.

The income of officials consists usually of several items. The fixed minimum and the

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increments make up the salary proper; to these must be added the compensation for rent, which varies with the cost of living in different places, and occasionally local additions. The officials move up automatically on the salary scale according to years of service. The salary of elementary school teachers is given in the following table (4 20 M = 1 dollar):—

	INCREMENTS AFTER YEARS OF SERVICE									
	After	7	10	13	16	19	22	25	28	31
Minimum Salary										
1400 M		200	200	250	250	200	200	200	200	200
Total salary	1600	1800	2050	2300	2500	2700	2900	3100	3300	

The compensation for rent, which is additional, amounts to from 200 to 800 M, and the local additions, in towns of over 10,000 population, up to 900 M, so that the highest possible income is 5000 M. Female teachers receive a somewhat lower, middle school teachers a somewhat higher salary. The salary of principals consists of the same minimum as that of teachers, *i. e.* 1400 M, to which is added from 500 to 1000 M more in virtue of his position (*Amuszulage*), and a compensation for rent which is more by 25 per cent than that of teachers, *viz.* 250–1000 M. And finally the salaries of District School Inspectors amount to from 3000 to 7200 M, which may be reached in six stages of 700 M each. The compensation for rent is from 560 to 1200 M. The compensation for rent varies with the cost of living in different towns. In Prussia the localities are by law divided into five classes (A to E). To class E belong those places where the cost of living is lowest, so that the rent indemnity is lowest there. Class A stands at the opposite extreme. The rent indemnity is thus a means which, keeping the minimum salary everywhere at the same level, seeks to adapt the total amount of income to local circumstances.

The salary of teachers in higher schools (*Oberlehrer*) is indicated in the following table:

Salary initial	after	3	6	9	12	15	21
	years of service						
2700 M	.	3400	4100	4800	5400	6000	7200

To this from 560 to 1300 M must be added as compensation for rent. The salary of female teachers is somewhat lower. The directors in complete institutions receive.—

Salary initial	After	3	6
	years of service		
6600 M	7200	7800	

The rent indemnity amounts to from 900 to 1800 M. The salary of Provincial School Councillors is 6300 M, rising in three stages to 8000 M, with a rent indemnity of from 900 to 1800 M. The Special Councillors in the Ministry receive 7000 M, rising in three stages to 11,500 M. after twelve years of service. The rent indemnity is 2100 M.

Pensioning of teachers is dealt with by the Prussian Pension Law, Section 1: "Every

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civil servant who draws his salary from the state receives from the same a pension for life when he is incapacitated for the performance of his duties after at least ten years of service in consequence of physical disability or other infirmity or intellectual failing, on account of which he is retired. Where the incapacity is due to illness, wound, or other accident, with which the official has met in the exercise of his duties or through contributory cause with no fault of his own, the right to a pension becomes due even before the completion of ten years of service."

**Section 7.** "Where an official is incapacitated before the completion of ten years of service and is on that account superannuated, except under circumstances referred to in the second half of the first paragraph, in case of destitution a pension for a definite period or for life may be granted with the approval of the King."

When an official is sixty-five years old the claim for a pension is not conditional on incapacity. The amount of the pension is determined as follows: "Where the retirement takes place after the tenth, but before the completion of the eleventh, year of service, the pension amounts to  $\frac{3}{8}$  and rises with each completed year up to the thirtieth year of service by  $\frac{1}{8}$ , and thereafter by  $\frac{1}{10}$  of the income. But there is no increase beyond  $\frac{3}{8}$  of this income." In calculating the pension the whole income last received inclusive of the rent indemnity is used as a basis; local additions are as a rule subject to pensions. In 1906 there were in Prussia alone 10,025 teachers from elementary schools in receipt of pensions, of whom 8381 were male, and 1644 female. The total amount of pensions was 15,007,764 M (13,562,980 M for male, 1,444,784 M for female, teachers); the average pension for males was 1618 M and for female teachers 879 M. Widows and children of deceased officials have also a claim to a pension, in the calculation of which the following provisions are made in Prussia: "The amount received by the widow is 40 per cent of the pension to which the deceased would have been entitled, if he had been superannuated at the time of his death. The sum for widows must not be less than 300 M nor more than 3500 M. The allowance for orphans is. (1) For children, whose mother is living and at the time of the death of the official was entitled to the widow's allowance, a fifth of that allowance for each child. (2) For children whose mother is no longer alive or at the death of the official was not entitled to the widow's allowance, a third of that allowance for each child. The allowance for widows and orphans must not exceed the amount of the pension to which the deceased was entitled or would have been entitled if he had been superannuated at the time of his death."

The conditions treated in the foregoing account are as a whole similar in the rest of the

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federal states, although differing in details in many ways, which cannot be entered upon here. It may be mentioned, however, that occasionally teachers, as other officers, have to contribute to pension funds, in which case the maximum pension is usually higher, as in Bavaria.

Arising out of the fixed and definite position already described and the high professional efficiency due to the thorough preparation, the social standing of teachers in elementary and higher schools is high. For the same reasons these teachers have developed a strong professional feeling, even though it is at present confined to each grade respectively. Just as there is no bridge leading from the ranks of elementary school teachers to higher school teachers, so both regard themselves as separate professions, and the professional organizations of both work entirely independently of each other; but since higher and lower education are separate systems, each with different problems, this separation is not such an evil.

TABLE I

	1901	1891	1881
Number of men in the army	260,416	182,827	150,130
Without schooling	131	824	2,332
Per cent of whole number	0.05	0.45	1.55

TABLE II

	1891	1901
School population	4,464,906	6,103,745
of whom there were		
1 In public elementary schools	3,900,655	5,670,870
Per cent	87.36	92.91
2 In other schools	222,211	339,017
Per cent	4.98	5.55
3 Temporarily excused from attendance, but duly registered	312,219	82,638
Per cent	6.99	1.35
4 Not registered on account of physical defects	9,038	10,672
Per cent	0.20	0.18
5 Illegally kept away from school	20,783	548
Per cent	0.47	0.01

(Based on Lexis' *Public Education in the German Empire*, p. 96.)

**Attendance** — In all German states compulsory school attendance prevails, lasting generally eight years (seven in Wurttemberg), and beginning with the sixth year. In Bavaria there is compulsory attendance at Sunday school from fourteen to seventeen. The extension of school compulsion to the continuation school (*qv*), that is, beyond the fourteenth year to the eighteenth, or up to entrance into the army (which is in itself a powerful educational institution), has not yet been introduced everywhere, but is earnestly striven for. Much remains to be done in this field, particu-

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larly for girls Legal compulsory attendance is everywhere strictly enforced in Germany, and in the last resort is secured with the aid of the police and the courts Only on proof that children are receiving satisfactory instruction privately is exemption from school granted Hence the percentage of illiterates in Germany is almost nil, as may be seen from the tables on page 71

**School and Church.** — The opposition between the Protestant and Catholic denominations (Germany is about one third Catholic and two thirds Protestant) has been one of the greatest influences in German history, and is still one of the most important factors in domestic politics No wonder then that this is reflected in education The public higher schools are almost wholly interdenominational or undenominational (*simultan*); the lower schools are undenominational in only a few states, as in Baden and Hesse, while the denominational elementary schools exist in the largest states, especially Prussia The most important legislative enactments on this question read as follows. "Public elementary schools are to be so organized that Protestant children receive their instruction from Protestant teachers, Catholic children from Catholic teachers" "In public schools with several teachers, either only Protestant or only Catholic teachers are to be appointed" Finally, "when in any school community, which has only elementary schools staffed with Catholic teachers, the number of local Protestant children of school age for five consecutive years is over 60, or in towns and rural communities of more than 5000 inhabitants, over 120, then, provided that the legal representatives of more than 60, or more than 120 children of school age of the class mentioned, make recommendations to the supervising educational authorities, instruction is to be arranged in schools wholly under Protestant teachers," and vice versa Jewish pupils are received into the elementary schools; where a Jewish community is large enough, it may erect a separate school, although their number is in any case very few In 1906 the percentage of children who were in schools of their own denomination was as follows: —

	IN TOWNS	IN THE COUNTRY
	Per cent	Per cent
Protestant . . .	92 20	97 27
Catholic . . . .	87 25	91 47
Jewish . . . . .	30 03	20 37

**Coeducation** — For boys and girls in higher education separate institutions are provided almost everywhere, only a few South German states (Baden, Hesse, Württemberg) admitting girls into the boys' schools; up to the present

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this has not been done in Prussia In the elementary system special girls' schools or girls' classes are provided when the numbers are large enough In 1906, 65 per cent of the elementary school classes in Prussia were mixed, containing 64 per cent of all the children There were 40,376 separate classes and 75,526 mixed classes In the towns, of all the children 1,669,286 were in separate classes and 636,979 in mixed, in the country, 561,537 were in separate and 3,296,596 in mixed classes Thus in the towns separate classes, and in the countries mixed classes predominate

**Cost of Education** — The maintenance of elementary schools as a general rule falls by law on the communities, the state enters only in case of need and gives assistance only to smaller communities The terms of the Prussian law on the subject are: "The erection and maintenance of public elementary schools falls, with the exception of the provisions of this law, on the municipal communities and the independent districts Communities (or districts) either are independent school districts or may be united for the maintenance of one or more schools into one common school district (*Gesamtschulverband*) One community may belong to several union school districts Even when it forms one independent school district, it may belong at the same time to one or more union districts" (Section 1) According to Section 7, "Where the inability of a school district to raise the cost of maintaining an elementary school is proved, subsidies are given by the state Further the state grants to smaller communities a part of the cost for new school buildings" The amount of expenditures for the purposes of elementary education is indicated in the following tables (from *Statistisches Jahrbuch f. d. deutsche Reich*, Vol XXIX (1908), p 153) --

EXPENDITURE FOR PUBLIC ELEMENTARY SCHOOLS  
(1 Dollar = 4 20 Marks)

States	Total		Amount contributed by the State (in 1000 Marks)		Cost per Pupil in Marks	
	1901	1906	1901	1906	1901	1906
Prussia	269,917	328,247	73,066	82,378	48	51
Bavaria	39,766	52,680	14,206	18,937	46	55
Saxony	36,548	45,364	6,998	10,391	53	59
Württemberg	12,265	15,809	3,748	5,333	42	50
Baden	10,999	16,033	2,396	4,472	40	52
Hesse	7,875	10,170	2,506	2,888	48	54
Alsace-Lorraine	8,869	10,677	2,630	2,956	39	44
German Empire	421,310	522,869	122,898	150,134	47	54

Sum total of state expenditures of Prussia<sup>1</sup> (the expenses of the communities not included) for public elementary instruction, training of elementary school teachers, etc

<sup>1</sup> Figures taken from *Etat des Ministere des affaires exterieures, etc* Angelegenheiten, 1910

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	MARKS
I. Current expenses	
Normal schools . . . . .	11,106,232
Preparatory institutions . . . . .	2,247,673
For both groups to be added . . . . .	757,539
Normal school for gymnastics . . . . .	333,880
School supervision . . . . .	4,422,420
Elementary schools . . . . .	141,417,317
School for defectives . . . . .	304,632
Sum total of current expenses . . . . .	161,586,776
II. Single expenditures for elementary schools . . . . .	6,265,440
To the communities for education of negligent dependent and delinquent children . . . . .	6,000,000
Instruction in prisons and jails . . . . .	203,500
Sum total of single expenditures . . . . .	12,468,940

politics also demands the creation of such a system in the growing towns, for this attracts settlers to the town. A few of the higher schools are under royal patronage and possess considerable endowments; a larger number are maintained by the state, but by far the largest belong to communities or towns. There are comparatively few private high schools for boys, although they are slowly increasing in number. Further details of the expenditure for this branch of education are indicated in the table on page 75.

EXPENDITURE OF STATE AND COMMUNITIES FOR PUBLIC ELEMENTARY SCHOOLS IN THE CITIES AND IN THE COUNTRY IN PRUSSIA (IN MARKS)

	Cities		Country	
	1896	1906	1896	1906
1. Total (including building expenses)	83,129,558	163,252,542	102,787,937	153,956,514
Of this sum				
Salaries . . . . .	60,545,580	111,208,768	73,367,542	107,670,644
Equipment . . . . .	22,583,978	52,043,774	29,420,395	46,285,870
2. Total contributed				
By the state . . . . .	13,327,759	16,175,140	39,610,836	53,095,034
By the communities, etc . . . . .	67,426,515	142,621,306	49,913,141	82,528,465
3. Percentage of cost contributed				
By state . . . . .	16 03	9 91	38 54	35 79
By communities . . . . .	81 11	87 36	48 56	53 60
4. Average cost				
Per school . . . . .	195 97	337 86	32 23	46 75
Per class . . . . .	27 57	38 11	16 62	21 07
Per child . . . . .	47	71	30	40
Per capita of population . . . . .	6 41	9 67	5 44	7 51
5. Total income of teachers				
Male . . . . .	2,282,462	81,278,964	62,173,450	90,587,619
Female . . . . .	8,984,671	19,996,533	4,120,765	7,839,999
6. Average income of teachers				
Male . . . . .	2,029	2,567	1,357	1,742
Female . . . . .	1,361	1,700	1,132	1,370

To the figures for 1906 under No 1, 11, 110,091 M ought to be added; this sum comprises contributions by the state for city and country schools which cannot be separated. The total expenditure for public elementary schools for 1906 thus amounts in Prussia to 328,319,147 M.

The single expenditures of the state amounted to 1,408,560 M in 1910 (*Etat*, p 238); the amount spent locally it is impossible to give, but it was certainly far larger, since many new schools are being established, — more by the communities than by the state.

The higher education of girls has up to the

COST OF SCHOOL BUILDINGS (1906)

	Cities	Country	Together	1901
1. Current expenses for public elementary schools in 1905, without the cost of new buildings, repairs, or extensions				
Salaries . . . . .	139,354,504	132,947,954	283,412,549	227,621,597
Material equipment, etc . . . . .	111,208,768	107,670,644	229,989,503	186,873,192
2. Cost of new buildings, repairs and extensions in 1905	28,145,736	25,277,310	53,464,245	40,748,405
Amount of building debt for school buildings in June, 1906 . . . . .	23,898,038	21,008,500	44,906,598	42,295,821
	110,428,352	99,499,637	209,927,989	155,288,394

Figures taken from *Statistisches Jahrbuch für den preussischen Staat*, Vol XXX (1909)

The duty of maintaining the higher schools is not definitely determined by legislature in Prussia. So far as possible the towns maintain their own secondary schools, and frequently make it a matter of great pride to possess a highly developed system of education. Local

present been mainly in the hands of private institutions, the number of which will in consequence of the recent regulations show a rapid decline, and the burden will fall almost entirely on the communities. The current expenses of the state for these schools amounted

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## SURVEY OF THE PERMANENT INCOME AND EXPENSES OF HIGHER EDUCATIONAL INSTITUTIONS FOR BOYS IN PRUSSIA, ACCORDING TO THE BUDGET FOR 1910 (IN MARKS)

TYPES AND NUMBER OF INSTITUTIONS	INCOME					EXPENDITURE			
	State Fund	Private Property	Private Revenue (Fees)	Municipal Fund	Endowment	Total Income also Total Expenditure	Payment Limit of Salaries	Remuneration for Instructors	Administration and Equipment
A 5 institutions under royal patronage	60,765	688,235	320,298	—	147,321	1,216,620	556,452	20,360	639,808
B 243 state-maintained institutions	14,516,441	773,395	9,078,194	1,276,092	637,914	26,282,039	22,848,327	677,478	2,756,233
C 5 institutions maintained by the state and others in common	323,995	26,087	261,656	219,823	1,787	732,611	572,100	12,866	147,744
D 466 institutions maintained by other means, but supported by the state and excluding institutions otherwise maintained	3,105,603	955,288	21,173,406	22,683,672	965,322	48,883,284	38,593,040	1,401,848	8,888,395
Total, including other small sums for 719 institutions	17,916,154	2,443,006	30,833,555	24,178,848	1,752,346	77,123,011	62,569,920	2,112,553	12,441,437
Average per school	24,918	3,397	42,884	33,628	2,437	107,265	87,023	2,038	17,303
Gymnasium at Steglitz near Berlin	—	3,393	101,618	79,652	—	184,664	149,662	4,060	30,941
The 35 municipal schools in Berlin (with six and nine classes) (See D)	8,219	35,242	2,137,346	3,160,755	68	5,341,631	4,479,580	337,820	524,231

Figures from *Etat des Ministre d'gestl etc., Angel f d Etatsjahr 1910, Beilage*

in 1910 to 1,079,583 M (in 1906 only about 330,000 M), single expenses are not yet to hand, the corresponding local expenditures cannot be given but were certainly very considerably higher.

**ELEMENTARY AND INTERMEDIATE EDUCATION** -- The lower schools (*öffentliche Volksschulen*, public, common, or elementary schools) are wholly public, and there are practically no private schools of this type. As a rule no fees are charged. Instruction begins at seven or eight in summer, and eight or nine in winter, and includes four or five, rarely six, periods a day. While the number of pupils may rise to a maximum of 1000 (a figure very rarely attained), the minimum number is small, and in remote places is from ten to twenty. Separate schools for boys and girls are maintained only in larger communities, where the number of pupils is large enough to warrant a separation, and this is the usual practice (See above.)

The teachers by a large majority are men; in 1906 there were in Prussia 138,216 men and 23,708 women teachers. But the percentage of women teachers is gradually increasing. The men teachers give from twenty-six to thirty or thirty-two lessons, the women twenty-two to twenty-six or twenty-seven per week. The division of schools into classes varies according to the size of a community. In the country single and two-class schools with one or two teachers are common, while in the towns systems with eight or nine classes and from

twenty to thirty teachers have been developed. Some details are given in the following table (based on *Statist Jahrb f d preuss Staat*, Vol VII, 1910, p 166) —

	IN THE TOWN		IN THE COUNTRY	
	1896	1906	1896	1906
Average per school of				
Classes	7 11	8 87	1 94	2 22
Teaching positions	7 05	9 02	1 55	1 80
Children	418	477	109	117
Average per teacher of				
Classes	1 01	0 98	1 25	1 23
Children	59	53	70	65
Average number of children per class	59	54	56	53
Number of classrooms	30,090	42,882	50,221	59,565
Number of children not received on account of overcrowding	578	245	1831	674

**Curriculum** — Such a variety of external conditions is naturally accompanied by a variety of curricula and standards in the individual schools. The single-class schools in which children of all ages are taught together, cannot perform the same type of work as the fully graded school. But all schools of whatever size must conform to certain minimum requirements, of which those of Baden may serve as an example, similar regulations being found in the other states: "The education of the elementary school shall train the children up to be intelligent, religious, and moral persons and upright members of the community. It

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must cover the following subjects: religion, reading and writing, German, arithmetic, singing, elements of geometry, geography, natural history, and nature study, and history, with physical exercises for boys, and for girls instruction in female handicrafts. The number of periods per week shall be at least sixteen, and from the fourth year on at least twenty, with a maximum of thirty for any class. The following time-table of the Berlin elementary schools may be taken as representative of a large school system —

COURSE OF STUDY OF THE ELEMENTARY SCHOOLS AT BERLIN

	VIII	VII	VI	V	IV	III	II	I
Religion	3	3	3	4	4	4	4	4
German	8	7	7	6	6	6	6	6
Object lessons	2	2	2	—	—	—	—	—
History	—	—	—	2	2	2	2	2 (2)
Arithmetic	4	4	4	4	4	4	4 (2)	4 (2)
Geometry	—	—	—	—	—	3 (0)	3 (2)	3 (2)
Nature study and science	—	—	—	2	2	4	4 (3)	3
Geography	—	—	—	2	2	2	2	2
Drawing	—	1	2 (1)	2	2	2	2	2
Writing	—	2	2	2	2	1	1	1
Singing	1	1	2	2	2	2	2	2
Gymnastics	2	2	2 (1)	2	2	2	2	2
Sewing, needle-work	—	—	(2)	(2)	(2)	(3)	(4)	(4)
Total	20	22	24	38	28	32	32	32
	Lower Stage			Middle Stage		Upper Stage		

(The figures in brackets denote deviations in the girls' schools)

The work of these schools may be indicated by the scope of some subjects in the upper grades of a Berlin elementary school —

German the pupils must attain to thorough soundness in oral and written use of the vernacular. Com-

plete thoroughness in orthography and the elements of grammar are expected and reached.

Arithmetic for Class II includes the rule of three, sums with compound numbers, proportion, calculations of everyday life, excluding exchange, discount, and partnership, together with insurance. Class I exchange, discount, and partnership; comprehensive and final drill in calculations of everyday life; arithmetic and algebra (except in girls' schools), the theory of denominate numbers, algebraical addition, subtraction, multiplication, and division, proportion, equations of the first degree with one or more unknowns.

Nature study (physics) in the boys' schools, Class II lessons in inorganic chemistry and mineralogy, magnetism, electricity, galvanism. Class I completion of inorganic chemistry, introduction to organic chemistry, mechanics completed, sound and light. In the girls' schools, Class II Lessons in organic chemistry, especially in its application to foodstuffs, elements of mechanics of solid, liquid, and gaseous bodies. Class I magnetism, electricity, galvanism, sound, light.

Little can be said about the methods of instruction. The teachers are somewhat more restricted than in the high schools, yet not so much as to crush individuality. Closer insight into the methods can only be secured by visiting the classrooms and a study of the textbooks.

The elementary schools do not grant any privileges in the same sense as the higher schools. Some workingmen's guilds demand that their apprentices shall have completed the first class of the elementary school; and such requirements are laid down occasionally in other occupations. The tables given below, compiled from various sources, give additional statistics of elementary education in the most important German states and the Empire as a whole.

**Special Provisions for Abnormal and Super-normal Children** — In an increasing number of towns special schools or classes are being established for the backward (*Schwachbegabte*). In 1905 such arrangements existed in 97 Prussian communities with a school population of

STATISTICS OF GERMAN ELEMENTARY SCHOOLS

A 1901 or 1900, B 1906

	NUMBER OF SCHOOLS			NUMBER OF MALE TEACHERS			NUMBER OF FEMALE TEACHERS		
	A	B	Increase per cent	A	B	Increase per cent	A	B	Increase per cent
Prussia	36,756	37,761	2.7	76,342	84,980	11.3	13,866	17,784	28.3
Bavaria	7,280	7,434	2.1	12,184	12,559	3.1	2,715	3,861	42.2
Saxony	2,273	2,304	1.4	10,003	12,068	20.6	401	653	62.8
Württemberg	2,353	2,382	1.2	4,615	4,890	6.0	494	615	24.5
Baden	1,677	1,688	0.7	3,631	3,983	9.7	418	850	104.8
German Empire	59,187	60,584	2.4	124,027	137,213	10.6	22,513	29,384	30.5

	TOTAL NUMBER OF TEACHERS			NUMBER OF PUPILS			NO. OF PUPILS PER TEACHER		PERCENTAGE OF MEN AND WOMEN HOLDING FULL TIME APPOINTMENTS			
	A	B	Increase per cent	A	B	Increase per cent	A	B	Men	Women	Men	Women
Prussia	90,208	102,764	13.9	5,670,970	6,164,398	8.7	63	60	85	15	83	17
Bavaria	14,589	16,420	10.2	873,399	958,037	9.7	59	58	82	18	76	24
Saxony	10,404	12,721	22.3	655,771	775,098	13.0	66	61	96	4	95	5
Württemberg	5,109	5,505	7.8	295,325	315,778	6.9	58	57	90	10	89	11
Baden	4,849	4,039	19.5	273,149	308,884	13.1	67	64	90	10	82	18
German Empire	146,540	166,597	13.7	8,924,799	9,737,262	9.1	61	58	85	15	82	18



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1,224,146. The following table gives the number of classes and pupils specially provided for:

		Boys	Girls	Total
Special classes in public schools . . . . .	184	1837	1418	3255
Number of classes in separate schools . . . . .	388	5084	4044	9128
Total . . . . .	672	6021	5452	12,383

TIME-TABLE IN A SPECIAL SCHOOL AT HALLE

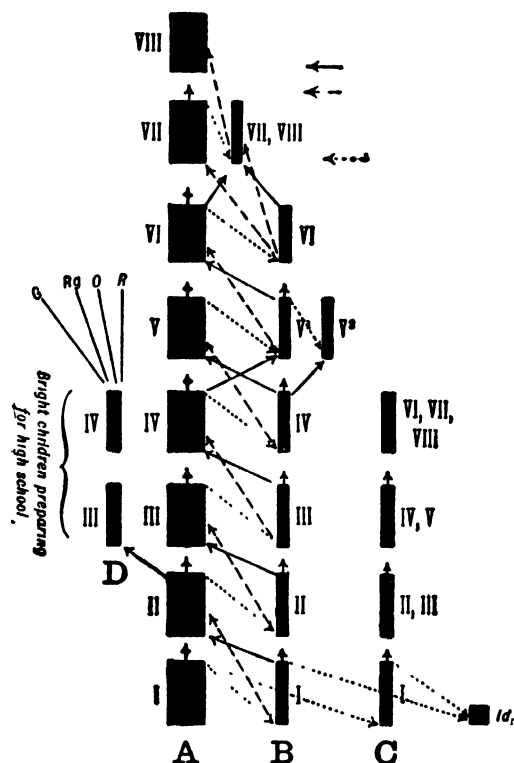
Subjects	V	IV	III	II	I
Religion . . . . .	3	3	3	2	2
Arithmetic . . . . .	4	4	4	4	4 (5)
German . . . . .	—	6	6	7	7
Writing . . . . .	—	2	2	1	1
Object lessons . . . . .	9	4	4	—	—
Drawing . . . . .	—	—	1	2	2 (1)
History . . . . .	—	—	—	2	2
Geography . . . . .	—	—	—	2	2
Natural history . . . . .	—	—	—	2	2
Singing . . . . .	—	1	2	2	2
Gymnastics . . . . .	2	2	2	2	2
Manual work . . . . .	4	4	4	4	4
	22	26	28	30	30

The Mannheim system created by Superintendent Sickinger has aroused considerable attention and much imitation. It not only provides for schools for backward, but also attempts to provide special means for the education of the very bright and gifted pupils. This aim is attained by dividing the school system not only vertically into classes, but horizontally into various types of classes and institutions, and by assigning children to different schools not alone according to the districts in which they live, but according to their ability. By this system the very able children come after two years' attendance at school into classes which prepare them in one and a half years for the gymnasium. Pupils above the average have a richer curriculum, including a foreign language; the normal pupils go through the usual eight years' course, while

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the backward and dull receive courses of from four to seven years.

The following table gives a schematic view of the whole system, the eighth class being the lowest:—



Column A Regular grades containing more than 90% of the pupils  
 Column B Grades for temporary aid  
 Column C Auxiliary grades or special schools  
 Column D Preparatory classes of high schools  
 Id Institution for idiots G Gymnasium Rg Realgymnasium.  
 O Oberrealschule R Reformgymnasium  
 — Regularly promoted  
 — Placed temporarily in separate classes for individual attention and returned to regular grades  
 — Placed in special classes owing to defective mentality  
 (From Maennel, *The Auxiliary Schools of Germany.*)

PUBLIC MIDDLE SCHOOLS IN PRUSSIA, 1901 AND 1906. (See p 78)

	Boys		Girls		Mixed		Total	
	1901	1906	1901	1906	1901	1906	1901	1906
Number of schools . . .	217	202	137	137	102	120	456	459
Number of classes . . .	1,605	1,659	1,279	1,408	875	1,140	3,759	4,207
Number of teachers . . .	1,682	1,750	1,406	1,579	895	1,212	3,983	4,544
Number of assistant teachers . . .	266	292	295	263	152	188	713	743
Number of pupils . . . . .	57,082	57,295	47,680	49,603	16,371	20,140	73,549	78,443
	+ 96 in girls' schools	+ 8 in girls' schools	+ 6 in boys' schools		13,512 boys	17,578 girls	61,192 boys	67,187 girls
Current expenses in marks . . .	5,645,985	6,540,017	4,207,225	5,108,082	2,663,421	4,092,858	12,516,631	15,830,957
Average cost:								
per school . . . . .	26,018	32,376	30,710	37,942	26,112	34,107	27,449	34,490
per class . . . . .	3,518	3,942	3,289	3,692	3,044	3,590	3,330	3,760
per pupil . . . . .	99	114	88	105	89	106	93	109

**Middle Schools (Mittelschulen, Bürgerschulen, or Higher Elementary Schools)** — This type of schools is intermediate between the elementary and higher schools, and is distinguished from both chiefly in teaching not more than one foreign language. While they are very frequent in the South German States, such as Baden, and in Saxony, and there form an important part of the school system, they are not so well developed in Prussia, as is indicated in the table at bottom of page 77.

It will be seen from this table that there are middle schools for boys, for girls, and for both together. The expenditure on this type of schools is much less than for higher or elementary schools. The reason for the comparative failure of these schools in Prussia, although such an intermediate stage was really a strong necessity, was that they did not convey any privileges nor prepare for or articulate with the higher schools. New courses of study were, however, issued in 1910 for Middle Schools which mark a great step in advance. While privileges were not granted to these schools, the curriculum has been so arranged that it can prepare for the higher schools. They comprise nine classes or years, and are based on the elementary school in so far as both have a common course in the lower stage. Fees are charged, but a suitable number of free places are maintained. Except in the lower stage there is an average of five periods per day. Good pupils may study a second language from the seventh school year on. In principle every pupil is expected to take only one compulsory subject. By the establishment of minimum and maximum standards, every school has sufficient scope to adapt the curriculum to special needs. These are new principles in the Prussian educational system; moreover the new schedules approach much more nearly to the principle of election and elasticity than any other part of the system. They are accordingly given here in greater detail.

#### Training of Elementary School Teachers

Special institutions have been established for the professional training of teachers for elementary schools, distinct for males and females. The normal schools for men are part of the elementary school system. Between the elementary school and the normal school there is an intermediate school, the preparatory institution (*Präparandenanstalt*). Normal schools and preparatory institutions (of which there are at present only a very few for girls) are usually residential institutions (*Internate*). The preparatory institutions are either attached to or separated from the normal schools proper. They receive pupils from the elementary schools at the age of fourteen and keep them for three years. Attendance at the preparatory institution is not a requirement for entrance to the normal school, and candidates may prepare privately, but must show by examination "that they have attained

COURSE IV  
FOR A MIDDLE SCHOOL PREPARING FOR A HIGHER SCHOOL

SUBJECT	MIDDLE SCHOOL <sup>1</sup>							SCHOOLS WITH A COMMON FOUNDATION										HIGHER GIRLS' SCHOOL											
	Classes							Gymnasium Classes					Realgymnasium Classes					Realschule and Oberschule					Higher Girls' School						
	6	5	4	3	2	1	Total	6	5	4	U3	O3	Total	6	5	4	U3	O3	Total	7	6	5	4	3	Total				
Religion	2	2	2	2	2	2	12	3	2	2	2	3	11	3	2	2	2	2	2	11	3	3	3	2	2	13			
German	5	5	4	4	4	4	25 (27)	5	4	4	4	4	19	5	4	4	4	4	3	19	6	5	5	4	4	24			
Latin	2	2	2	2	2	2	12	2	2	2	2	3	9	2	2	2	2	2	2	9	3	3	3	2	2	13			
French	5	6	6	4	4	4	26 (30)	6	6	6	3	4	23	6	6	6	4	4	6	30	6	5	5	4	4	24			
English	2	2	2	2	2	2	12	2	2	2	2	3	9	2	2	2	2	2	2	9	3	3	3	2	2	13			
History	2	3	4	3	3	3	18 (21)	2	2	6	3	3	16	2	2	2	6	3	3	17	2	2	2	2	2	8			
Geography	4	4	5	5	5	5	25	5	5	5	4	4	23	5	5	5	4	4	23	5	5	5	4	4	24				
Mathematics	2	2	2	2	3	3	15 (18)	2	2	2	2	3	13	2	2	2	2	3	13	2	2	2	2	2	10				
Nature study	1	1	1	1	2	3	8	2	2	2	2	11	4	2	2	2	2	4	11	2	2	2	2	2	10				
Writing	2	2	2	2	2	2	12	2	2	2	2	3	9	2	2	2	2	3	9	2	2	2	2	2	10				
Drawing	1	1	1	1	1	1	6	2	2	2	2	2	8	2	2	2	2	2	8	2	2	2	2	2	10				
Singing	3	3	3	3	3	3	18	3	3	3	3	15	3	3	3	3	3	15	3	3	3	3	3	3	12				
Gymnastics for boys	2	2	2	2	2	2	12	2	2	2	2	3	9	2	2	2	2	3	9	2	2	2	2	2	10				
Needlework for girls	2	2	2	2	2	2	12	2	2	2	2	3	9	2	2	2	2	3	9	2	2	2	2	2	10				

<sup>1</sup> The numbers in brackets denote the number of periods possible when English is taken in place of Latin.

the knowledge and ability specified in the course of study for preparatory institutions." The transfer from a higher or middle school to the institutions for the training of teachers is, in Prussia at any rate, not provided for, and pupils who wish to transfer must pass an entrance examination for admission to the class they wish to enter. Pupils come in some cases from a middle or real school, but rarely from a higher school. The course of study of both institutions is given in the following scheme; the normal schools for women deviate somewhat, but only slightly, from this.

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TIME-TABLE PREPARATORY INSTITUTIONS AND  
NORMAL SCHOOLS

CLASS	PREPARATORY INSTITUTIONS			NORMAL SCHOOL		
	III	II	I	III	II	I
Pedagogy . . .	—	—	—	3	3	3
Lesson-planning and model lessons	—	—	—	—	4 <sup>1</sup>	4 <sup>1</sup>
Practice teaching	—	—	—	—	—	4-6
Religion . . .	4	4	3	3	4	3 <sup>2</sup>
German . . .	5	5	5	5	5	3 <sup>2</sup>
Foreign languages	3	3	3	2	2	2
History . . .	2	2	3	2	2	2
Mathematics	5	5	5	5	5	1 <sup>3</sup>
Science and nature study . . .	2	4	4	4	4	1 <sup>3</sup>
Geography . . .	2	2	2	3	2	1 <sup>3</sup>
Writing . . .	2	2	1	—	—	—
Drawing . . .	2	2	2	2	2	1
Gymnastics . . .	3	3	3	3	3	3 <sup>2</sup>
Music . . . .	3	4	5	4	4	4
Agriculture . . .	—	—	—	1	1	—
	34	37	37	38	38	33-35

<sup>1</sup> Included with subject matter<sup>2</sup> One hour for method<sup>3</sup> Method

The requirements in the normal schools are given in detail in a few subjects and classes —

I *Pedagogy* (A) Theory of Education. First year (3 hours a week) — General instruction in psychology and logic and their application in didactics and methods. Second year (3 hours a week) — Theory of education, history of education from the second semester. Third year (3 hours a week) — Continuation of history of education up to the present time. School organization, hygiene, management and regulations. Advice in regard to further study after graduation.

(B) Training in School Practice. Second year — In connection with model lessons in the practice school given by the practice teachers the students of the normal school are given opportunities all through the year to give lessons which they have prepared, and they receive instructions as to how to proceed. Third year — All the students of this third grade are intrusted with giving lessons and acting as class teachers in the practice school throughout the year under supervision of the regular instructor. Each student must have from four to six hours a week of independent teaching. Two hours a week are to be devoted by the students to preparing lessons with attention to method and subject matter, criticizing lessons given by the students and discussing the school plant, administration, discipline, etc. Besides, these two periods are set aside for model lessons and practice lessons to be given in the different branches by the practice teachers, in which didactics or methods are exemplified. The normal students also are required to attend the lessons given by their colleagues according to previously determined rotation. The practice and special teachers are to familiarize the students with the methods used in each branch of study.

\* \* \*

III *German Language and Literature* — Third year (3 hours a week) — The most notable contemporaries of Goethe and Schiller in connection with their works and their time. Some of the noted modern poets in biographies and in connection with the reading of their works. The German folk song. Dramas *Wallenstein* and one drama of Shakespeare. Prose reading, preferably Herder's and Schiller's prose works. Home compositions once a month. Two compositions in class. Methods of teaching. One hour a week throughout the year.

IV *Foreign Languages* (A) French. First year (2 hours a week) — Review and completion of accidence, the position of words, the use of tenses. Reading. Simple stories in prose, easy poems. Second year (2 hours a week) — The uses of moods, infinitive and participles, declensions and words governing cases. Reading. Easy historic prose author of modern times, poems. Third year (2 hours a week) — Syntax completed and reviewed. Reading. Some historians of modern times, poems.

\* \* \*

VI *Mathematics* (A) Arithmetic and Algebra. First year (3 hours a week) — Powers and roots, logarithms, equations of the first degree with several unknown quantities. Second year (3 hours a week) — Equations of the second degree. Arithmetical and geometrical progressions. Compound interest, computing revenues, annuities, etc. Third year (1 hour a week for arithmetic, algebra, and geometry) — Methods of teaching arithmetic and geometry.

(B) Geometry. First year (2 hours a week) — Proportional-

ity of straight lines and similarity of figures. Stereometry. Second year (2 hours a week) — Continuation of stereometry, construction of algebraic formulae, trigonometric functions and computation of plane figures. Third year (1 hour a week) — See above.

At the end of the course the first teachers' examination is held at the normal school in the presence of a commissioner of the government, the regulations for which are as follows —

The standards of knowledge and ability which are to be required are defined by the course of study of the normal school. The written examinations include (1) an essay on a topic taken from the theory of education or method, history of education, or German literature, (2) and (3) the preparation of an essay in religion and one in history, (4) a translation from the foreign language into German, (5) the preparation of a chorale for those who have taken lessons in organ playing and harmony. For the first essay four hours, for the rest two hours are allowed. The oral examination deals with the positive knowledge in pedagogy, religion, German, history, and the foreign language, and methods of different subjects of the elementary school. Further, those students who showed at the promotion from the second to the third class an unsatisfactory knowledge in nature study and geography are also to be examined in these subjects. A model lesson must be presented.

Candidates prepared outside the normal schools must be examined in all the subjects of the curriculum.

The first examination, however, is not a qualification for appointment as teacher. Such qualification is only obtained by the second examination, which may be passed not less than two nor more than five years after the first. This is not a repetition of the first examination, but aims to discover the ability of the candidate to hold a school appointment. The examination consists of three parts: the written work, which consists in the preparation of an essay on an educational subject, this is followed by the presentation of a lesson on a topic assigned one day in advance, and the oral examination, which begins with pedagogy covering mainly the history of education, principles and method, and school management; the examination in method may include all the subjects of the elementary curriculum, but, as a rule, each candidate is only examined in three subjects. On passing this examination the candidate receives a certificate for permanent appointment as teacher in the elementary school.

Two further examinations may be taken by the teachers. The examination for teachers in middle schools qualifies for appointment in middle schools and girls' high schools. The examination for principals, which may only be taken after that for middle school teachers, qualifies for appointment as director or instructor in normal schools, district school inspector, director of preparatory institutions, middle schools, and elementary schools with six or more classes.

The examination for middle school teachers consists of pedagogy and two of the following subjects: religion, German, French, English, history, geography, mathematics, botany and zoology, physics and chemistry. A thesis, for which eight weeks are allowed, must be prepared by each candidate on a topic from one of his two subjects. Further, there is a written examination of four hours on the two subjects. The oral examination consists of the presentation of a lesson, and an examination in pedagogy and the two selected subjects.

The principal's examination covers only the field of education in its broader sense. A topic is assigned for a thesis, for which eight weeks are allowed, on the theory and method of education and school management. The oral examination covers the whole field of general theory and method, special method of the separate subjects, their history, school ordinances and school management, school apparatus, and aids for instruction, popular and children's literature, etc.

#### Continuation Schools (*Fortbildungsschulen*)

— These schools do not form a part of the school system proper, and differ from that in organization and aims. For further treatment see CONTINUATION SCHOOLS, EVENING SCHOOLS; and especially INDUSTRIAL EDUCATION.

**SECONDARY EDUCATION** — The school year is divided in the same way as the elementary schools. In Bavaria, however, the school year runs from the end of September to the beginning of July. School opens, as a rule, at 7 or 7 30 in summer, at 8 or 8 30 in winter, with five or six periods of forty-five to fifty minutes, occasionally there are some afternoon periods. In the smaller towns there are often four periods in the morning and one or two in the afternoon. The size of the schools is smaller than in America, the maximum, which is rarely reached, being probably 1000 pupils, 400 to 500 being the normal number, while schools with 150 pupils are rarely found.

The higher education of boys and girls is quite distinct, and the two have developed historically along different lines. In a few states (Baden, Hesse, Württemberg) the girls are admitted to the boys' schools, and the tendency to admit girls to boys' schools in small towns, where the numbers are not great enough to call for separate schools for girls, is gradually, but surely, making itself felt.

The boys' high schools are, as a rule, public, there being very few private schools. The entrance requirements are the successful passing of the third or fourth class in the elementary school. Frequently preparatory schools which do this work in three years are attached to the high schools; such schools (*Vorschulen*) in which fees are charged are preferred by the wealthier classes. Every high school is divided into six or nine classes or school years. In the larger institutions each class is duplicated, — the autumn class for those pupils who are promoted in October, and the Easter class for those who are promoted at Easter. In Baden promotions take place only once each year, in July, and the classes are then divided into parallel sections. The following are the names of the classes, their abbreviated form, and the age of entrance into each: —

Lower Stage	Sexta VI 9	Intermediate Stage	Untertertia U III 12
	Quinta V 10		Obertertia O III 13
	Quarta IV 11		Untersekunda U II 14
Upper Stage		Obersekunda	O II 15
		Unterprima	U I 16
		Oberprima	O I 17
		Abiturientenexamen	18

Thus VIO is the Easter group of Sexta; UIM the Michaelmas group of Unterprima. Parallel classes, as, for instance, VIO and VIO<sub>2</sub>, are found only in exceptional cases where the classes are too large. The three stages as a rule form one institution, although there are schools consisting of only the lower and middle stages. Every class is passed in a year, and it is very rarely that a pupil can accomplish the work of a class in half a year, nor is this encouraged. Those who do not reach the standard of a class, that is, are deficient in two major subjects, fail of promotion and repeat the work of that class for a whole year. Promotions are by classes and never by subjects, and are made on a pupil's standing for the whole year and on the opinion of the teacher, examinations for this purpose rarely take place. The marking is at present on the following basis: 1, very good; 2, good; 3, satisfactory; 4, deficient; 5, unsatisfactory. In a few states another mark, 3, good as a whole, is inserted between 2 and 3, and 6 becomes the lowest. Generally a pupil fails of promotion when he is deficient in two major subjects. The maximum size of a class is 50 in the lower, 40 in the intermediate, and 30 in the upper, stage. These numbers are frequently reached in the lower, rarely in the upper, stage. If more pupils enter a class, then a division into two parallel classes is made.

**Curriculum** — There are three types of higher schools with nine-year courses: the gymnasium, the oldest form, with the classical languages as the distinguishing characteristic, the realgymnasium, with Latin, modern languages and natural science, the oberrealschule, without Greek or Latin, but with the modern languages and stronger emphasis on mathematics. German, mathematics, history, and religion are common to all. The following timetables of the three kinds of schools in Prussia show the distribution of the subjects and the number of periods of recitations each week:

GYMNASIUM

	VI	V	IV	U III	O III	U II	O II	U I	O I	Total
Required										
Religion	3	2	2	2	2	2	2	2	2	19
German	4	3	3	2	2	3	3	3	3	26
Latin	8	8	8	8	8	7	7	7	7	68
Greek	—	—	—	6	6	6	6	6	6	36
French	—	—	4	2	2	3	3	3	3	20
History	—	—	2	2	2	2	3	3	3	17
Geography	2	2	2	1	1	1	3	3	3	9
Arithmetic and Mathematics	4	4	4	3	3	4	4	4	4	34
Natural science	2	2	2	2	2	2	2	2	2	18
Writing	2	2	—	—	—	—	—	—	—	4
Drawing	—	2	2	2	2	—	—	—	—	8
Gymnastics	3	3	3	3	3	3	3	3	3	27
Singing <sup>1</sup>	2	2	2	2	2	2	2	2	2	18
	30	30	34	35	35	35	35	35	35	304
Optional										
Drawing						2	2	2	2	
Hebrew							2	2	2	
English							2	2	2	

<sup>1</sup> From IV onward only for pupils with vocal ability.

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The brackets denote the possibility of a temporary alteration of number of periods within the same group of subjects. In classes IV and U III a special class is arranged for pupils whose handwriting is bad.

The following changes in the curriculum are admissible. In O II, U I, and O I, English may take the place of French, in which case French may remain an optional subject with two hours a week. In U III, O III, and O II, other subjects may be substituted for Greek; in which case three hours are given to English, and generally in U III and O III two hours to French, and one hour to arithmetic and mathematics, while in U II one hour is given to French and two to mathematics and natural science.

REALGYMNASIUM

	VI	V	IV	U III	O III	U II	O II	U I	O I	Total
Required										
Religion . .	3	2	2	2	2	2	2	2	2	19
German . . .	4	3	3	3	3	3	3	3	3	28
Latin . . . .	8	8	7	5	5	4	4	4	4	10
French . . . .	—	—	5	4	4	4	4	4	4	29
English . . .	—	—	—	3	3	3	3	3	3	18
History . . .	—	—	2	2	2	2	3	3	3	17
Geography . .	2	2	2	2	2	1	—	—	—	11
Arithmetic and Mathematics	4	4	4	4	5	5	5	5	5	42
Natural science	2	2	2	2	2	4	5	5	5	29
Writing . . .	2	2	—	—	—	—	—	—	—	4
Drawing . . .	—	2	2	2	2	2	2	2	2	16
Singing <sup>1</sup> . . .	2	2	2	2	2	2	2	2	2	18
Optional	30	30	34	35	35	35	36	36	36	307
Geometrical drawing					2	2	2	2	2	

<sup>1</sup> As in the Gymnasium

OBERREALSCHULE

	VI	V	IV	U III	O III	U II	O II	U I	O I	Total
Required										
Religion . .	3	2	2	2	2	2	2	2	2	19
German . . .	5	4	4	3	3	3	4	4	4	34
French . . . .	6	6	6	6	6	5	4	4	4	47
English . . .	—	—	—	5	4	4	4	4	4	25
History . . .	—	—	3	2	2	2	3	3	3	18
Geography . .	2	2	2	2	2	1	1	1	1	14
Arithmetic and Mathematics	5	5	6	6	5	5	5	5	5	47
Natural science	2	2	2	2	4	6	6	6	6	36
Writing . . .	2	2	2	—	—	—	—	—	—	6
Freehand drawing	—	2	2	2	2	2	2	2	2	16
Gymnastics . .	3	3	3	3	3	3	3	3	3	27
Singing <sup>1</sup> . . .	2	2	2	2	2	2	2	2	2	18
Optional	30	30	34	35	35	35	36	36	36	307
Geometrical drawing						2	2	2	2	

<sup>1</sup> As in the Gymnasium

The extent of the knowledge which is to be transmitted will be indicated through the scope of the curriculum of the highest class in a few of the chief subjects and through the requirements of the final examination (Based on Lexis, Vol. II)

VOL. III — G

*Greek Subjects in Gymnasium* — Reading: Homer's *Iliad*, Sophocles, Euripides, Plato, selections from Thucydides, and Demosthenes, other prose valuable for content, appropriate selections of Greek lyric poetry. Grammar, revision, and recapitulations of the whole subject, as found necessary. Practice in unseen translation. Written translations from and into Greek.

*Latin in the Gymnasium* — Reading, 5 hours. Cicero (e.g. *in Verrem* IV or V, *pro Plancio*, *pro Sexto*, all with omissions, *pro Murena*, selections from Cicero's philosophical and rhetorical writings, also from his letters, Tacitus' *Germania* (at least till Chap. 27), also *Agricola*, or parts of the *Dialogue*, selections from the *Annales* (especially the sections referring to Germany) and from the *Histories*, selections from Horace, memorization of some of the *Odes*. Occasionally, unseen translation. Private reading, especially also of writers read in previous classes, is to be encouraged and fostered, but is not required as obligatory. Grammar, 2 hours. Revision with special attention to the more important and difficult syntactical rules, recapitulating explanations of specially prominent stylistic peculiarities. Translation into Latin, written class and home exercises.

The requirements in Latin in the realgymnasium are somewhat lower.

*French in the Realgymnasium* — The reading, which, as in the gymnasium, occupies a central position, is treated more extensively and intensively than in the latter, so that the pupils may acquire a broader notion of the special qualities of French literature in the last centuries, as well as some knowledge of the national culture and character. Revision and completion of the more important sections of the grammar. An outline of the laws of versification. The essentials of synonymy and of the laws of style. Extension of the vocabulary, including also technical and scientific terms. Written and oral exercises. Exercise in essay writing, from frequent brief production of what has been read, up to a freer treatment of definite concrete subjects. Conversational exercises at every lesson, not merely in connection with the reading and incidents of daily life, but also on the history, literature, and culture of the French nation.

*French in the Oberrealschule* — In these schools the teaching aims at imparting a knowledge of the more important French writings of the last three centuries, insight into the grammatical system of the language, some knowledge of the most important sections of French literary and social history, and practice in speaking and writing.

The scope in English is similar, although essays are not required in this language. The scope of these subjects is correspondingly smaller in the gymnasium.

*Arithmetic in the Realgymnasium and Oberrealschule* — Theory of combinations, and application to the theory of probability. The binomial theorem for any exponents, and the simplest infinite series. Repetition and continuation of the arithmetical course (extension of the notion of numbers by algebraical operations, from the positive integral to the complex number). Cubic equations. Elementary exercises in maxima and minima. Spherical trigonometry with application to mathematical geography and astronomy.

*Geometry* — Elements of descriptive geometry. The most important problems in some sections in elementary-synthetic treatment. Analytical plane geometry. Revision, recapitulation, and exercises in all branches of the subject taught in previous classes.

*Methods of Teaching* — No account can here be given of the methods of instruction in the German schools; an insight into them can only be obtained by a visit to the schools and by a study of the textbooks. General regulations on method are found only to a small extent; like the choice of textbooks, the method of teaching is left to the individual schools. Since school inspection, which might serve to secure uniformity, is very slight in higher education, the variety found in teaching is exceedingly great, and a somewhat firmer restriction placed on the individual teacher would at times not be out of place. A certain amount of uniformity is secured within each institution through the use of the same textbook by different teachers, and in the system itself through the prescription of definite aims whose attainment is assured by means of the final examination, at which an inspector is frequently present.

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Progymnasiums and realprogymnasiums, which are not very numerous, and the very numerous real schools have each the same curriculum, differing only in that they lack the three, occasionally (especially in Baden) the two, highest classes. Only the Berlin real schools have a somewhat different curriculum for purposes of better articulation with the common schools. French is here begun in Quarta, and more attention is given in the lower stage to arithmetic and mathematics.

**Reform Schools** -- From the accompanying table it can be seen that the transition from the gymnasium to the realgymnasium is quite possible in the first three years, but a change from the oberrealschule and the realschule to the gymnasium or realgymnasium or vice versa is entirely impossible. Hence parents must decide quite early, when their children are nine or ten years of age, on the type of school to which they are to be sent. The feeling that it would be better to postpone a decision which is irrevocable has led to the organization of the reformgymnasium and realgymnasium. A common foundation is laid for the three types of high schools, for which purpose the lower stage of the real school or oberrealschule is employed. At the end of three years there is a bifurcation; one section begins English and continues later with a stronger emphasis on natural sciences (realschule and oberrealschule), the other begins Latin, and after two years is again split up, the one division (gymnasium) beginning Greek, the other (realgymnasium) English. This is the Frankfort system, from which that of Altona deviates somewhat. According to this system either separate institutions may be established for the three types of schools, gymnasium, realgymnasium, realschule,

or oberrealschule, or two or three different types may be united into one institution. The following is the time-table of an institution consisting of a reformgymnasium and realgymnasium (the Leibnitz School at Hanover, where also a special method is employed in teaching Greek, the pupils beginning with the Homeric dialect and poems in U II, and going on to the Attic dialect in O II): --

The following scheme shows a combination of the realgymnasium with the real school according to the Altona system: --

TIME-TABLE OF THE REALGYMNASIUM AND REALSCHULE IN ALTONA

	FOUNDA-TION			REAL-SCHULE			REAL-GYMNASIUM						TOTAL FOR FOUNDATION AND REAL-GYMNASIUM
	VI	V	IV	III	II	I							
Required													
Religion	3	2	2	2	2	2	2	2	2	2	2	2	19
German	5	4	4	3	3	3	2	2	3	3	3	3	29
Latin	—	—	—	—	—	—	6	6	6	6	6	6	36
French	6	6	5	6	5	5	4	4	3	3	3	3	37
English	—	—	4	5	4	5	3	3	3	3	3	3	22
History	—	—	2	2	2	2	2	2	2	2	3	3	17
Geography	2	2	2	2	1	2	1	1	—	—	—	—	10
Arithmetic	—	—	3	2	1	1	—	—	—	—	—	—	44
Mathematics	5	5	3	4	5	5	4	4	5	4	5	5	11
Physics	—	—	—	—	—	—	2	3	2	2	3	2	6
Chemistry	—	—	—	—	—	—	—	—	—	—	—	—	12
Nature study	2	2	2	2	2	—	2	2	2	—	—	—	4
Writing	—	—	—	—	—	—	—	—	—	—	—	—	16
Drawing	—	2	2	2	2	2	2	2	2	2	2	2	27
Gymnastics	3	3	3	3	3	3	3	3	3	3	3	3	25
Singing	2	2	—	—	—	—	3	Choral Singing	—	—	—	—	315
	30	30	35	36	36	37	36	36	37	37	37	37	
Optional													
Geometrical drawing	—	—	—	—	2	2	—	2	2	2	2	2	2
Spanish	—	—	—	—	—	—	—	—	—	—	—	—	—

TIME-TABLE OF THE LEIBNITZ SCHOOL IN HANOVER GYMNASIUM AND REALGYMNASIUM WITH A COMMON FOUNDATION

	FOUNDATION					REAL GYMNASIUM					GYMNASIUM				
	VI	V	IV	III	O II	U II	O II	U I	O I	Total	U II	O II	U I	O I	Total
Required															
Religion	3	2	2	2	2	2	2	2	2	19	2	2	2	2	19
German	5	4	4	3	3	3	3	3	3	31	3	3	3	3	31
Latin	—	—	—	10	10	5	5	5	5	40	8	8	8	8	51
Greek	—	—	—	—	—	—	—	—	—	—	8	8	8	8	32
French	6	6	6	3	3	4	4	3	4	39	2	2	2	2	32
English	—	—	—	2	2	6	4	4	3	17	—	—	—	—	—
History	2	2	3	2	2	2	3	3	3	30	2	2	2	3	27
Geography	2	2	3	2	2	1	—	—	—	—	—	—	—	—	—
Arithmetic	5	5	5	4	4	4	5	5	5	42	3	3	3	3	35
Mathematics	—	—	—	—	—	—	—	—	—	11	—	—	—	—	11
Physics	2	2	3	2	2	3	2	3	3	11	2	2	2	2	8
Chemistry	—	—	—	—	—	—	2	2	2	6	—	—	—	—	—
Nature study	2	2	—	—	—	—	—	—	—	4	—	—	—	—	4
Writing	—	—	—	—	—	—	—	—	—	16	—	—	—	—	16
Drawing	2	2	2	2	2	2	2	2	2	16	2	2	2	2	18
Singing	2	2	2	2	2	2	2	2	2	16	2	2	2	2	18
Gymnastics	3	3	3	3	3	3	3	3	3	27	3	3	3	3	27
	30	30	33	35	35	37	37	37	37	311	35	35	35	35	303
Optional															
Hebrew	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
English	—	—	—	—	—	—	—	—	—	—	—	—	2	2	2
Geometrical drawing	—	—	—	—	2	2	2	2	2	—	—	2	2	2	2

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The aim and, as a rule, the methods of the reform schools are the same as in the corresponding schools of the old type. They are thus by no means new schools, but merely differ in postponing certain subjects in favor of others. Two principles are, however, adopted, new to the traditional German schools which had and still have a fixed course: these are the principles of a common foundation and of bifurcation. Two important changes are thereby effected; first the decision on the choice of an educational course is postponed for several years, and secondly more types of courses can be offered in the same institution and under the same direction. These principles find even wider application in the reform of girls' schools and middle schools. They indicate that the German educational system is gradually abandoning the principle of a fixed curriculum and is accepting the principle of election, — a movement of the highest significance. The Frankfort Plan was originated by Dr Reinhardt, now at Berlin.

The tables in the next column show schematically the relations between, and the articulation of, the three types of higher schools in the old and reform system.

**Leaving Examination (Abiturientenprüfung)** — The requirements correspond to the program of instruction of Prima. The written examination comprises, for all the schools, a German essay and the working of four mathematical questions, each dealing with a different branch, further. (a) In the gymnasium, a translation from German into Latin, and another from Greek into German. (b) In the realgymnasium: a translation from Latin into German; according to the curriculum of each separate institution, a French or an English exercise, viz, either an essay or a translation from German; and a question in physics. (c) In the oberrealschule, a French and an English exercise, an essay in one of these two languages and a translation from German into the other language, and a question in physics or in chemistry.

The oral examination comprises, for all the schools, Christian religious teaching, history, mathematics, and further: (a) in the gymnasium: Latin, Greek, and according to the curriculum of each separate institution, either French or English; (b) for the realgymnasium: Latin, French, and English, and physics or chemistry; (c) for the oberrealschule: French and English, and physics or chemistry.

**Statistical.** — The tables on page 84 will give some information on the number of the different schools, the number of teachers, of pupils, etc.; material of a more exhaustive and detailed character is not available.

**Privileges** — Two kinds of *Berechtigungen*, or of certificates that entitle the holder to certain important privileges, can be acquired in the higher schools: the certificate of admission for the one year volunteer service in the army,

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A ACCORDING TO THE OLD SYSTEM, THE CRITICAL POINTS BEING AT THE AGES OF 9 AND 11, AS A RULE EACH TYPE BEING A SEPARATE INSTITUTION

	GYMNASIUM	REALGYMNASIUM	OBERREALSCHULE	AGE AT ENTRANCE
Upper Stage (3 years)	O I	O I	O I	17
(Privilege of one year volunteer military service)	U I	U I	U I	16
	O II	O II	O II	15
	U II	U II Science begun	U II	14
Middle Stage (3 years)	O III	O III	O III Science begun	13
	U III Greek begun	U III	U III	12
		IV French begun	IV	11
Lower Stage (3 years)		V	V	10
		VI Latin begun	VI French begun	9
Preparatory school or Public elementary school				(3 years) or (about 4 years)

B ACCORDING TO THE REFORM SYSTEM, THE CRITICAL POINTS BEING AT THE AGES OF 11 AND 13, TWO OR EVEN THREE TYPES FORMING ONE INSTITUTION

	GYMNASIUM	REALGYMNASIUM	OBERREALSCHULE	AGE AT ENTRANCE
Upper Stage (3 years)	O I	O I	O I	17
(Privilege of one year volunteer military service)	U I	U I	U I	16
	O II	O II	O III	15
	U II Greek begun	U II English begun	U II	14
Middle Stage (2 years)	O III		O III	13
	U III Latin begun		U III English begun	12
		IV		11
Lower Stage (3 years)		V		10
		VI French begun		9

The age at graduation in both systems is 18 or 19

*Einhjährigenschein*, and the certificate of maturity for higher professional studies, *Reifeprüfungszeugnis* or *Zeugnis der Reife für höhere Berufsstudien*.

a The *Einhjährigenschein* is obtained in the schools with a course of six years or classes (realschulen, etc.) by the final examination at the end of the course, in the schools with a course of nine years (the three preparatory years not counted in either case) or classes without an examination by the promotion from

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PRUSSIAN HIGHER SCHOOLS ON FEB. 1, 1909<sup>1</sup>

TYPE OF SCHOOL	Number of Schools	NUMBER OF TEACHERS				NUMBER OF PUPILS									
		Directors and Chief Assistants	Special and Elementary Teachers	Probation Teachers		O I	U I	O II	U II	O III	U III	IV	V	VI	TOTAL
Gymnasium	336	4848	613	385		6068	7116	8724	11,461	12,486	13,215	14,560	14,020	14,646	102,297
Progymnasium	35	1851	37	20					510	576	740	828	838	905	4,497
Realgymnasium	138	1632	305	103		1338	1830	2748	4,360	5,050	5,853	6,417	6,577	7,029	41,202
Realprogymnasium	45	195	56	10					346	567	736	946	1,040	1,243	4,878
Oberrealschule	85	1212	259	96		898	1276	2144	3,504	4,286	4,823	5,614	5,976	6,214	34,735
Realschule	169	911	300	95					3,504	4,654	5,817	6,127	6,246	6,912	33,350

<sup>1</sup> From *Centralblatt, etc., Ergänzungsheft*, 1910, p. 50PRUSSIAN HIGHER SCHOOLS ON FEB 1, 1908 (A) AND 1909 (B)<sup>1</sup>

	GYMNASIUM		REAL-GYMNASIUM		OBER-REALSCHULE		PRO-GYMNASIUM		REALPRO-GYMNASIUM		REALSCHULE		TOTAL	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Schools (including reform schools)	332	336	124	138	75	85	40	35	39	45	171	169	781	808
Teachers	6,262	6,388	2,029	2,243	1,526	1,716	318	287	250	312	1,540	1,501	11,925	12,447
Teachers in preparatory schools	353	356	180	199	137	155	3	1	26	35	138	126	837	872
Pupils	101,094	102,297	37,683	41,202	30,702	34,735	4946	4497	4225	4878	33,465	33,350	212,115	220,959
Pupils in preparatory schools	13,006	13,309	6,905	7,424	4,924	5,644	98	39	889	1177	5,009	4,898	30,831	32,441

## OTHER STATES

Bavaria (1909)	46	4	9	32	—	51	141
Württemberg (1909)	14	5	10	5	7	88 <sup>1</sup>	129
Saxony	19	12	2	—	—	30	

<sup>1</sup> From *Centralblatt, etc.*, 1909<sup>2</sup> Twenty-one of these schools have one or two upper classes (obersekunda and unterprima)

untersekunda to obersekunda, which takes place after successfully completing the first six years or classes of the whole course (of nine years). The most important privilege acquired by this certificate is the right of serving only one year in the army, whereas otherwise every German has to serve at least two years. The service is voluntary (*Einhjährig Freiwilliger*) in so far as the time of service and the regiment may, within certain limits, be selected by the individual holding the privilege. This is of course of economic importance, but besides it means a social distinction, especially as the officers of the reserve, a much-coveted dignity, are taken from the *Einhährige* only. At the same time this certificate will show that the bearer possesses a certain amount of knowledge and intellectual training, and so a publicly and officially recognized standard of education is established by it which easily can and actually does serve as the entrance requirement for many official and private careers. So this certificate is the indispensable entrance requirement for the intermediate careers (as official or clerk) in the post office, telegraph and tele-

phone service, in the service of the judicial, the provincial, and the local administration, and the state railway service (the higher careers being always filled by university-trained men, the lower ones with men who have had an elementary school training). In this respect the *Einhährigenschein* takes the place of the civil service examination in America. Large business houses and especially banks generally do not take apprentices who have not at least this certificate, sometimes they require even more. The natural result is that a large number of boys remain at school only for the purpose of getting this certificate and leave as soon as they obtain it (see the figures under U II and O II in table above).

b The *Reifeprüfung* is the examination at the end of the full course of nine years of the three different types. It gives the right of admission to the careers of officer in the army and navy, and above all the right of admission to the universities and technical *Hochschulen*, that is, ultimately to the state examinations at the end of the university or technical course. So the *Reifeprüfung* is nearly the only entrance



to all higher walks of life, and certainly to all higher positions of honor and trust in the service of the state; and the social recognition in which it is held is correspondingly high.

The criticism which is sometimes made by foreign observers of the system of privileges shows a failure to realize the function and the importance of this system. It certainly has drawbacks; it is a heavy burden on the boys and on their parents; it keeps many boys in school who ought not to be there any longer, and is therefore a burden on the school. But infinitely greater are its advantages for the life of the nation as well as for the work of the school. By this system definite educational standards are secured throughout the nation, in a reliable way it provides young men with a broad knowledge and thorough intellectual training for the higher as well as for the middle careers in life, it relieves the higher institutions of the burden of elementary work and lays a good foundation for their own work. It puts the examinations where they belong, — at the beginning and not at the end of the course; and though it sifts thoroughly, it avoids the tremendous waste of entrance examinations; it does not place the examinations in the hands of persons who have never seen the boy, but leaves him to his teachers, who have known and worked with him for years; and the boy is not judged by the written work of a few hours, but by the oral and written

work of a year and by his whole personality. The system secures the willing, though not always the hearty, cooperation of the parents. Last, but not least, it exercises an automatic pressure on the boy, which causes him to work, — a pressure which otherwise the teacher would have to exercise by his personal efforts. Thus the school system becomes more efficient. It would be difficult to devise another system which could bring about these same results as economically and as thoroughly. Far from being the "bane of German secondary education," the system of privileges — *Eingängigkeit, Reifeprüfung, Staatsexamen* — is, therefore, the most important reason for the efficiency and thoroughness of the German schools, more important than even the preparation of teachers, which is partly secured only with the help of this system.

The externs, *Extraner*, those who prepared outside of the schools, are not counted in this list. In 1907-1908 at the gymnasiums 368 externs registered, for the examination of whom 253 were admitted and 150 passed; 88 of them were 21 years of age and over, and 85 entered a university. At the realgymnasiums the corresponding figures were, 205, 162, 123, 73, 61, and at the oberrealschulen, 186, 97, 67, —, 23.

**Cadet Schools.** — These schools are to be found in Prussia, Bavaria, and Saxony. They provide for the general training of future officers in the army and are generally boarding schools, with the curriculum of the realgymnasium combined with military practice. In Prussia there are eight preparatory institutions with lower classes (*Sexta* to *Obertertia*) only, and one central institution with the upper classes (*Untersecunda* to *Oberprima*), which is at Berlin-Grosslichterfelde. This horizontal division into lower and upper sections is a special feature of the cadet schools, distinguishing them from the other higher schools. In 1893 in Prussia the number of pupils in the preparatory institutions was 2470, in the central institution 1000. Many officers come also from the regular higher schools, with or without the *Reifezeugnis*. (See MILITARY EDUCATION.)

**Higher Education of Girls.** — For a long time the higher education of girls was not so well cared for as that of the boys, and at times it was almost neglected. But in recent years a strong reform movement has thoroughly reorganized these schools and placed them on a much higher level. Whereas most of them were formerly in private hands and were money-making institutions, a rapidly growing percentage is now supported by the communities; the state, at least the state of Prussia, supports only very few (see p. 74). As to promotion, division of school year, etc., see the general remarks on the higher schools for boys. The classes are generally named 10th class, 9th class, etc., the 1st class being the highest.

RESULTS OF THE REIFEPRUFUNG IN PRUSSIA.  
EASTER, 1907-1908<sup>1</sup>

	AT THE GYMNASIUMS		AT THE REAL- GYMNASIUMS		AT THE OBER- REAL- SCHULEN	
	Michaelmas	Easter	Michaelmas	Easter	Michaelmas	Easter
Number registered for the examination .	1907	1908	1907	1908	1907	1908
	1120	5133	239	1053	117	745
Number not admitted or withdrawn .	412		79		60	
Number examined .	5841		1213		862	
Number passed .	5622		1183		779	
Of those successful there were						
Protestants .	3397		971		648	
Catholics .	1862		131		97	
Jews .	357		77		27	
Number under 18 years of age .	278		48		27	
18 years old .	1497		356		206	
19 years old .	1698		412		268	
20 years old .	1127		220		186	
21 years and over .	1022		147		92	
Number of successful candidates						
who went to the universities .	4042		632		353	
To the technical high schools .	487		204		164	
Entered military career .	340		58		22	
Entered higher forestry, customs, postal and other state service .	151		42		36	
Other occupations and undecided .	593		247		204	

<sup>1</sup> From *Centralblatt*, etc., 1908.

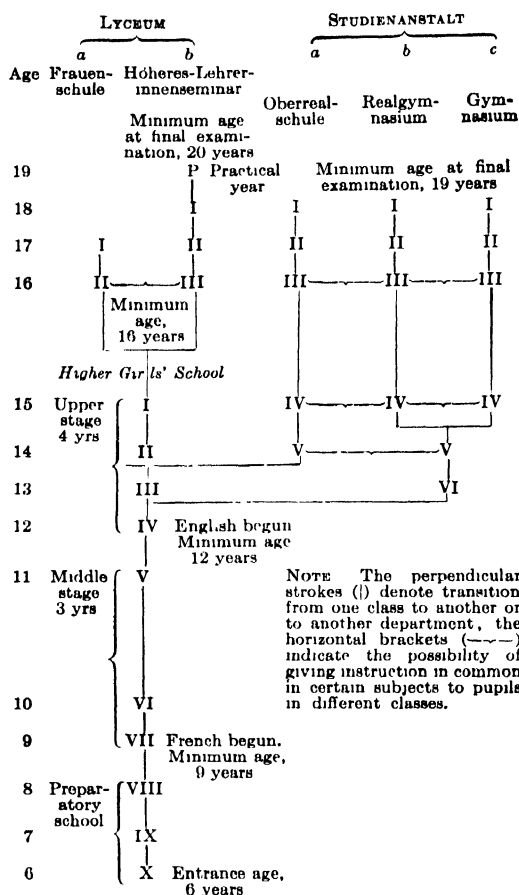
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**Organization and Curricula** -- There are separate higher schools for girls in all the states of the empire. Their curriculum, with the exception of mathematics and science, is not widely different from that of the realschulen, and, though frequently one year longer (10 years or 7 without the 3 years of the preparatory school), it is not quite so broad and the teaching not so thorough (partly on account of the absence of privileges, *Berechtigungen*) Those girls who desire to get an education equal to that of the boys or who wish to pass the *Reifeprüfung* are, in some of the smaller German states, either admitted to the boys' schools (as in Baden or Saxony), or to *Mädchen-gymnasien* or *real-gymnasien*, which are in no way different from the corresponding schools for boys in Baden. In Prussia, according to the regulations of 1908, the girls are not admitted to the boys' schools, and the new higher girls' schools are different from the boys' schools. As these regulations of 1908 will be the starting point for a new development and will be more or less adopted by other German states, their most important features must be given here.

In Prussia the higher girls' school proper contains a course of 10 years (or 7 without the 3 years of the preparatory school), which is nearly equal to the 9 (or 6 respectively) years of the realschule. On this course two others are built, both comprised under the name of *Lyceum*: one of two years, to be known as *Frauenschule*, a very undefined course; the other, one of four years, called *höheres Lehrerinnenseminar* (training college for women teachers at the higher girls' schools proper). After the seventh and eighth year of the higher girls' school proper three other courses branch off which lead to the different kinds of *Reifeprüfung*. These courses are known as *Studienanstalt*. The provision of adequate facilities for preparation, corresponding to the education of the gymnasium, will lead to the admission of women to the universities as fully recognized students, and has already led to new regulations, to take effect in 1913, of demanding university study from teachers in the higher girls' schools. (See Prettyman, C. W., *Higher Girls' Schools in Prussia Teachers College Rec.*, May, 1911.) The influence of the Reform Schools and the principles therein expressed, a common foundation and bifurcation, will be easily recognized.

The following tables show the system, the articulation of its parts, and the different curricula:—



NOTE The perpendicular strokes (|) denote transition from one class to another or to another department, the horizontal brackets (---) indicate the possibility of giving instruction in common in certain subjects to pupils in different classes.

## COURSE OF STUDY OF THE HIGHER GIRLS' SCHOOL PROPER

### a. Literary and Scientific Subjects

	LOWER STAGE			MIDDLE STAGE			UPPER STAGE				TOTAL
	X	IX	VIII	VII	VI	V	IV	III	II	I	
1. Religion	3	3	3	3	3	3	2	2	2	2	17
2. German	10	9	8	6	5	5	4	4	4	4	32
3. French	—	—	—	6	5	5	4	4	4	4	32
4. English	—	—	—	—	—	—	4	4	4	4	16
5. History and Art	—	—	—	—	2	2	2	2	2	3	13
6. Geography	—	—	2	2	2	2	2	2	2	2	14
7. Arithmetic and Mathematics	3	3	3	3	3	3	3	3	3	3	21
8. Natural Science	—	—	—	2	2	2	3	3	3	2	17
Total	16	15	16	22	22	22	24	24	24	24	162

### b. Technical Subjects

	—	3	2	1	1	1	—	—	—	3
9. Writing	—	3	2	1	1	1	—	—	—	3
10. Drawing	1	1	1	2	2	2	2	2	2	14
11. Needlework	—	2	2	2	2	2	2	2	2	6 (14)
12. Singing	—	—	2	2	2	2	2	2	2	14
13. Gymnastics	—	—	2	2	2	2	3	3	3	18
Total	2	7	6	9	9	9	7 (9)	7 (9)	7 (9)	55 (63)

<sup>1</sup> In the classes X-VIII occasional drawing and clay modeling during the object lessons in German

<sup>2</sup> Needlework is optional in the upper classes

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## COURSE OF STUDY OF THE LACEUM

### A. *Frauenschule*

	II	I	Total
1 Pedagogy	2	2	4
2 Household Arts	5	5	10
3 Kindergarten-teaching <sup>1</sup>	4	4	8
4 Hygiene and care of children	4	4	8
5 Civics and economics	2	2	4
6 Bookkeeping (household)	1	1	2
7 Needlework	2	2	4
8 Religion			
9 German			
10 French, English, Latin, or Italian			
11 History, Geography, Science			
12 History of Art			
13 Gymnastics			
14 Drawing and painting			
15 Music			

<sup>1</sup> Household arts and kindergarten teaching may be so arranged that in the first year only the former, in the second only the latter, are taken with 9 hours per week

### B Training College for Teachers (*Höheres Lehrervinnenseminar*)

Academic Subjects	ACADEMIC CONTINUATION CLASSES				PRACTICAL YEAR
	III	II	I	Total	
Religion	3	3	3	9	1 <sup>2</sup>
German	3	3	3	9	3
French	4	4	4	12	1 <sup>2</sup>
English	4	4	4	12	
History	2	2	2	6	1 <sup>2</sup>
Geography	2	1	1	4	
Mathematics	4	4	4	12	1 <sup>2</sup>
Natural Science	2	3	3	8	1 <sup>2</sup>
Pedagogy	2	2	2	6	3
Method and Model Lessons			(4) <sup>1</sup>		4
Practice Teaching					4-6
Reports and Discussions					8
	26	26	26	78	26 (25-27)
Technical Subjects					
Drawing	2	2	1	5	—
Singing	1	1	1	3	—
Gymnastics	3	3	1	9	3

<sup>1</sup> Method and model lessons in Class I are included in the periods given to each subject and are given in place of the respective subjects rather than as separate courses

<sup>2</sup> Method and introduction to professional literature

<sup>3</sup> Method and introduction to experimentation

The curriculum of the *Studienanstalten* is almost the same as those of the corresponding boys' schools, but as the whole course lasts

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thirteen years (instead of twelve as in the boys' schools), the number of recitations per week is a little less. Those who have completed the course of any of the *Studienanstalten* may enter the highest class, practical year, of the Seminar.

The higher girls' school proper and the *Frauenschule* have no privileges, the *Reifeprüfung* at the end of the *Studienanstalten* grants the same privileges as that of the gymnasium, etc. As at present there are only about 35 *Studienanstalten* in Prussia, and as the girls are not admitted to boys' schools, many girls who desire a higher education can get it only with difficulty, especially in the smaller towns. Financial or other statistics in suitable form are not available, as the whole system of girls' schools is in a rapid process of reorganization and readjustment, it would in any case be useless to quote statistics.

## Training of Teachers for the Higher Schools

— The teachers in boys' schools are men, most of them with university training, in the girls' schools there are partly men and partly women teachers, most of the women being trained in the training colleges mentioned above, though an increasing number of women are receiving the same university training as the *Oberlehrer*. Admission to the profession of teaching in all the states is dependent on the passing of a special examination for teachers in higher schools, e.g. in Prussia (*Prüfung für das Lehramt an höheren Schulen*), held by special examining boards and independent of the universities, and also a course of practical preparation of from one to two years. A university degree is not a qualification for a teaching appointment, although professors of the universities are frequently members of the examining boards.

*The Examination in Prussia* — To be admitted to the examination a candidate must hold a certificate of graduation from a German higher school and must have studied for at least six semesters at a German university. As a rule the period of study lasts from four to five years or more. The examination consists of two parts, general and special, and both are written and oral. The subjects of the general examination are the same for all candidates and include: philosophy (the most important facts of its history, the chief principles in logic and psychology, the knowledge of an important philosophical work), pedagogy (the philosophical principles underlying the most important facts of its history since the sixteenth century), German literature (general development from the eighteenth century, the knowledge of a few important works), religion (content and coherence of the Bible, general outline of the history of the Christian church, the principal doctrines of the denomination of the candidate). In the special examination there must be one of the following combinations: Latin and Greek, French and English or Latin, history and geography, religion and Hebrew, Greek,

or German, pure mathematics and physics; chemistry, including mineralogy, and physics, or, in place of physics, botany and zoology. Other possible subjects are applied mathematics, and, occasionally, Danish and Polish. In the first three combinations German may take the place of any one subject. The requirements in any of the subjects mentioned, except Hebrew, are divided into two stages: the second grade covers the lower and middle classes including *untersecunda* (minor subjects); the other, the first, includes also the upper classes (major). A candidate is successful when he satisfies in the general examination, and passes in at least one major (first grade, *Lehrbefähigung für die erste Stufe*) and two minor subjects. A large number of subjects may, however, be selected by the candidate, as, for instance, two major and one or two minors. The examination is conducted as follows. The candidate must in the written examination prepare privately two essays, one for the general and the other for the special examination. The wishes of the candidates are considered so far as possible. Sixteen weeks are allowed for the preparation of these essays, although an extension of sixteen more weeks may easily be obtained. A doctor's dissertation or some other printed work may be accepted in place of one of the two essays. A further written test of at most three hours' duration may be imposed, and is in any case required in modern languages. This is followed by the oral examination which lasts about an hour for each major subject and half an hour for each minor, although these periods are nowhere prescribed definitely. Reexamination, extension and supplementary examinations are permitted, but not more than twice for each one of these.

The following requirements of the Prussian Examination Ordinance in a few important subjects are added to indicate the scope of knowledge expected —

*Latin and Greek* — (a) Second grade. A sound knowledge of Greek and Latin grammar, ability in the written use of both languages so far as to translate suitable passages with grammatical correctness and, in Latin at any rate, without any striking defects of style, ability, on the basis of systematic and thorough reading of the classics, to understand, and, omitting passages of special difficulty, to translate readily, selections from works suitable for *sekunda* in the gymnasium. Candidates must possess such a knowledge of Greek and Roman history, including the history of literature and antiquities, mythology and prosody, as to give the necessary explanation on these points of authors to be read in the middle stage, and to be able to employ intelligently good reference works in the preparation of lessons.

For the first grade the additional requirements are a thorough scientific knowledge of grammar, readiness in the written use of Latin, grammatical correctness in the written use of Greek, and ability to speak Latin, wide reading knowledge of the Greek and Roman classics, especially such as serve to enrich the lessons in the gymnasium, and scientific training in the method of explanations, acquaintance with prosody, so far as it bears on the poets to be read in the gymnasium, and practice in appropriate rendering of verse, a knowledge of the general literary development, particularly the best periods, sufficient acquaintance to guarantee further systematic study of the principal periods in Greek and Roman history, political institutions, private life, religion and mythology, and philosophy of the Greeks and Romans, a knowledge of archaeology so far as necessary for effective illustration of lessons by intelligent employment of an appropriate selection of objects. The candidates must also

give evidence of a knowledge in outline of the development of philology.

*English* — After giving evidence of a knowledge of elementary Latin grammar and ability to understand and to translate at least easy passages in the school authors, such as Cæsar, the requirements in this subject are (a) for the second grade. A knowledge of the elements of phonetics, correctness and thorough familiarity in pronunciation, a knowledge of accent and syntax, and elementary synonymy, the possession of a broad vocabulary and knowledge of idiom, and some ability in oral use of the language, a knowledge in outline of the development from the time of Shakespeare of English literature, in which the works of the most important writers in prose and verse must be read, readiness in correct translation of the usual authors into German and in free, written composition in the foreign language without serious errors of expression and style. (The requirements in French are very similar.)

(b) For the first grade. In the written and oral use of the language there is expected not only complete grammatical correctness based on a scientific study of grammar, but a thorough acquaintance with the vocabulary and the peculiarities of idiom, together with a satisfactory ability to employ them for purposes of instruction, a knowledge in outline of the development of the language from the Old English period, and the general development of literature together with a detailed study of the more important works in the past and present, familiarity with the rules of English prosody in the early and modern periods, acquaintance with the history of England so far as necessary for the material explanation of the common school authors. Where the knowledge of the historical development of the language is not so detailed a very able and thorough knowledge of modern literature and an excellent command of the modern language may be accepted as an equivalent.

*Pure Mathematics* — (a) For the second grade. A sound knowledge of elementary mathematics and acquaintance with analytical plane geometry, especially with the chief qualities of conic sections and the principles of differential and integral calculus. (b) For the first grade. Such a familiarity with the principles of higher geometry, arithmetic, algebra, higher analysis, and analytical mechanics, that the candidate can solve a not too difficult problem out of this field.

*Physics* — (a) For the second grade. A knowledge of the most important principles and laws out of the whole held of this science, and ability to prove these laws mathematically, so far as possible without the application of higher mathematics, an acquaintance with the instruments necessary for school instruction and practice in using them. (b) For the first grade. A more detailed knowledge of experimental physics, and its applications, acquaintance with the fundamental investigations in one of the more important branches of theoretical physics, and a general view of the whole field.

The requirements described are those of Prussia, and they are similar in other states with noteworthy differences in Bavaria and Württemberg. In both these countries every candidate has to pass two examinations at an interval of two or more years, and the preparatory work to be done at the university is more strictly prescribed, while the oral and written examinations are conducted differently (see Morsch). Only the following states have agreed to mutually recognize their respective examination certificates, Prussia, Saxony, and the smaller Saxon states, Mecklenburg-Schwerin, Brunswick, Alsace-Lorraine, and some of the smallest states which have no examining boards of their own.

*Practical Preparation* — The certificate of success in the written examination does not qualify for the appointment of teacher. Such qualification is obtained only by practical training of one, but generally two years. This consists, according to the Prussian regulations, of a Seminar year and a probationary year.

*A The Seminarjahr* — During this year candidates must become acquainted with the theory and principles of education in their application to the higher schools and with the method of individual subjects of instruction, and must be introduced to practical work as teacher and educator. For this purpose they

## EDUCATION IN GERMAN STATES

## I ELEMENTARY

	POPULATION IN 1905	CENTRAL ADMINISTRATIVE AUTHORITY	LOCAL ADMINISTRATION	ELEMENTARY SCHOOL ATTENDANCE	CONTINUATION SCHOOL	TRAINING OF TEACHERS	SALARIES	PENSIONS
<b>Bavaria</b>	6,524,372	Ministry of the interior for ecclesiastical and educational affairs	City school committee in country	6-13	Compulsory for three years, 13-16	2 years normal school, 3 years practice-teacher, 3-6 years assistant	1200-2130 M	Teachers contribute
<b>Württemberg</b>	2,302,179	Ministry for ecclesiastical and church affairs, and denominational authorities	Local school committee (including teachers)	7-14	Compulsory for two years, since 1895	3 years normal school. No permanent appointment before 24 after a second examination	1200-2400 M	Non-contributory. Retire at 65
<b>Saxony</b>	4,508,608	Ministry for public worship and public instruction	Committee of city council, in country school committee	6-14	Compulsory for 3 years for boys, 2 years for girls, since 1873	3 years normal school	1500-3000 M	Non-contributory, Retire at 65
<b>Baden</b>	2,010,728	Higher school authority in the Ministry for the Interior	Local council	6-14 boys, 6-13 or 14 girls	Compulsory for 2 years for boys, 1 year for girls, since 1875	3 years normal school, permanent appointment 2-6 years after graduation from n s and 2d examination	1100-2000 M	Non-contributory. Maximum after 40 years' service
<b>Hesse</b>	1,200,175	Ministry for the Interior, department for school affairs	Local school committee, including oldest teachers	6-14	Compulsory for 3 years for boys only, local option for girls	3 years normal school, permanent appointment after 2 years and examination	1100-2800 M	Non-contributory, Maximum after 50 years' service
<b>Saxe-Weimar</b>	388,095	Department for public worship in state Ministry	Local school committee, including teachers	6-14	Compulsory for 2 years for boys, local option for girls	3 years normal school, permanent appointment after 2 years and examination	1200-2300 M	Non-contributory. Maximum after 37 years' service
<b>Mecklenburg-Schwerin</b>	623,045	Department for educational affairs in the Ministry	Local school committee, private estate owners	6-14	Not compulsory, state subsidizes industrial education	2 years normal school	400-1300 M (country), 500-2000 M (cities)	Non-contributory, Maximum after 50 years' service
<b>Mecklenburg-Strelitz</b>	103,451						900-2500 M	No provision
<b>Oldenburg</b>	438,856	Department for churches and schools in the state Ministry	Local school committee, pastor a teacher, chapel administrative officer and an elected member	6-15	Voluntary	3 years normal school, permanent appointment after 3 years and examination	1000-1750 M	Contributory, Maximum after about 37 years' service
<b>Saxe-Meiningen</b>	268,916	Department for church and school affairs in state Ministry	Local school committee, mayor, school principal, three representatives	6-14	Compulsory for 2 years for boys and girls	3 years normal school, permanent appointment after 2 years and examination	1100-2200 M	Non-contributory, Maximum after 50 years' service
<b>Saxe-Coburg-Gotha</b>	242,432	Department in the state Ministry	Local school committee including the pastor	6-14	Compulsory for 3 years for boys and girls in Coburg	3 years normal school, permanent appointment after 2 years and examination	1100-2500 M	Non-contributory, Maximum after 40 years' service
<b>Saxe-Altenburg</b>	206,508	Department for ecclesiastical affairs in the state Ministry	Local pastor in country, church superintendent in towns	6-14	Not compulsory	3 years normal school	1150-2250 M	Non-contributory, Maximum after 40 years' service

I ELEMENTARY — *Continued*

	POPULATION IN 1905	CENTRAL ADMINISTRATIVE AUTHORITY	LOCAL ADMINISTRATION	ELEMENTARY SCHOOL ATTENDANCE	CONTINUATION SCHOOL	TRAINING OF TEACHERS	SALARIES	PENSIONS
Anhalt	328,029	Department for school affairs in the government	Local school committee including a teacher	6-14 or earlier, if attainments satisfy	Compulsory	3 years normal school, permanent appointment after 2 years examination	1200-3000 M	Non-contributory, Maximum after 50 years' service
Brunswick	485,956	Ministry of education	Local school committee, including oldest teachers as advisors	6-14	Compulsory	3 years normal school, permanent appointment at 25 years of age, permanent examination after examination	1000-2100 M	Non-contributory, Maximum after 50 years' service
Reuss a L.	70,603	Consistory	Local school committee	6-14	Not compulsory	2 years normal school, permanent appointment after examination	1200-3300 M	Contributory Service
Reuss J L.	144,584	Department for church and school affairs in the Ministry	Local school committee (mayor, pastor, 1 teacher and 2 representatives)	6-14	Not compulsory	3 years normal school, permanent appointment after 24 examination	1100-2200 M	As in Reuss a L.
Schwarzburg-Rudolstadt	96,835	Department for church and school affairs in the Ministry	Local school committee with pastor as president	6-14 boys, 6-13½ girls	Compulsory	3 years normal school, permanent appointment after 24 examination	1000-2000 M	Non-contributory, Maximum after 50 years' service
Schwarzburg-Sondershausen	85,152	Department for church and school affairs in the Ministry	Local school committee (mayor, pastor, and 2 elected members)	6-14	Compulsory for boys for 2 years	3 years normal school, permanent appointment after 24 examination	1050-2450 M	Non-contributory, Maximum after 40 years' service
Lippe	145,577	Consistory	Local school committee (pastor, administrative officers and teachers, and elected members)	6-14	Compulsory	3 years normal school, permanent appointment after 24 examination	1150-2000 M	Non-contributory, Maximum after 37 years' service
Schaumburg-Lippe	44,992	Ministry	Local school committee (pastor, presiding in country, mayor in cities)	6-14		3 years normal school, permanent appointment after 24 examination	450-2450 M	Non-contributory, Maximum after 45 years' service
Waldeck-Pyrmont	59,127	Principality administrative authority for elementary education the provincial school board at Cassel for secondary	District school committee (pastor, administrative officer, schoolman)	6-14	Compulsory for boys for 2 years	Teachers trained in Prussian normal schools	1100-2740 M	Non-contributory, Maximum after 25 years' service
Lübeck (Free City)	105,857	Superior school authority (members of senate, elected members, schoolmen, clergy)		6-14		3 years normal school	1600-2500 M	Non-contributory, Maximum after 35 years' service
Hamburg (Free City)	874,878	Superior school authority (members of senate, elected members, schoolmen, clergy)	District school committee	0-14 (English compulsory in some boys' schools)	Optional	3 years normal school, permanent appointment after four years and examinations	2000-4400 M	Non-contributory, Maximum after 40 years' service
Bremen (Free City)	263,440	Senatorial committee for school affairs selected by a superintendent and school director		6-14	Optional	3 years normal school, permanent appointment after 2-5 years	1800-3600 M	Non-contributory, Maximum after 30 years' service

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## II. SECONDARY (1908)

	SECONDARY SCHOOLS						APPOINTMENT OF TEACHERS	SALARIES WITH- OUT RENT- INDEMNITY TEACHERS, - DIRECTORS	PENSIONS (PER CENT OF SALARY LAST RECEIVED)
	Gymna- sium	Realgym- nasium	Oberreal- schule	Progym- nasium	Realpro- gymna- sium	Real- schule	Private Schools	Normal Schools	
Prussia . . . . .	326	103	61	41	48	157	21	165	T 2700-7200 M D 6000-7800 M Non-contributory; Maximum 75%, after 40 years.
Bavaria . . . . .	47	5	9	30	—	46	9	12	T 3000-6000 M D 7200-9600 M Non-contributory; Maximum 100%, at the age of 70
Saxony . . . . .	19	15	2	—	3	32	6	21	T 3600-7200 M D 6800-9300 M Non-contributory; Maximum 80%, after 40 years of service.
Württemberg . . . . .	18	4	10	6	8	21	2	6	T 3400-5300 M D 3900-6300 M Contributory 2%, Maximum after 40 years of service
Baden . . . . .	18	7	8	—	8	30	1	4	T 2500-6400 M D 3500-7450 M Non-contributory; Maximum 75%, after 40 years' service
Hesse . . . . .	11	3	7	3	—	13	1	3	T 2800-6000 M (6000 M in 6th year) D 5600-6600 M Non-contributory; Maximum 100%, after 50 years' service
Mecklenburg-Schwerin .	7	6	—	—	2	5	—	1	Non-contributory; Maximum 90%, after 30 years' service
Mecklenburg-Strelitz	3	—	—	—	1	2	—	1	As in Mecklenburg-Schwe- rin
Saxe-Weimar . . . . .	3	2	—	—	1	4	—	2	Non-contributory; Maximum 80%, after 36 years' service
Oldenburg . . . . .	5	—	1	—	—	2	—	2	Non-contributory; Maximum 90%, after 50 years' service
Brunswick . . . . .	6	1	1	2	—	1	4	2	Non-contributory; Maximum 100%, after 50 years' service
Saxe-Meiningen . . . . .	2	2	—	—	—	2	1	1	Non-contributory; Maximum 75%, after 40 years' service

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## II. SECONDARY (1908) — Continued

	SECONDARY SCHOOLS						APPOINTMENT OF TEACHERS	SALARIES WITH- OUT RENT- INDEMNITY TEACHERS, DIRECTORS	PENSIONS (PER CENT OF SALARY LAST RECEIVED)
	Gymna- sium	Realgym- nasium	Oberreal- schule	Progym- nasium	Realpro- gymna- sium	Real- schule	Private Schools	Normal Schools	
Saxe-Altenburg . . . . .	2	—	—	—	—	2	1	1	Contributory, 3%, Maximum 80%, after 40 years' service
Saxe-Coburg-Gotha . . .	2	1	1	—	—	2	—	2	Non-contributory, Maximum 100%, after 50 years' service
Anhalt . . . . .	4	1	1	1	1	3	—	1	Non-contributory, Maximum 100%, after 49 years' service
Schwarzburg-Rudolstadt .	1	—	—	—	2	—	1	1	Contributory, 2%, Maximum 80%, after 36 years' service
Schwarzburg-Sondershausen .	2	—	—	—	—	2	—	1	Contributory 2%, Maximum 80%, after 37 years' service
Waldeck . . . . .	1	—	—	—	1	1	1	—	Non-contributory, Maximum 69%, after 25 years' service
Reuss à L . . . . .	1	—	—	—	—	1	—	1	Non-contributory, Maximum 80%, after 37 years' service
Reuss j L . . . . .	2	1	—	—	—	1	1	1	As in Reuss à L
Lippe . . . . .	2	—	—	—	—	2	1	1	Non-contributory, Maximum 80%, after 37 years' service
Schaumburg-Lippe . . .	1	1	—	—	1	—	—	1	Non-contributory, Maximum 80%, after 45 years' service
Lubeck . . . . .	2	—	—	—	—	2	1	1	Non-contributory, Maximum 75%, after 35 years' service
Bremen . . . . .	3	1	2	—	—	3	—	1	Non-contributory, Maximum 80%, after 30 years' service
Hamburg . . . . .	2	1	3	—	—	8	6	2	Non-contributory, Maximum 100%, after 30 years' service
Alsace-Lorraine . . . . .	18	2	5	1	—	11	—	1	Non-contributory, Maximum 75%, after 40 years' service



are assigned in groups of eight or ten to a school, where at least two hours of discussion take place each week chiefly on the following subjects: principles of education and instruction and method, especially of the subjects of the candidates; historical survey and discussion of contemporary questions, the character, organization, and curriculum of the higher schools; the school ordinance, principles of school discipline, hygiene, etc., administrative authorities and their organization; service regulations of teachers; and, finally, directions for observation of lessons. The candidates must bring short reports or deliver oral lectures on all these subjects. In their particular work, they must acquire by class-room visitation a survey of the tasks of the whole school. The trial lessons of the candidates begin as soon as possible, and the problems, which at first are kept within narrow limits, are generally made broader and more extensive. Each candidate must give a trial lesson about once in four weeks, at which all the candidates, the director, and the subject teacher must be present. This is followed by a general discussion and criticism. About two months before the close of the year every candidate must hand in a somewhat larger dissertation which demands theoretical considerations and practical applications and should be based on the candidate's own experience and observation.

**B The Probationary Year (Probejahr)** — This period serves mainly to afford the candidates practice in the application of the educational knowledge and ability acquired in the seminar-year, and is usually spent in another institution. The candidates are intrusted with larger, more continuous problems for eight or ten hours a week, always under the more or less strict supervision of the director and those teachers in whose classes the candidates are teaching. As evidence of the amount of pedagogical insight attained the candidates must hand in a report of their own work as teachers. It is only then that the certificate qualifying for appointment in a higher school can be granted, and with it ends the training of the young teacher.

**Reform in the Higher Schools** — Only the most important of the reform movements and ideas can be mentioned here without any further discussion. The following are movements which have been realized here and there without any general acceptance as yet: the introduction of boarding schools; the admission of girls to boys' higher schools; the introduction of biology, philosophy, and civics; closer attention to the modern scientific theology in religious instructions, and, above all, greater freedom and consideration of the interests of the pupils in the upper stage. Possibly there should also be added here the frequent demand for more professorships of education. The following opinions, which have remained nothing more and of which one or the other may be

realized in the future, may be referred to lessening of the home work and the number of subjects in the curriculum, establishment of vocational classes, special promotion of pupils of more than average ability, separation of the upper stage and the establishment of an intermediate institution between the school and the university, somewhat like the American college; and a number of other radical ideas which cannot be mentioned here. It is a pretty generally accepted opinion that the German higher school system, as at present organized, cannot last any length of time, but how it is to be reformed is a problem. But those concerned in it are convinced that reform will not be brought about by a revolution, but by gradual, even slow, but unceasing development.

P Z

**UNIVERSITIES — Historical** — (1) Although the German universities are considerably younger than the famous *Studia generalia* of Italy, France, England, and Spain, Germany from the beginning played an important part in medieval culture. At Bologna and Paris German students and teachers made very creditable contribution to the universities, and in Germany itself schools of the orders like the Dominicans and Franciscans at Cologne, where men like Albertus Magnus, Thomas Aquinas, and Duns Scotus taught, were close rivals of the foreign universities. But the universities proper only sprang up in Germany in the middle or, if the whole of present Germany is considered, towards the end of the century.

In order of time two groups may be distinguished. (1) 1349–1415. Prague 1349, Vienna 1365, Heidelberg 1385, Cologne 1388, Erfurt 1392, Leipzig 1409, Rostock 1419. By the establishment of a *studium generale* at these places the educational organization of Southern and Western Europe was transplanted into German territory. (2) 1456–1506. Greifswald 1456, Freiburg 1457, Basle 1459, Ingolstadt 1472, Trier 1473, Mainz 1477, Tübingen 1504, Wittenberg 1504, Frankfurt-on-the-Oder 1506 (*qv*). The establishment of these institutions was a natural consequence of the new intellectual movement of the time, the Renaissance, but a greater cause was the concentration of political power in the hands of territorial princes. To strengthen their influence these rulers confined the clerical and intellectual life within their own borders and found need for their own territorial university. All these universities, including the older, did not originate independently as did Paris out of the association of famous teachers and their students, but definite political aims contributed to the rise of each. Hence the life of the students was not regulated by a democratic constitution similar to that at Bologna, but the statutes were imposed from above, generally modeled on those which had in the meantime been developed in Paris. However much the secular power may have done for the

establishment, granting of privileges and organization of a university, in its whole work and character it was regarded entirely as an ecclesiastical and clerical institution. Not only did the faculties receive the right to teach and grant academic honors through the papal bull, but in its general attitude and sympathy the university belonged to the clerical estate. The success and influence of these numerous universities on the culture of Germany, in spite of the ridicule of the humanists and the charges of the Reformers, were both very great. Neither movement would have been possible without the preparatory work of scholasticism fostered by the universities. According to Eulenberg's investigations about the year 1500 there were from three to four thousand natives and some two thousand foreign students in Germany. How great must even then have been the number in the German population of university-trained men!

(II) At the beginning of the sixteenth century scholasticism was driven out in Germany as elsewhere by the humanistic movement. But just as the triumph of humanism seemed about to be completed, a new and stronger movement, the Reformation, began and destroyed almost entirely the hopes of victory. Since all intellectual activity had until then been clerical, the general attack on clericalism was bound to lead to a vast upheaval of the whole educational system. But the confusion was soon overcome, for in the first place the German Reformers required for the success of their work a far better educated clergy than the old church, to be able to preach the "pure word of God," the pastor must have studied. Secondly, the secular powers also needed a thoroughly well-trained legal profession for the new duties which were thrust on them by the increase of territorial rights, confiscation of church property, and the acceptance of Roman law. Under pressure of these needs the crisis was overcome and the universities in Germany became territorial institutions for the purpose of meeting the demand for theologians and lawyers. The deeper the cleavage between the Catholic and Evangelical (including Lutheran and Reformed) churches became, the more rigorously was the territorial principle applied to the universities. New universities were added in great numbers; Protestant were Marburg (1527), Königsberg (1544), Jena (1558), and Helmstedt (1576), Catholic included the two Jesuit universities of Dillingen (1549) and Würzburg (1582) (*qq v*). The older universities were also reorganized to meet the new requirements. The smaller principalities and free towns added to their gymnasiums a course of academic lectures, for such an "academic gymnasium" enabled the poorer states to train up theologians and jurists above suspicion from among their own sons. While in the medieval period the majority of the students had been content with

a training in the fourth and lowest faculty, arts, they now sought a professional training in law and theology, with the result that the numbers in these superior faculties increased. Medicine and science still remained almost insignificant. Instruction in all the faculties had taken over from humanism the watchword "Back to the sources," a worship above all of the three sacred tongues, and for daily use a number of new textbooks, but in practice there continued, even in Protestant Germany, the characteristic forms of scholastic method throughout the whole of this period. The intellectual standard of the universities rose somewhat during this period as compared with the earlier, but hardly at the same rate as the general intellectual progress. The epoch-making science of the day, the mathematical, was excluded from the universities, and the contributions of Copernicus, Galileo, Kepler, Descartes, Newton, Leibnitz, were made outside of these institutions. Exhausted as they were by the devastation of the Thirty Years' War (1618-1648), the universities were not in a position to continue their progress.

(III) Research in modern science, which in France, England, and Italy was promoted by academies or societies, in Germany gradually began to center round the universities. Leibnitz, it is true, had already in 1700 called into existence at the Royal Court in Berlin an academy modeled on the Académie des Sciences in Paris, and the Royal Society in London, followed in 1757 by the establishment of the Gesellschaft der Wissenschaften at Göttingen in the Kingdom of Hanover. But the intellectual modernization of culture in Germany did not proceed from the associations of investigators, but from the professional chairs. Hence the academies in Germany are up to the present but of secondary importance and consist of associations of university professors meeting for definite and specialized research.

The new era was opened by the establishment of the Prussian University of Halle in 1694 as a conscious protest against the traditional studies. The modern movement was there inaugurated by three professors: (1) The pietist, August Hermann Francke (*qv*), who broke through the prevailing theological orthodoxy, (2) the leader in the enlightenment, Christian Thomasius (*qv*), who swept out of existence the prevailing formalistic prejudices and superstitions in political and ecclesiastical law; (3) the rationalist, Christian Wolff, who tore down the scholastic barriers between philosophy, mathematics, and natural science. The modern principle of academic freedom now begins its triumphant course. Instruction is now marked by the lecture method with which is introduced the use of the vernacular. While French culture above all had exercised a profound influence on Prussia, the University of Göttingen, founded in 1737, was influenced by the connection between the kingdom of

Hanover and England. Göttingen took Halle as a model, and in addition to jurisprudence promoted the study of the natural sciences and introduced the modern study of the classics; not the mere imitation of ancient models in poetry and eloquence, but a complete entering into the spirit of classical antiquity from the literary, historical, and æsthetic standpoints. Halle and Göttingen were followed in 1743 by the foundation of Erlangen. At the end of the eighteenth century the new ideas had become firmly established in the German universities.

(IV) At the time that Napoleon reorganized the French universities on the principle of the strictest possible control of academic learning and teaching (1808), Prussia, conquered and deprived of all power, established the University of Berlin (1810) on the widely different basis of the greatest academic freedom. Intellectual power was to replace what Prussia had lost materially, and the training in pure idealism was to be left entirely to the influence of truth and freedom. While the universities had hitherto been conducted like schools, with the professors as masters and the students as apprentices, the University of Berlin was to be a free intellectual working community with the professors as masters and the students as their assistants, both occupied in common with the solution of the same tasks. This principle soon found its way into all German universities and laid the foundations on which was built up Germany's unique position in international culture. Soon after Berlin, Breslau (1811), Bonn (1818), and Munich (1826) were founded. A number of the older and smaller universities had disappeared in the Napoleonic period. No new foundations were made in the nineteenth century in spite of the great increase in population. It is only within recent years that it has been proposed to add to the existing number of universities. In 1902 Münster was transformed from an Academy for Catholic Theologians into a university. Recently it has been agitated to establish universities on a basis of voluntary endowments and municipal grants, and in 1914 such an institution will be opened at Frankfurt-a-M (*qv*), while another is proposed in Hamburg. Hitherto it has been unnecessary to increase the number of universities, since in their inherent organization the existing institutions have been much extended and have become specialized. The two great tendencies of the nineteenth century, the great specialization in the intellectual work especially and the remarkable development of natural science, led to a demand not only for a great increase of instructors and a narrow specialization of studies, but also for a development and a constant increase of all the numerous intellectual institutions connected with a university. Since the chief aim of university instruction is to make men of the students, not only imbued with the spirit of their subject,

but ready to carry it forward step by step, the German university requires in the first place learned seminars and scientific laboratories. In the philosophic-historical subjects, in theology, jurisprudence, philology, etc., the seminars, in which the master and his assistants investigate the problems in their field, necessarily required in the course of the nineteenth century more complete equipment, while in medicine and the natural sciences more suitable and more specialized clinics, laboratories, and experimental institutes had constantly to be provided. Since the expenditure on the institutes is much greater in the larger than the smaller universities, a certain amount of inequality arose among them, only compensated for by the fact that the student is enabled to be more directly and personally associated with his director in the smaller than in the larger institutes. As far as the quality of professors is concerned there is no distinction at the different universities. It may be that a few places have one or two men of repute or even geniuses among their professors, but Germany is thus distinguished from other countries by the fact that in essence all the universities are alike, and the same may be studied in Freiburg or in Königsberg as in Berlin.

**Present Position — Relation to the State —** Universities may be established only by the state or with the approval of the state. All the existing universities are state institutions, and as such juristic persons in public law. Their rights, however, as a result of the federal character of the German Empire vary somewhat. As a rule they are not based on legislation but on special privileges, statutes, and ministerial decrees. The income of the universities is very slight, and only a few have sufficient interest-bearing property to be able to cover an appreciable portion of their maintenance at their own expense. Generally they are maintained by the state. The state university budget must, like the state budget, generally receive the approval of the regular representative bodies, and at the discussions the public can, through its representatives, make its wishes with reference to the universities felt. The states do not allow any one to hold an appointment in the church, in the judiciary or higher administrative service, and permit no one to practice law or medicine who has not studied in a German university and then passed the prescribed state examinations. These state privileges are more important for the universities at present than the right to grant academic degrees. The authority in Prussia to which the universities are subjected is the Ministry of Public Worship and Education, which appoints a representative, Curator, or Chancellor for each university, with charge of the external affairs.

The internal administration is in the hands of the universities themselves through the Rector and Senate. The Senate consists either

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**DISTRIBUTION OF EXPENDITURES IN PERCENTAGE OF THE TOTAL, IN PRUSSIAN UNIVERSITIES** (*Preuss. Statistik*, Vol 223, p 7)

	1868	1877-1878	1887-1888	1896-1897	1905-1906	1908-1909
Cost of administration	5.67	37.0	3.46	4.49	4.11	3.94
Salary of professors, etc	45.95	41.94	36.00	30.49	27.93	27.85
Institutes, collections, etc	37.07	47.18	47.18	51.96	55.45	56.04
Hostels, maintenance, grants, etc	3.70	2.30	1.66	1.67	1.30	1.10
Cost of building rates taxes . . . . .	3.19	2.45	1.61	3.73	4.17	4.20
Covering of decreases in receipts unforeseen and surplus expenditure	4.42	3.03	2.71	2.54	2.27	2.27
Rent indemnities for instructors . . . . .		6.02	5.38	5.12	4.77	4.52

of several full professors (*ordentliche Professoren*) or generally of annually changing committees of the same body. The Rector or, in some states where the hereditary ruler holds this position, the Prorector is elected annually from the ranks of the full professors, and his election must receive the approval of the state. He presides over the senate. The professors are civil servants with certain privileges. Full professors are appointed by the state or the ruling prince on the responsibility of the Ministry, when as a rule the suggestions of the Faculty or the university are respected. The state also appoints associate professors (*ausserordentliche Professoren*) and confers the professorial title. Again the universities are represented in the legislature of the state by each sending one professor *ex officio* to the Diet (upper House) of their respective state.

*Relation to the Church* — This in Germany is in some ways simpler, in some more complicated, than elsewhere. It is simpler in that both university and church are under the same authority, both being state institutions. Other denominations than the evangelical or Roman Catholic are of little significance, since their membership is too small. But it is this very close connection between Church and State that leads to great complication. The Catholic Church is opposed to the fundamental principle of the German universities, absolute academic freedom, while a strong section in the evangelical church is at any rate not friendly to it. This in view of the strength of the Catholic party in politics leads to parliamentary conflicts on the question of intellectual prescription and on the so-called destructive activity of the "atheistic" professors. So far as individual theological faculties are concerned, the opponents of academic freedom in the evangelical church seek the cooperation of the local synods in filling theological chairs. Hitherto the state

authorities have opposed these tendencies. Yet in practice some concession was made to them in filling chairs not in accordance with the qualifications of candidates and the suggestions of the university, but on the basis of distributive justice (*justitia distributiva*) between the right and left wings of the clerical political parties, with the result that science invariably suffered. In the Catholic theological faculties the present modernist movement has caused the state authorities considerable difficulties; what, for instance, should be the attitude of the state when a professor of theology, appointed by the state with a guarantee of academic freedom, refuses to accept the prescription of his church in his teaching? or again, when a university receives into its midst professors who have taken this oath and thus have abjured their freedom? A solution of this situation has not yet been discovered. The following Prussian universities have evangelical theological faculties: Berlin, Bonn, Breslau, Greifswald, Halle, Konigsberg (all for the old Prussian state church), Gottingen (for the state church in the Prussian province of Hanover), Marburg (for the state church in the province of Hesse-Nassau), and Kiel (for the state church in the province of Schleswig-Holstein). Besides there are evangelical theological faculties at Erlangen (Bavaria), Leipzig (Saxony), Tubingen (Wurttemberg), Heidelberg (Baden), Giessen (Hesse), Rostock (Mecklenburg), Jena (Thuringian States), Strassburg (Alsace-Lorraine). Catholic theological faculties exist in Prussia at Bonn, Breslau, and Munster, in Bavaria at Munich and Wurzburg; in Wurttemberg at Tubingen, in Baden at Freiburg, in Alsace-Lorraine at Strassburg. These university faculties, however, do not suffice for the demand for the Catholic clergy in Germany, and there are in addition six state Lyceums (five in Bavaria and one in Prussia) in which the professors are appointed by the state, one episcopal Lyceum in Bavaria, and seven episcopal theological institutions (six in Prussia and one in Lorraine) in which the professors are appointed by the bishops. Although several universities retain their denominational title from their origin, *e.g.* the Evangelical University of Halle, they are in fact wholly undenominational. Jews are admitted to the teaching bodies everywhere in a percentage far above their number in the population. However, the complaints of the Jews that they are overlooked for promotions are not rare and frequently not without reason.

*Organization* — The universities are still organized according to tradition into four faculties. No university has less than four faculties, only the recently founded University of Munster is still without a medical faculty. In single instances only is there a faculty of political science as distinct from that of law, and a mathematical-natural-science as distinct

from the philosophical. In a broader sense the faculties include the whole *corpus academicum*, the teaching body as well as the students. In the narrower sense the faculty consists only of a section of the teaching body, the full professors in the respective faculty. These elect annually from their midst a dean as director of their business. They are responsible for the regular conduct of instruction in their field, suggest names to the Minister in filling vacant chairs, for the distribution of definite courses to other instructors, for the promotion of private docents (*q v*) and associate professors, etc. They further arrange the schedule of lectures and arrange the hours among themselves, determine on the admission of private docents, and are the authority responsible for the conferment of academic degrees.

The full professors (*ordentliche Professoren, ordinari*) are almost the sole and exclusive bearers of all the rights of the academic teaching bodies. Each of them has a teaching commission for a definite subject and is as a rule bound to conduct a more comprehensive private course in his field and one free public lecture of one or two hours. He receives, first, a definite salary, as a rule 4000–6000 M (\$800–1200) a year, and a slight indemnity for rent, secondly, the fees paid by the students for the private courses, usually 5 M an hour each semester (although in Prussia when fees exceed 3000 M, half of the excess must be paid into the treasury), thirdly, increments granted at the discretion of the Minister who wields a great power, fourthly, fees for graduation and examinations. Professors of medicine conduct to some extent their private practice, and as compared with the great income from this source their salary is insignificant. Similarly, professors in other applied sciences frequently have considerable additions to their salaries.

In addition to the full professors there are a number of others: (1) Honorary full professors who have the rank of full professors but nothing more; (2) titular professors or private docents who have only the title of professor but nothing more (3) Associate professors (*ausserordentliche Professoren, extraor-*

*dinari*) are divided into two classes according as their salaries are or are not permanently included in the university budget. The latter receive no salary, though they often receive a remuneration, as when they are assigned to give a definite course. Such assignments are also made occasionally to private docents. The deciding question in this confusion of titles and positions is whether an instructor is provided for in the budget, for although he does not as a consequence receive a seat or a voice in the faculty, yet his teaching is recognized as within the university. Of greater importance, however, in the applied sciences is it that he conduct his own institute, and is thus independent of other professors. In the case of private docents it is to some extent a limitation of this academic freedom that they are dependent on the good will of full professors for the use of equipment in the applied sciences. The number of associate or extraordinary professors is very large, since with the constant specialization in all sciences and the comparatively slow increase of full professorships the work of the university could certainly not be carried on. The salary of an associate professor who is paid by the state rises in Prussia from 2000 M to 4000 M in twenty years. Many professors never rise above the grade of associate professor because there is no full professorship at all in their subject.

The ranks of the professors are as a rule filled from among the private docents (See Docent for method of appointment, etc.). It is the exception for a man to be called from practical work as pastor, judge, doctor to fill a chair, but in some faculties is not quite so rare an occurrence.

A number of young scientists are also employed to assist the professors. Frequently in the applied sciences a private docent is also appointed as assistant, in such cases his dependence on the full professor is thus correspondingly greater.

*Student Body* — The requirement for matriculation as student in a German university is the possession of the maturity certificate (*Reifezeugnis*) of a secondary school (*Gym-*

## NUMBER OF INSTRUCTORS IN THE GERMAN UNIVERSITIES

(Preuss. Statistik, Vol 223, p 26)

a. Full Professors						b. Associate Professors						c. Private Docents						
EVANGELICAL THEOLOGY			CATHOLIC THEOLOGY			LAW			MEDICINE			PHILOSOPHY			TOTAL			
Winter Semester 1896-7	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
	101	22 <sup>1</sup>	27	51	7	6	143	25	35	198	163	223	521	242	280	1015	459	571
		+5			+1			+5			+5			+34			+50	
1896-7	109	32	31	55	11	5	155	26	40	215	213	289	556	293	388	1090	575	753
		+5			+2			+12			+11			+46			+76	
1908-9	119	41	34	63	16	19	164	51	47	251	260	497	650	403	511	1247	771	1108
		+5			+5			+17			+34			+60			+121	

<sup>1</sup> The addition refers in every case to Honorary Professors

*nasium, Realgymnasium, or Oberrealschule*) The certificate of certain professional schools is also accepted in some universities for further study in the special subjects; thus, the graduates of industrial schools are under certain circumstances permitted to take up the study of mathematics and natural science, or graduates of normal schools for elementary teachers may be admitted for the study of pedagogy, *e g* at Leipzig, Jena, Giessen, and Tübingen. Women who have fulfilled the same requirements as men are also matriculated, although there are individual professors who do not admit women to their classes. Foreigners are admitted everywhere, if they can show satisfactory preparation. Besides the students there are further registered auditors (*Horer*). At Giessen permission to visit is granted by the Curator for four semesters, which may be extended to six. Such registration is only allowed in the faculty of philosophy. Almost universally the students enjoy complete freedom of study (*Lernfreiheit*), but since the regulations for the professional examinations, which are taken at the close of the academic career, prescribe a definite course, the students in most subjects, and especially law, are confined to a more or less regulated curriculum.

The enrollment in the summer semester of 1911 was 57,330 distributed as follows: Evangelical theology, 1834, Catholic theology, 2825, law, 11,023, medicine, 11,927, philosophy, 29,721. These figures include 2522 women. In addition there were 4060 auditors. The students were distributed as follows in the individual universities: Berlin, 6039, Munich, 6942, Leipzig, 4888, Bonn, 4174, Freiburg, 3080, Halle, 2681, Breslau, 2586, Göttingen, 2492, Heidelberg, 2452, Marburg, 2302, Tübingen, 2118, Strassburg, 2071, Münster, 2009, Kiel, 2001, Jena, 1902, Königsberg, 1517, Würzburg, 1449, Giessen, 1315, Greifswald, 1180, Erlangen, 1104, Rostock, 920. (See also COLLEGE AND UNIVERSITY STUDENT ATTENDANCE.)

#### NUMBER OF STUDENTS COMPARED WITH THE EXPENDITURE OF THE PRUSSIAN UNIVERSITIES

(*Preuss. Statistik*, Vol 223, p 7)

	NO. OF STUDENTS	TOTAL EXPENDITURE <sup>1</sup>	EXPENDITURE PER HEAD PER STUDENT
		M	M
1868-1869	7338	3,886,633	530
1877-1878	8510	7,007,647	823
1887-1888	13,720	9,180,603	669
1896-1897	13,861	11,417,345	824
1905-1906	20,255	15,426,684	762
1908-1909	22,717	17,428,242	766

<sup>1</sup> Covered in the main by the state fund, partly from the property of the university. In Prussia, two-thirds in 1868, and in 1908-1909 three quarters of the expenditures were borne by the state. The expenditures of the non-Prussian universities are as high as those of Prussia.

The students are partly organized in free societies (*Corporationen*), partly unorganized. The method by which the student organizations among themselves or for the whole student body form committees for the supervision of student interests varies from place to place. The German student does not live in college or similar hostels, but in private houses. Hostels exist only for Catholic theological students, and at Tübingen also for a number of evangelical students. Elsewhere there are small endowments for students of small means. Fees and dues are low. University life only becomes expensive when the student, only just out of school and entering on independence but with high spirits and small financial experience, adopts an expensive mode of life. Extravagance, however, is foreign to the German student or is confined to a small circle, as at Bonn and Heidelberg. But generally the men lead a steady life and work with a will, despite their great freedom.

The period of attendance at the university varies with the different faculties. The following are the number of semesters spent on the average in the last decade: Evangelical theology, 7.37, Catholic theology, 7.04, law, 6.86, medicine, 11.00; philology and history, 9.10, mathematics and natural science, 8.88. The academic degree which prevails in the legal, medical, and philosophical faculties is still only the Doctorate (Dr. Jur., Dr. Med.; Dr. Phil.). In the theological faculty there are two degrees, the licentiate and the doctorate (Lic. Theol. and D. Theol.). All these degrees are of practical significance only to those who look to an academic career, otherwise they are merely ornamental. They may be obtained in course by the presentation of an independent work of scientific value and an oral examination before the faculty, or they are conferred *honoris causa*. The doctorate in theology is now only conferred as an honorary degree. The technical term for graduation is *Promotion*. Modeled on the university degrees is the title of Doctor of Engineering (Dr. Ing.), conferred by the technical high schools.

In addition to the universities there is an appreciable number of technical high schools, commercial academies and high schools, academies of forestry and mining, veterinary and agricultural high school. To these must be added the military school, such as the war academy, artillery and engineering schools. More intimately connected with the universities, in aiming not at professional education, but at intellectual advancement, are the public lecture courses at the institutions at Frankfurt-a.-M. (*qv*), Cologne, and Hamburg, the Royal Academy at Posen, and the Berlin Academy for Medical Training for the Army, equivalent to a medical faculty. In university extension work significant beginnings have been made in Berlin (Humboldt Academy, Free High School, Society for Popular Courses by Berlin

University Instructors), at Dresden (*Gehestiftung*), and at Frankfurt-a-M

**LEARNED SOCIETIES** — The societies and associations for the advancement of learning are divided into two classes: the academic or royal societies subsidized by the state, and the general associations founded privately to promote some branch of study. Such associations vary in the character of their work and contributions from the small local society of amateurs and public school teachers to the academic society consisting of carefully trained specialists. It is calculated roughly that there are about one thousand associations founded for purposes of promoting studies throughout Germany. None of these attempt any instruction beyond the reading, discussion, and circulation of reports among members. Some offer prizes for works of original research on a prescribed theme, others for works on any topic, others again subsidize the carrying out of some piece of research. It is impossible here to do more than to mention the state-endowed academies.

The earliest German academy is the *Kaiserlich Leopoldinisch-Karolinische deutsche Akademie der Naturforscher* founded in 1662 as the *Academia naturæ curiosorum*, which was at first devoted to the study of the medical sciences and now covers the sciences generally. The academy has no permanent location, except for its library in Dresden, and its seat changes with the home of the president for the time being. The *Königliche Akademie der Wissenschaften* was established in Berlin in 1700 by Frederick I on the suggestion of Leibnitz, its first president. It was reorganized after a period of decline in 1744 and opened with great ceremony by Frederick the Great (*q v*). The fields of knowledge which are covered by the academy are mathematics, physics, philosophy, and history-philology. The members are divided into ordinary, foreign, honorary, and corresponding. Transactions and proceedings are published. To the credit of this academy fall the publications of the *Corpus Inscriptionum Græcarum*, *Corpus Inscriptionum Latinarum*, *Corpus Inscriptionum Atticarum*, the works of Aristotle, and the *Monumenta Germaniæ Historica*, all works which can be better undertaken by an institution having some continuity than by an individual. The *Königliche Gesellschaft der Wissenschaften* was established at Göttingen in 1751 and reorganized in 1893. It consists of two classes, — mathematical-physical and philological-historical. At Munich there was founded in 1759 the *Königliche Bayerische Akademie der Wissenschaften* which devotes itself to mathematical-physical, philosophical, and historical studies, although originally founded for the last only. The *Königliche Sächsische Gesellschaft der Wissenschaften* at Leipzig was established in 1846 and incorporated with itself the *Fürstlich Jablonowski-Gesellschaft der Wissenschaften* (founded

in 1768) for the study of mathematical-physical and historical-philological subjects. There are further the academies which arise out of the connection in modern times between the arts and sciences, e g the Academy at Heidelberg (f. 1909), and the Kaiser-Wilhelm Academy in Berlin (f. 1910). F. M. S.

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**GERMANY, EDUCATION IN THE COLONIES OF** — The colonial possessions of Germany by their position and natural conditions of soil and climate represent strategic rather than commercial value, and the Home Government has no motive for educational efforts in any part of these possessions, comparable, as regards scope and system, to those maintained by the British, or even by the French governments in their foreign dependencies

Beginning with Togoland on the slave coast of Upper Guinea, the German colonies comprise a succession of "spheres of influence" bordering on the ocean-washed coasts of West, Southwest, and Eastern Africa, together with groups of small islands in the Pacific Ocean, and the port town and district of Kiau-Chau in the Shantung province of China. With the exception of the last named, the conditions of German occupation are practically the same in all the colonies. At the seat of government reside the imperial governor and his staff, military posts and courts of justice mark the principal places, and at these points center the schools, government and missionary. These are all educational influences as well as direct incentives to progress. Native interpreters are needed for the governor's service, natives are trained for the military and police corps,

and are subject to criminal processes in the courts, and native teachers are employed in the schools. Thus individuals selected from the mass of rude tribal peoples become familiar, in some slight measure, with the institutions of orderly society. In the East African colonies the German government encounters strong Mohammedan forces, and consequently formal education becomes a matter of serious importance. An effort has here been made to establish compulsory school attendance in restricted measure.

It was undoubtedly the impulse of commercial rivalry that prompted the colonial enterprises in which Germany engaged in the last quarter of the nineteenth century, but neither Africa nor the Pacific islands have so far yielded large returns for business energy or capital. Meanwhile the military advantage of these possessions has become more and more evident. Science has also been brought to the aid of adventure in efforts for utilizing the natural resources of these lands, constructing roads, and supplying commercial facilities, these late efforts are giving industrial aim to the schools that have been established under German influences. The following statistics and context summarize the main particulars relative to the educational work in the several colonies.

## SCHOOL STATISTICS AFRICAN POSSESSIONS

COLONY	POPULATION			GOVERNMENT SCHOOLS		MISSION SCHOOLS	
	Date	White	Native	No	No of Pupils	No	No of Pupils
Togoland	1909	330	1,000,000	2	275	150	9057
Kamerun	1909	1127	3,000,000	4	2200	—	19,000
German South-west Africa	1909	13,791	178,000	11	377	—	3000
German East Africa	1909	3387	1,000,000	—	3821	—	16,500

The German possessions in the Pacific Ocean comprise two groups of islands. to the first group belong, German New Guinea including Kaiser Wilhelm's Land, Bismarck Archipelago and the small adjacent islands, Caroline, Pelew, Marianne, Solomon, and Marshall; the second is the Samoan group including Savau and Upolu. The estimated native population of the two groups is about 450,000, the non-native colored population, mostly Chinese, numbers about 2000, the white population, chiefly German, about 950. Missionary societies, both Protestant and Roman Catholic, are active on all the islands. The Samoan group was formerly under the joint protectorate of Great Britain, the United States, and Germany, but was ceded entirely to the latter power by the Anglo-German agreement of Nov. 14, 1899, ratified the following year by the United States. As a

result of the prolonged relation with Western Powers, the natives of these islands have been Christianized and are very receptive subjects of missionary instruction. A German government school with about 90 pupils is maintained on the island of Upolu, and in 1909 nearly 9000 pupils were under instruction in missionary schools of the two Samoan islands.

The seizure of Kiau-Chau by Germany in 1897, and the subsequent transfer of the town, harbor, and district to that Power by treaty, were events of great importance in the movement which is gradually transforming the Orient. The entire area of the German Protectorate is 200 square miles exclusive of the bay, which is also about 200 square miles in extent. The civil organization, established before the German arrival, comprises 33 townships. The native population of Kiau-Chau is estimated at 120,000, and the European at about 1200, of whom 1000 are Germans. This number does not include soldiers. At Tsingtau the government has established a college for which elaborate plans have been formed. Two departments are provided for, namely, a preparatory school and a school of science. The preparatory school course extends over six years, taking young Chinese of at least thirteen years of age. These students must have had a good Chinese education and be qualified for the lower classes of high schools. A certificate relative to his qualifications must be submitted by the scholar seeking admittance, obtained after examination, which is indispensable, before the Chinese examiner at Tsinan and the inspector of studies of the college at Tsingtau. Knowledge of the German language and modern sciences is not required for the preparatory school, but if newly entering scholars have such knowledge, they will be admitted to the higher classes. An examination is held before graduation from the preparatory school, which must be passed in order to obtain admission into the higher - second department.

The school of science consists of two divisions (1) A department of law and political science, and (2) a technical department, including natural history. The program of the first department comprises international law, general state and administrative rights, state laws, railway, mining, and maritime law, political economy, finances and comparative cases of real property. The general outlines of a process or suit and the features of police administration are also included in the course.

In the technical department there are laboratories for chemistry, physics, electricity, mineralogy, and geology, machine building, mining, etc. Students of the higher college are at liberty to choose their vocations, but must then strictly comply with the schedule. The students of the first term class admitted are expected to remain at college for four years, but, later, discrimination will be made

when the students enter, according to their knowledge of the German language, so that the courses will occupy the following periods: Legal course, three years, forestry, three years, building, two years, technical, four years.

The philosophical course will be taught by Chinese teachers, a medical branch is also projected, and a subcourse will be given in gymnastics, music, and art. The minimum age for the school of science is twenty years, and a good knowledge of the preparatory courses is essential to admission. If a student wishes to join the school of sciences without having attended the preparatory school, he must first pass an examination in both Chinese and Western sciences, including the Chinese and German languages.

The present staff comprises twelve German tutors and ten Chinese teachers and interpreters, as the number of students grows the staff will be increased. A translation office will be opened in conjunction with the college to prepare the necessary material. Arrangements have been made by the managers of the German-Chinese high school to open a free course of lectures on popular scientific subjects, illustrated with pictures and experiments, for the benefit of the foreign residents. Besides these lectures, an evening course in the Chinese language and script, as far as necessary for daily use, will be given for the benefit of the German community.

A colonial department was organized in the Foreign Office at Berlin in 1890, and in 1899 a colonial school was established at Witzenhausen, near Gottingen, with the express purpose of preparing practical farmers, planters, stock-raisers, and fruit growers who may be inclined to settle in some one of the German colonies. In all the colonies, graduates of the school are found to-day acting as business managers for German trading companies, owners and managers of plantations, clerks in the government service, etc. The course of the colonial school lasts two years and is so arranged that the theoretical instruction comes in the winter and the practical instruction in the summer. The subjects chosen for lectures are those which will add to the pupils' knowledge of tropical plants and agriculture and of colonial enterprises and politics. The studies include such branches of learning as chemistry, botany, and physics. The institution is well supplied with laboratories and has a large farm and gardens and wood land for the study of forestry, vine growing, etc. The trade shops of Witzenhausen are also open to the students for practical instruction.

It is noticeable that while graduates of the colonial school are found in the African and Asiatic colonies, they prefer the German settlements in the new world, especially in Brazil, Argentina, and Chile, and their expert knowledge and skill are proving of immense value in the commercial and industrial development of those countries.

The growing importance of German colonial enterprise is illustrated in the proposed plans of the new university at Hamburg, which shall include a faculty of colonial science. This faculty will constitute the distinctive feature of the new institution

A. T. S.

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GERRY SCHOOLS — See HUMANE EDUCATION

**GERSON, JEAN CHARLIER** (1363–1429) — Teacher, theologian, and chancellor of the University of Paris, born at Gerson, educated very probably at Rheims, and studied at the College of Navarre in Paris. He early devoted himself to theology, and obtained the degree of doctor in that subject. At the early age of thirty-two he became Chancellor of the University of Paris in succession to his friend and teacher, Peter d'Ailly. His standing as a theologian was high, and he soon gained the title of *Doctor Christianissimus*. Breaking from the scholasticism and dialectic methods of his day, his writings show a return to source material and the Church fathers, and a good knowledge of the classics, while his philosophy was nominalistic colored by mysticism. At the Councils of Pisa and Constance he was an important factor, and his general influence was considerable. He preached to the people in the vernacular, mainly on questions of practical morality, and took a great interest in the young students of Paris, where he tried to introduce some sort of guidance and a moral spirit among them. In a letter he recommended to such a student a study of Greek and Latin works for their content, and for style. As a teacher himself, he looked to Quintilian for the ideal in his field. His chief educational work was the *Tractate on Leading the Little Ones to Christ* (*Tractatus de Parvulis tradendis ad Christum*), which, as is indicated in the title, concerns itself wholly with religious and moral education. The work, which has as its text Mat. xix, 14, is divided into four parts, each with its own text. (1) The necessity and means for educating the young for reverence of God, religion, humanity, and civilization on a basis of habit (La. iii, 29). The means are sermons, private admonition, discipline, and the confessional. (2) On those who offend young children by bad examples (Mat. xviii, 16). (3) On the great service performed by the religious teacher (James, v, 20). (4) Self-defence and

apology (Gal. vi, 1). The last ten years of his life he spent in a convent of Cælestine monks and devoted much time to teaching children.

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**GESNER, CONRAD** (1516–1565) — Called by Hallam "a man of prodigious erudition." He was born at Zurich. His parents being unable to educate him, he was befriended, housed, and educated by Amman, the professor of rhetoric, for three years. He resolved to travel, and entered the service of Capito, a Hebrew scholar, at Strassburg. After further travel, he was placed at the head of a school at Zurich. After studying physic, he resigned his school teaching, and, having had a small pension allotted him, he set to work at reading the Greek physicians. For a time he was professor of Greek at Lausanne, and was professor of philosophy at Zurich for the last twenty-four years of his life. Gesner wrote his *Bibliotheca Universalis* in 1545. This was a catalogue of books in Latin, Greek, and Hebrew, and gave criticisms and specimens of many of the works cited. He wrote a continuation of the work in the *Pandectæ Universales*, 1548–1555. These two works attempted to do for general literature what the Digest of Justinian had done for Civil Law. Thus Gesner's books are of the greatest value as a bibliographical encyclopedia of literature up to his times. In 1555 he published *Mithridates de differentiis linguarum tum veterum, tum quæ hodie apud diversas nationes in toto orbe terrarum in usu sunt, observationes*. This is the first great modern book on comparative philology, and attempts a characterization of all ancient and modern languages from the Ethiopic down to the gipsy language. Gesner also wrote the *Historiæ Animalium* published in 1551–1556, containing a critical account of all that had been written and done on zoology by his predecessors. His *Icones Animalium* is a volume of woodcuts and names only. As a naturalist Gesner emphasized the method of personal observation instead of relying on the observations of the old classical writers, though he did a great deal in promoting the close study of those writers. He planted a botanic garden for his observation and experiments. He formed a museum in connection with his professorial post and obtained contributions of some specimens from most parts of Europe. He made the ascent of Mont Pilatus near Lucerne and examined all the specimens he could find there, in spite of the superstitions concerning the mountain. He visited patients in Zurich at the time of the plague and devoted himself to the study of the best cures, but he was overtaken by it and died in his Museum in 1565.

He was the greatest encyclopedist of the Renaissance  
F. W.

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**GESNER, JOHANN MATHIAS** (1691–1761) — Prominent philologist and reformer of higher education in Germany; was born the son of a pastor in the small city of Roth in Franconia and received his early education at the gymnasium in Ansbach. In 1610 he went to the university of Jena, in 1715 he was appointed teacher of the gymnasium in Weimar, in 1729 he accepted a call to the principalship of the gymnasium in Ansbach, but finding that this position did not allow him sufficient leisure for his literary activity, he left it the following year and became the head of the old *Thomas-schule* in Leipzig. He reestablished the reputation of the school by restoring the study of the classics, by enriching the course of study, especially through the emphasis laid on mathematics, and by improving the discipline. In 1734 he was called as Professor of Rhetoric to the newly established university of Göttingen and remained there until his death. He lectured on Latin and Greek literature and on classic archæology, but, at the same time, kept up his strong interest in pedagogy. He was the inspector of the Brunswick gymnasiums and conducted, from 1738 on, a philological seminar in which candidates for the teaching profession received a general education together with theoretical and practical training in pedagogy. For this purpose he wrote his *Primæ linæe isagoges in eruditionem universalem* (*Outlines of an introduction to general education*, particularly to philology, history, and philosophy), which appeared in 1760. As early as 1715, he had written his *Institutiones rei scholasticæ*, a treatise on education, which shows the influence of the ideas of Ratke, Comenius, and Locke.

Gesner's educational activity marks an epoch in the history of classical education in Germany. He is the founder of that great movement in German education which is known as *Neo-Humanism* (*qv*) and which controlled the aim and methods of the most influential of the higher schools, and through them the educational ideals of the leading classes of the nation, down to the last quarter of the nineteenth century. He revived the study of Greek, which in Germany at that time had been almost totally neglected, and insisted on the study of the classics for the sake of their great thought content and their ethical and æsthetic value. He believed in arousing in the pupil a pleasurable interest in his work, and, for this reason, he advocated the teaching of the elements of Latin

through usage only, and without the help of formal grammar. In this way he was a forerunner of Basedow and of the modern reformers of foreign language instruction. Next to the study of the classics, he emphasized instruction in the mother tongue, in French, mathematics, natural science, history, and geography. Gesner's educational views were backed by a rare combination of great erudition, not only in philology but in several other fields of knowledge, with a long practical experience in teaching and fine pedagogic tact. Through his connection with the Brunswick schools and his training of teachers, he had constant opportunities of testing the actual operation of his theories in practice. It is owing to these favorable circumstances, and to the fact that his work was carried on by such brilliant successors as Ernesti (*qv*) in Leipzig and Heyne (*qv*) in Göttingen, that the movement initiated by Gesner acquired such a great and lasting influence on the higher education of Germany.

Among the writings of Gesner, besides the works already noted, may be mentioned his various editions of Latin authors, as well as his selections from Cicero, Pliny, and from Greek authors (*Chrestomathia Ciceroniana* 1716, *Pliniana* 1723, *Græca* 1731), the last of which contributed greatly to the improvement of the study of Greek in Germany, his *Thesaurus* of the Latin language, published in 1745 in four volumes, and his *German Essays* (*Kleine Deutsche Schriften* 1756), which contain much of pedagogic value. F. M.

See NEO-HUMANISM.

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**GESTURE LANGUAGE** — A method of communication in which movements of the hands or other organs of the body are employed instead of the ordinary movements of articulation. This is a primitive form of language and undoubtedly exemplifies a simpler stage of psychological development than that which is exhibited in articulate language.

C. H. J.

See LANGUAGE.

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**GETHSEMANI COLLEGE, TRAPPIST P O, KY** — A Catholic college connected with the Abbey of Gethsemani. Preparatory and commercial departments are maintained, diplomas being conferred in the latter.

**GHENT, UNIVERSITY OF** -- See BELGIUM, EDUCATION IN

**GHERARDO OF CREMONA** -- A distinguished scholar and teacher of mathematics in the twelfth century. He was born in 1114 at Cremona, in Lombardy, and died there in 1187. He is known chiefly for his work in astronomy, which included several translations from the Arabic, the *Almagest* (see **PTOLEMY**) among them. D E S

**GIBBS, JONATHAN C** (1831-1874) -- A colored educator, educated at Dartmouth College (graduating in 1852) and at the Princeton Theological Seminary. He was in charge of the educational work organized by the Presbyterian church among the freedmen (1863-1868), secretary of state in Florida (1868-1872), and state superintendent of public instruction in Florida (1872-1874). W S M

**GIDDINESS** -- See **DIZZINESS**

**GIESSEN, THE GRAND DUCAL HES-SIAN LUDWIG UNIVERSITY OF** -- The University of Giessen was founded by Landgrave Louis V, the Faithful, in the year 1607, and owes its origin to the religious conditions of the period. (See **GERMANY, EDUCATION IN**, section on *Universities*.) Giessen, from its inception, possessed the character of a university, although in the beginning the theological faculty was by far the largest and most renowned, the institution being known far and wide as a Lutheran stronghold. To this circumstance may be attributed the fact that at the outbreak of the Thirty Years' War Giessen was one of the most frequented universities in the whole of Germany, being exceeded in size probably only by Leipzig and Jena. As a direct result of political changes, the university was transferred to Marburg in 1625, a religious controversy at the latter institution twenty years previous having led to the secession that was responsible for the organization of a university at Giessen. At the close of the war, another political transfer brought about the reestablishment of the institution at Giessen, and from that time to the present day the university has had an honored, albeit somewhat modest existence.

A faculty of political economy was established at the university in 1777 and may be regarded as the forerunner of the faculties of political science, but it was disorganized eight years later. In 1829 a school of forestry was established as a branch of the university, and from 1837 to 1875 Giessen also possessed a technical school (at Darmstadt since 1877), both departments being included in the faculty of philosophy. This fact is worthy of comment, as the schools of technology are not affiliated with the universities in Germany. The faculty of medicine includes a college of veteri-

nary medicine, which is the only school in Germany to award the degree of Dr. Med. Vet. From 1830 to 1859 Giessen also supported a Catholic theological faculty.

A new library building was completed in 1904, having been erected at a cost of \$125,000, it contains over 230,000 volumes and over 100,000 dissertations and programs. The annual university budget amounts to about \$375,000. Giessen is one of the smallest of the German universities in point of attendance, there being 1249 students enrolled in the winter semester of 1910-1911, of whom more than half are registered in the faculty of philosophy, this being followed by medicine, law, and theology, in the order named.

Among former teachers of the university may be mentioned the celebrated jurist Rudolf von Jhering, and the renowned chemist Justus von Liebig, Robert von Schlagintweit, the explorer, served as doцент at Giessen from 1863 to 1885. R T, Jr

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**GIFTS** -- See **FROEBEL, KINDERGARTEN**

**GILBERT, SIR HUMPHREY** (1539-1583)

-- The navigator and stepbrother of Sir Walter Raleigh. In c. 1572 he devised a scheme for "the erection of an Academy in London for the education of her Majesty's Wards and others the youth of nobility and gentlemen," which was edited from the Lansdowne Ms. by Dr. F. J. Furnivall for the Early English Text Society in 1869. Gilbert bewails the fact that the wards of the Crown were often in the hands of those of evil religion or insufficient quality, and since these wards were chiefly resident in London, he proposes that an Academy be erected and suggests not only the subjects to be taught therein but also the salaries to be paid to the teachers and ushers. A new type of education was proposed, based on a curriculum differing from that of the humanistic schools of the day. Milton's *Tractate* shows a remarkable similarity to Gilbert's work. Masters were to be engaged to teach Latin, Greek, and Hebrew, although a sufficiently important place is assigned to the vernacular, for "in what language soever learning is attained the appliance to use is principally in the vulgar speech as in preaching, in parliament, in council, in commissions and other offices of common weal." Readers were to be appointed for moral philosophy to read "the political part thereof", for natural philosophy, for mathematics to deal with military art, cosmography, astronomy, and practical navigation. A doctor of physic was to teach physic, chirurgery, and medicines, and was to have a garden and simples. Civil

law, divinity, and common law were each to have a reader. Provision was to be made for the teaching of modern languages, dancing, heraldry, defence, horsemanship, strategy, and tactics.

The arrangements for the library are particularly interesting. The keeper is allowed £26 a year. After every mart he "shall cause the bringers of books into England to exhibit to him their registers, and thus to have first choice of books to buy. For the buying of books, etc., for the library £40 was to be allowed. But in addition it is to be noted, "All printers in England shall be forever charged to deliver into the library of the Academy, at their own charges, one copy, well bound, of every book, proclamation, or pamphlet printed." The treasurer's salary was to be £100. The chief governor was to be the master of the wards, assisted by the rector who was to have personal supervision over the pupils. The public readers of arts and common laws were to publish some new book every six years, and every three years to issue a translation of some good book. F. W.

See ACADEMIES, COURTLY, GERBIER, GENTRY AND NOBLES, EDUCATION OF, MILTON

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**GILCHRIST, JOHN BORTHWICK** — See GILCHRIST EDUCATIONAL TRUST

**GILCHRIST EDUCATIONAL TRUST** — An institution established by the will of John Borthwick Gilchrist (1759-1841), a servant of the East India Company and an orientalist. He was professor of Hindustani at London University and took an interest in educational and philanthropic efforts, being associated with George Birkbeck (qv) in some of his work. He left his property to trustees for "the benefit, advancement, and propagation of education and learning in every part of the world so far as circumstances will permit." He left every arrangement to the discretion of his trustees. The will was the subject of litigation which lasted twenty-five years, and only the fortunate circumstance that part of the property was on the site of Sydney, Australia, rapidly increasing in value, secured any means for the trustees to proceed with their work. The trustees adopted the principle of doing pioneer work in promoting education and learning where other efforts were not being employed. In this way numerous movements have been started, and as soon as they have been taken over by other bodies, the Trust has diverted its support to some new object. Thus, scholarships to aid Indian students to study at English universities were established until the work was taken up by the government and universi-

ties were erected in India. Colonial scholarships were also instituted. When Girton College and other institutions were established for the higher education of women, scholarships were provided as well as in training colleges for secondary school teachers. Traveling scholarships for secondary school teachers were established for professional purposes. Reports have been published on educational topics in foreign countries including Educational Systems of Sweden, Norway, and Denmark, French Secondary Education, The Teaching of Literature in Girls' Schools in Germany, Manual Instruction in France and Switzerland; The Teaching of Geography in Switzerland and Italy. When the Board of Education undertook the *Special Reports*, the Trust discontinued the traveling scholarships, just as the system of exchange teachers between England, France, and Germany was begun by the Trust until taken over by the Board. University Extension, the Workers Educational Association (qv), the National Home Reading Union (qv), and the Recreative Schools Association have also been assisted by the Trust. At present the Trust money is being used to encourage a system by which young teachers may be afforded opportunities of spending some time in the classrooms of expert and more mature colleagues. A scheme is also on foot for the establishment of a school of Oriental Languages to commemorate the work of the founder. The remarkable success of the Trust has shown the importance of freedom in the management of Trust funds for public purposes. More good work has been accomplished and more success has been achieved in this way than would have been possible under the restraint of the "dead hand" of regulations and provisions, which only too often hamper such bequests, not only in England but in America. The Right Honorable Lord Shuttleworth is at present chairman of the Trust, which has its offices in London.

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*Times* (London) Educational Supplement, Oct. 4, 1910

#### GILDS, MEDIEVAL, AND EDUCATION

— To conceive of the gild as the technical school of the middle ages is to realize only very imperfectly its importance for the history of education. The gilds of merchants and craftsmen which regulated commerce and industry from the eleventh and twelfth centuries onward were only species in a great genus which embraced such widely different institutions as the Universities, the Inns of Court, the Colleges of Physicians and Surgeons on the one side, and the humblest parish burial club or rural cooperative society on the other. The religious fraternity supplied the only available form and sanction for every kind of free association, whatever its aim — political, social,

economic, recreative, educational, religious. In its main aspect it may be regarded as the main instrument in the formation of that series of middle classes by whose efforts the principle of self-government was first realized in the narrower sphere of civic life and thence transplanted to the wider sphere of the national state.

Although it is generally confined to the professional and technical aspects of this development, the term "education" applies in a large sense to the whole process of class formation, and a few words may be said as to the social and political education afforded by the guilds. Socially their primary function was to facilitate a transition from the tie of kinship to that of a fellowship based on neighborhood or a common profession. The Saxon guilds of thanes which Maitland has likened to a "county club", the "frith guilds" of London and the Knights' guilds which in some cases perhaps formed the first nucleus of free civic association, all served this purpose and are connected by it as one continuous social development, both with the merchant and craft guilds and with the parish guilds in town and country. By their instrumentality the process described by Fustel de Coulanges as taking place in the city state of antiquity was carried a stage further. What the fiction of adoption and the artificial widening of the ancestral cult were to the earlier phase of civic expansion, the more attenuated fiction of fraternity, and the foundation of cooperative chantries were to the medieval city. Closely connected with this was a more consciously educational development. The wealthy city guilds took over the halls of feudal magnates and cooperatively emulated their style of life. They feasted kings, and drew nobility, gentry, and clergy into their honorary membership, and were thus one of the main agencies in removing social exclusiveness and in transmitting social manners and ideals from a narrower to a wider circle.

In the political education of the middle ages the guilds played an unique part. They were the main channels through which new classes of the population were drawn into the field of political activity. Their internal affairs furnished an excellent training in self-government and administration, whilst their intervention in municipal and occasionally in national politics gave their ambitious members a wider scope for their powers. The disputes that have arisen as to the part played by the guilds in the earliest phases of civic organization turn upon questions of constitutional form and leave untouched the primary importance of the guilds as generators of political force and organs of political change. In many leading cases at least it is highly probable that the guilds of the twelfth century had as large a share in molding the earlier patrician rule in the cities of Western Europe as the craft guilds of the thirteenth and fourteenth centuries had in trans-

forming it. The proceedings of the guilds, as such, were secret, but they provided periodical opportunities for freely debating questions of policy or of principle, and there can be little doubt that towards the end of the fourteenth century, when the guilds became more numerous and active both in town and country, they often served as centers of political, social, and religious propaganda.

Turning now to education in the stricter sense it is well to emphasize the fact already noted that the greater part of the organized higher education of the middle ages was based on a social structure provided by guilds. "The rise of the universities," says Rashdall, "was merely a wave of that great movement towards association which began to sweep over the cities of Europe in the course of the eleventh century" (See UNIVERSITIES). The federated guilds of scholars or teachers or both, of which the universities were composed, performed the same functions in regard to the higher education of the professional classes as the later guilds performed in regard to the technical education of the merchant and the craftsman (See DEGREES, INCEPTION). The completed guild structure of a London livery company towards the close of the fifteenth century is closely analogous to that of one of the Inns of Court (*q.v.*) or one of the Oxford colleges of the same period.

A link between the universities and the guilds is furnished by the civic corporations of the learned professions. The notaries formed one of the greater guilds of Florence, and probably the regulations imposed by the civic authorities of London in the thirteenth century on pleaders and attorneys were drawn up by a professional guild. In fifteenth-century London the professions of medicine and surgery received from the city a set of ordinances which placed them under the rule of a Rector who must be a Doctor of Medicine, a Master of Arts and Philosophy, or a Bachelor of Medicine of long standing, and the last-named degree was only to be accepted as a temporary makeshift. The guild insisted on previous graduation for full membership, imposed examinations in medicine and surgery, and provided a hall for reading and disputation. Later on, in the seventeenth and eighteenth centuries, the Barber-Surgeons of London, Paris, and Edinburgh provided regular demonstrations in anatomy for the instruction of their members. The London guild of Apothecaries has retained its examining functions down to the present day. (See PHARMACEUTICAL EDUCATION.)

Whilst the medical and surgical guilds were thus able to delegate many of their educational functions to the universities, the guilds of merchants and craftsmen were the sole repositories of the traditional lore of their several callings. It is very probable that they were the main channels by which that lore was transmitted from the East to the West and from the later



days of the Roman Empire to the earlier middle ages Dr L M Hartmann has recently established a strong case for the continuity of the gild tradition at Rome and Ravenna. The style of the earliest cathedral builders has been traced continuously back to the school of "Comacine" masters, whom the Lombards found working in North Italy. The dedications of the gilds of the five fundamental medieval handicrafts afford corroborative evidence which has been hitherto overlooked. The patron saints of the masons — the Quatuor Coronati — were Roman martyrs of the third century, those of the shoemakers — St Crispin and St Crispinian — are said to have been martyred at Soissons at the same period. St Aubert, the patron saint of the bakers of Flanders and Scotland, was Bishop of Cambrai and Arras in the seventh century. St Eloi, universally venerated by the smiths of the middle ages, was a goldsmith of Limoges who became a missionary Bishop at Noyon under Dagobert. But perhaps the most interesting case is that of St Severus, a woolcomber, who was Bishop of Ravenna just before the fall of the empire and whose body was afterwards carried, first to Mainz — the place of the first recorded weavers' gild in Germany — and thence to Erfurt, another weaving center, and who is subsequently found as the patron saint of weavers throughout the Netherlands and Scotland. A similar significance attaches to the spread of the cult of St Nicholas of Myra, the patron saint of Levantine commerce and navigation, which is exactly contemporaneous with the settlement of a hitherto largely nomadic trading class and the rise of the merchant gild. There are early churches of St Nicholas in close connection with the ports or markets of London, Bristol, Yarmouth, Newcastle-on-Tyne, Liverpool, Ghent, Brussels, Utrecht, Berlin, Frankfurt, Leipzig, Hamburg, Prague, Stockholm, Bergen.

It is thus probable that the most important educational service of the gilds was removed before their recorded history begins. In the later period, inaugurated by the grant of royal charters or civic ordinances in the twelfth and thirteenth centuries, the growth of the system of apprenticeship is the central feature of gild history from the educational point of view. The earliest extant records of apprenticeship are private contracts between individuals which stipulate for a premium or certain years of service in return for specified teaching. The authorized regulation of the conditions of apprenticeship by the gilds begins in London, Paris, and elsewhere in the last quarter of the thirteenth century. The urban population was then rapidly increasing. Division of labor was giving rise to new trades for which the craft gild furnished a ready organization, and during the two following centuries a steady stream of rural labor was drawn by this agency into the channels of a higher technical training.

The education provided by the gild rested entirely on a domestic basis. As a rule the master craftsman might teach his trade to as many sons as he pleased, but could only have one other apprentice who received board and lodging, clothing and discipline as one of the family. In entering the new household the apprentice passed under the protection of the gild which revised the terms of his contract, furnished a court of appeal against ill usage or defective training, and guaranteed the ultimate attainment of mastership. This produced uniformity within each craft, but the variations of usage between different crafts and different cities remained very wide throughout the middle ages. In Paris the cooks required two years' service, the carpenters four, the chandlers six, the embroiderers eight, the goldsmiths ten. A seven years' apprenticeship, which had become universal amongst London crafts, was adopted as the national standard in the sixteenth century. On the continent a much shorter period of from two to six years was supplemented by the requirement of from three to five years' travel in search of fuller experience. Some of the Rhine cities were much frequented by journeymen as the finishing school of their several trades.

Besides regulating access to the only technical school, the workshop, the gilds largely determined the nature of the instruction thus afforded, not only by an official examination of the aspirants to mastership, but also more effectively by the regular inspection of their trades, backed by civic authority, in which the collective technical conscience of the gild was brought to bear on the methods of the individual craftsman. False work and bad materials were seized and judged by juries of experts. In some crafts, *e.g.* the goldsmiths, the gild affixed its stamp to sound work, in others, *e.g.* the blacksmiths, the pewterers, and even the bakers, each master must have a mark of his own, whilst in the cloth manufacture it became usual to insist on inspection and official sealing at each stage. Technical rules multiplied under the control of the gilds and were afterwards in many cases codified in national legislation. The Act of 1603-1604, which prescribes in fifty-two elaborate sections the industrial technique to be followed by the English leather trades, is an interesting illustration of the cumulative power of gild tradition. It is very difficult to appraise justly the educational value of this tradition. In its later phases, when we know it best, it was almost wholly a hindrance to industrial progress. It was in the earlier and less recorded phases that the gilds performed their real educational service by disciplining crude labor, checking dishonest impulses, and gradually forming a professional sense of honor. But even then the gild's powers of search were often used to exclude the competition of foreign wares. Later on, when the craft gilds acquired pre-

dominance in city government, their policy as embodied in their ordinances, their methods of inspection, and their regulation or apprenticeship exhibited a narrower spirit of corporate egotism. The two opposite abuses to which the system of apprenticeship is liable -- undue restriction as a means of limiting the number of masters and entire absence of restriction as a means of exploiting youthful labor -- both became common in the fifteenth century.

The ordinances of the majority of guilds at the close of the middle ages exhibit a compromise between these conflicting tendencies. New masters are often forbidden to take any apprentices for several years, and then restricted to one, whilst those who sit on the governing body may take two, and those who have held the highest office three. By this time the entrance to mastership had likewise become restricted, partly by the growth of industrial capital, but also by the imposition of artificial conditions. Foremost among these was the institution of the masterpiece, which did not become widespread till the sixteenth century. Originating in simple tests of competent workmanship this developed into the imposition of a task sometimes occupying many months and requiring the use of expensive material besides the payment of heavy fees to the official examiners. The extant rules for the execution of the masterpiece -- which in the case of a wide range of Paris crafts cover a period of four centuries -- form a valuable contribution to the history of technical education. A jury of scribes examined candidates in calligraphy, orthography, and casting of accounts. The printers and booksellers required a knowledge of Greek and Latin, the masterpiece of the pinners was a thousand pins, of the shoemakers a pair of boots, three pairs of shoes, and a pair of slippers, of the butchers the dressing for sale of the carcasses of a cow, a calf, a sheep, and a pig. But in many cases much more elaborate tests were prescribed or were left to the discretion of the guild authorities who deliberately used them to exclude candidates from the mastership. At the same time the sons of masters and those who could pay a large entrance fee were exempted altogether or subjected to a nominal test. Whilst, therefore, the educational functions of the guilds attained their most explicit and impressive form in the masterpiece, they were simultaneously ceasing to exercise an appreciable influence on the main course of industrial development which by this time was escaping from the corporate restrictions imposed in the older urban centers and seeking a freer environment in the country. However regrettable, it was no doubt natural that the pioneers of the next phase of industrial progress and especially the inventors of labor-saving machinery should have found their chief obstacle in the handicraft traditions of the guilds. (See APPRENTICESHIP AND EDUCATION, INDUSTRIAL EDUCATION) G U

The guilds were, however, more intimately associated with school education in England. Many guilds maintained one or more priests to minister to the members of the fraternity, the practice arose for these priests to keep school for children of members or of the whole town. In time money was left to guilds for the express purpose of engaging a clerk to keep school, elsewhere the guilds paid the schoolmaster out of their funds. Thus at Barnard Castle the Gild of Trinity was "founded and endowed with certain lands, by gift of the brethren and other benefactors of the sons of ancient time to find a priest to say mass and to keep a free grammar school and a song school for all the children of the town." Of 33 guilds investigated by Leach, "excluding the Craft Guilds of London and Shrewsbury, and the Merchants' Gild at York, 28 kept grammar schools, and to them may be added the Drapers of Shrewsbury, who kept a grammar school, while the Mercers of London were trustees for three schools mentioned, and the Goldsmiths for two." In many instances the guild corporations were appointed as trustees of schools and with them were vested the right of appointing or dismissing the schoolmaster, the superintendence of repairs, the school property, the admission of pupils, the drawing up of statutes for the better government of schools, or appointing boards of governors for schools. The Skinners' Company of London became trustees for Tonbridge School in 1552 with power to draw up statutes for the school, and the practice grew up for the governors to pay an annual visit to the school. With the decay of the guild system most of the schools maintained or supervised by the schools became private endowed schools, while only a few schools in London have remained under the control of guilds, e.g. Merchant Taylors' School, Stationers' School, and the Mercers' School.

Of recent years, some of the wealthier London companies have devoted large sums to the endowment of technical and university education.

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**GILDS, TEACHERS'** — These were associations which arose in the sixteenth century to protect those teachers of primary subjects who had municipal recognition against the competition of the wandering scholars, dame and hedge-schools (*Winkelschulen*). Such organizations were confined to Germany, though at least one is found in Holland-Harlem. There is definite information bearing on the gilds in Munich (1564), Nuremberg (1613), Frankfurt-a.-M. (1613), and Lubeck (1653), while they also existed in Augsburg, Landshut, Bamberg, Stuttgart, Tubingen, Urach, and Brunswick. At Lubeck a second gild of teachers of reading and prayers was also organized. Their organization was similar to that of other gilds, which were practically on the decline when the teachers organized. A period of apprenticeship, varying from three to nine years, and beginning with the sixteenth or eighteenth year, was imposed. An examination had to be passed to become a journeyman or assistant teacher. The assistant could be employed for pay by a master and could also give private lessons, part of the proceeds going to his master. When a vacancy occurred in the gild, it was filled by the oldest assistant on proving his ability, usually by writing out, with great flourishes a signboard, a Latin motto, e.g. *Patientia omnia vincit*, or a Biblical quotation, and the master's name formed the content. The gilds struggled with difficulty against competition but without success, in spite of protests to the municipal councils, which supervised and inspected their schools. On the whole their influence was baneful, they kept down the number of schools by increasing the number of pupils in the few favored institutions without adding to the accommodations, the qualifications for membership were not always strictly adhered to, the sons, widows, or daughters of deceased members were sometimes allowed to continue schools without being required to go through the regular routine. Materially the gilds did not improve the position of their members, for many had to supplement their slight income by alms. One advantage, however, did accrue, members of the gilds were *ipso facto* citizens. The gilds lingered on ineffectually until the end of the eighteenth century. The Munich gild was finally dissolved in 1801, the capable teachers being incorporated into the state system. At Nuremberg, the gild was driven out in 1818 on the introduction of paid teachers, while at Lubeck the last was heard of the gild in the same year.

See **TEACHERS' VOLUNTARY ASSOCIATIONS**

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**GILL, ALEXANDER** (1565–1635) — Headmaster of St Paul's school, London, from 1608 till 1635. He had John Milton as pupil in the school from 1620 to 1625. Gill continued the tradition of Mulcaster's (*qv*) interest in the study of the English language as shown in Mulcaster's *Elementarie* 1582, and in 1619 published the book for which he is best known — *Logonomia Anglica, qua Gentis Sermo facilius addiscitur*. He advocated the phonetic spelling, and suggested a reform of the alphabet with that purpose, by introducing the two Anglo-Saxon signs for *th* and other Anglo-Saxon signs, together with dots over the vowels to represent their various sounds, he gets his adequate alphabet. In the feeling of pride in our old Saxon tongue Gill ranks as a pioneer. The most interesting section of the *Logonomia Anglica* is the part devoted to Syntax, where he begins to treat of the figures of speech. Following on the lines of Abraham Fraunce (*qv*), Gill quotes from English writers to illustrate the English usage in rhetorical figures. The significance of the book is the establishment of Ramus's method of illustration of rhetorical figures from modern sources, the drawing of attention to the beauties of the English literary writers, and the beginnings of the study of English literature in a school textbook. The curious point must be borne in mind, that Gill's *Logonomia* is written in Latin. Gill's son, also called Alexander (1597–1642), in 1621 became under usher of St Paul's school to his father, and was teacher and friend of Milton. Gill fell in disgrace in 1628, through drinking a health to Felton, the assassin of Buckingham, and belittling the king. Eventually forgiven, he is said to have been an usher in Farnaby's (*qv*) school, and in 1635, succeeded his father as High or Head Master of St Paul's School. He died in 1642, having gained the reputation for great severity in connection with school teaching.

F. W.

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**GILMAN, DANIEL COIT** (1831–1908) — The first president of Johns Hopkins University, and one of the leading influences in American educational development during the greater part of his career. He was born in Norwich, Conn., July 6, 1831, and was of old New England ancestry on both sides. Graduating at Yale in 1852, he pursued graduate studies at Harvard for a year, residing in the home of Arnold Guyot, the geographer, then he spent two years in Europe, where, though an attaché of the United States Legation at St. Petersburg, he found opportunities for seeing and learning much of England, Germany, and France, as well as of Russia. Returning in 1855,

he took an active part in advancing the permanent organization of the Sheffield Scientific School at Yale, and became one of the chief promoters there of the ideas of "the new learning." He was an ardent champion of scientific studies as a means of culture, though he fully recognized the claims of the classical education; and it was precisely this attitude that he afterwards manifested in shaping the character of Johns Hopkins University. He was made assistant librarian of Yale College in 1856, and afterwards librarian and professor of physical geography. During his connection with Yale, which ended in 1872 with his acceptance of the presidency of the University of California, he was one of the chief influences making for progress generally, and in particular for the building up of the Sheffield Scientific School. He was also actively connected with the public school system of Connecticut, in which he introduced important improvements. The University of California, under his presidency, from 1872 to 1875, underwent a most remarkable development, in spite of the obstacles interposed by political interference. He became president of Johns Hopkins University in 1875.

The establishment of Johns Hopkins University in 1876 marks an epoch in the history of education and learning in America, and it is to Gilman that the determination of its character must be ascribed. From the beginning, he set before himself the object of making the new institution a means of supplying to the nation intellectual training of a higher order than could be obtained at existing American colleges and universities, and at the end of a year of travel and inquiry he had gathered, as a nucleus, six professors of eminent ability, under whom, with the aid of younger associates, there was launched, for the first time in this country, a university whose standards and activities were on a level with those of the great institutions of Europe. The establishment of full-fledged "graduate schools," the naturalization of research as a leading element in American universities, and the development on a great scale of scientific and scholarly publications, date from the foundation of Johns Hopkins University. And a singular testimony to the importance of Gilman's influence in hastening this development is furnished by the fact that, although it was not until seventeen years later that funds were available for the opening of the Johns Hopkins Medical School, no other institution in the meanwhile attempted to bring about "the prodigious advancement of medical teaching"—to quote President Eliot— which was there effected under Gilman's guidance, and in accordance with the aim that he had cherished from the beginning.

In 1901 Gilman resigned the presidency of Johns Hopkins. In 1902 he became the first president of the Carnegie Institution, he resigned that office in 1904, but continued as a trustee of the institution until his death.

Throughout his life, in addition to his educational activities, he was deeply and actively interested in public improvement and in practical philanthropic effort, being, in particular, one of the pioneer workers in charity organization and in civil service reform. He succeeded Carl Schurz as president of the National Civil Service Reform League, his connection with the Peabody Fund, the Slater Fund, and the Russell Sage Foundation was of great importance; and he served on many public and semi-public commissions. His contributions to periodical literature were numerous, and he was one of the chief editors of the *New International Encyclopedia*. He wrote a *Life of James D. Dana* and the volume on *James Monroe* in the "American Statesmen" series. He edited the *Miscellaneous Writings of Francis Lieber*, and prepared an edition of De Tocqueville's *Democracy in America*, for which he wrote an elaborate introduction. Two other volumes published by him are *University Addresses* and *The Launching of a University*. He died at Norwich, Conn., Oct. 13, 1908. F. F.

See **JOHNS HOPKINS UNIVERSITY**

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**GILPIN, WILLIAM** (1724–1804) — Schoolmaster, author, and artist. He graduated B.A. at Oxford in 1744 and was ordained in 1746. A few years later he took over a boarding school at Cheam, Surrey, which he kept successfully for nearly thirty years and handed on to his son. The school is still in existence under the charge of a descendant of Gilpin. The distinguishing marks of the school were the study of the vernacular, of gardening and business, the boys engaging in practical commerce on their own accounts, the elimination of corporal punishment, replaced by trial by jury and fines which were spent for the general welfare of the whole school, and confidence in and reliance on the boys' sense of honor. As Vicar of Boldre Gilpin took an active interest in the social welfare of his parishioners and gave a number of his pictures to endow a parish school. In 1779 he published *Lectures on the Church Catechism*, which had been prepared earlier for his pupils. His writings consisted of biographies of eminent English Churchmen, including his own ancestor Bernard Gilpin, and descriptions of points of artistic interest in England accompanied with his own sketches.

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#### **GIRARD COLLEGE, PHILADELPHIA, PA.**

— An institution founded by the will of Stephen Girard (*qv*) for "poor white male orphan" children, and opened in 1848. The institution was placed in trust of the Councils of the City of Philadelphia, and is now managed by the

Board of Directors of City Trusts. Alexander Dallas Bache (*q.v.*) was appointed the first president and was sent by the trustees to Europe to make a survey of the educational institutions and systems. By one of the terms of the will "no ecclesiastic, missionary or minister of any sect whatsoever" is admitted in any capacity within the premises of the institution. An attack on the will failed in the courts on the ground that the exclusion of ministers was not necessarily an attack on religion or broad religious teaching. Orphan (*i.e.* fatherless) boys are admitted between the ages of six and ten years and receive a training such as will enable them to earn their own living at fourteen to eighteen years of age. The enrollment in December, 1911 was 1491.

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#### GIRARD, JEAN BAPTISTE (1765-1850)

— Better known as Père Grégoire Girard, a contemporary and fellow-countryman of Pestalozzi. Born in Freiburg, he attended the Jesuit school there and at the age of seventeen joined the Franciscan Order. He spent his novitiate in Lucerne and thence proceeded to the University of Wurzburg, where he studied theology. When the Swiss government had the reform of public education under consideration, he drew up a plan for primary, secondary, and cantonal schools and a national Swiss university, as a result of which he was appointed secretary to the Minister for Culture and Education, to act as advisor in the Catholic interests. Finding that his advice was rarely sought, he became pastor in Berne (1800-1804), where his broad humanitarian sympathies cut across denominational limitations and endeared him to everybody. He devoted himself mainly to the study of education and was inspired by the efforts of Pestalozzi at this period. His opportunity came in 1804 when he was called to his native city to organize public education. For more than twenty years he strove with great success to reform educational practice and theory. Starting with 40 pupils, the school in 1820 had 400 pupils, and the idea of education became established as essential to public welfare, not only in the minds of most of his fellow-citizens, but also in the surrounding cantons. The school was much visited by foreign observers. But the work of Pestalozzi tended to overshadow that of Girard who aimed to put the master's theories into practice so far as possible. In 1809 he was sent with the commission appointed by the government to Yverdon, and his report on the whole was satisfactory (*Rapport sur l'Institut de Pestalozzi présenté à la haute Diète de*

*la Suisse*). Unfortunately the labors of Girard were suspended by the reactionaries as tending to undermine religion and as being revolutionary, and in 1823 the school was closed. Girard retired to Lucerne, where he devoted himself to writing and recommending educational reform.

Girard was strongly influenced in the direction of the moral and religious end of education. Pestalozzi's work he criticized on the ground that too much emphasis was laid on the intellectual and too little on the emotional and volitional aspects. He accepted the theory of harmonious development as the aim of instruction, but here again he held that Pestalozzi overemphasized the mathematical subjects, which he feared would lead to materialism. Nature study, history, and geography were all to lead to a recognition of God, much in the same way as Froebel proposed. The lack of teachers compelled Girard to adopt the monitorial system (1816), which, strangely enough, formed the center of attack on the part of his opponents. His school was divided into four grades, and each subject was reviewed anew and expanded in each grade. He won the affection of his pupils to a remarkable degree, and on his way to and from school he was always attended by a large group of them.

His chief work was the *Langue maternelle enseignée à la Jeunesse comme Moyen de Développement intellectuel, moral et religieux* (*The vernacular taught to the young as a means of intellectual, moral, and religious development*), in seven volumes, the first dealing with his pedagogical views. Here he recognizes the loosening of the bonds of family, church, and state, and for that reason urges control through moral and religious education. This work secured him in 1844 the prize awarded by the Paris Academy. Other works were *Dialogues sur l'Institution des Écoles de Campagne*, *Divers Discours et Dissertations sur des Sujets de Pédagogie générale*, *Des Moyens d'attacher la Jeunesse à ses Études et d'activer ses Progrès*.

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#### GIRARD, STEPHEN (1750-1831)

— Founder of Girard College for Orphans, attended the schools of France, but was largely self-educated. He was for many years engaged in commercial pursuits, and left his fortune to various philanthropic and educational institutions. He bequeathed \$2,000,000 for the establishment of a college for orphans in Philadelphia. W. S. M.

See GIRARD COLLEGE

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**GIRLS, EDUCATION OF** — The various aspects of this subject are treated under separate titles. The existing practices concerning the education of girls with boys are presented under the title COEDUCATION. One phase of this question is discussed briefly under SEGREGATION. The history of the education of girls in America is included in the article on COLONIAL PERIOD IN AMERICAN EDUCATION. The early history of European practice is included in the article on MIDDLE AGES, EDUCATION IN. The general place of girls' education in various countries at the present time is given in the articles on the separate national systems. The entire subject of higher education is treated *in extenso* under the caption WOMEN, HIGHER EDUCATION OF.

#### GIRLS' PUBLIC DAY SCHOOL TRUST.

— An organization founded in England in 1872 to provide secondary education for girls. It was an outcome of the larger movement which centered in the National Union for Improving the Education of Women. The Trust numbered among its promoters Mrs William Grey, Miss Gurney, and Sir J. P. Kay-Shuttleworth. The work was organized on a commercial basis, and the shareholders receive a dividend of five per cent, any surplus being devoted to improving the schools. The first school was opened at Chelsea. The aim of the Trust is declared to be to provide for girls opportunities similar to those open to boys in the great Public Schools. "Particular stress is laid on the formation of character by moral and religious training and for fitting girls for the practical business and duties of life." A full secondary school course is provided in all the schools, which number more than thirty and have over 7000 pupils. A training department for teachers in secondary schools, as well as in drawing and music, is maintained at the Clapham High School, which also prepares for the Teachers' Diploma of London and Cambridge Universities and the Froebel Certificate. Special courses in domestic economy are given in some schools to pupils who have completed the regular courses. The fees charged vary according to the age of the pupil from £9 9s. to £15 15s. (\$47-\$78 a year). A few scholarships are maintained at each school.

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**GIRTON COLLEGE, CAMBRIDGE, ENGLAND** — An institution founded in 1869 at

Benslow House, Hitchin, for the higher education of women. It was the outcome of the efforts of Miss Emily Davies who had unsuccessfully tried to influence the Schools Inquiry Commission (1865-1867) to support the establishment of such an institution. Through her book *The Higher Education of Women* (1866) she had contributed to the progress of the women's educational movement in England. In 1868 she secured influential support and subscriptions which led to the opening of the house at Hitchin with six students. In 1873 the college was moved to Girton College, near Cambridge. Instruction was given by the resident tutors and several professors of the University along the lines of the university requirements, and the students were admitted to university lectures by courtesy. In 1881 the Senate granted permission to the students to present themselves for the university Tripos examinations for degrees, the College grants degree certificates, but not degrees on the results. At the same time the lectures were thrown open to the women. The remarkable successes of the students gave a considerable impetus to the cause of higher education of women, a large majority of the alumnae having devoted themselves to teaching in girls' secondary schools. The enrollment of the college in 1909-1910 was 158.

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**GLADSTONE, WILLIAM EWART** (1809-1898) — The great English statesman did not play as great a part in the development of English education as might be expected from his general interest in national welfare and progress. He approached the question of elementary education almost entirely with a strong belief in the claims of an established church. In 1838 he was a member of the Select Committee for the Education of the Poorer Classes appointed to consider the best means of providing useful education in large towns. Gladstone insisted on religious education as a basis for state aid. It was about this time, too, that he proposed the establishment of teachers' training schools in every diocese, and the licensing of teachers by bishops. In 1854 he was instrumental in removing tests on admission and graduation at Oxford, although he insisted that the teaching and governing remain functions of the Church of England. He was opposed to a Crown Commission to inquire into the universities and would have preferred reform from within. When the Education Bill of 1870 was brought forward by Forster (*qv*), Gladstone was lukewarm in his support. As he himself admitted later in a review of a biography of Forster (*Nineteenth Century*, September, 1888), his views "were by no means identical with the views of Forster."

"My responsibility," he writes, "is that of concurrence rather than of authorship." He would have preferred a system of local option on the question of religious instruction, for, as he says, "in all things, including education, I prefer voluntary to legal machinery, when the thing can be well done either way." In 1873 he undertook the difficult question of Irish University Reform, and in attempting to compromise met with the opposition of both Catholics and Protestants on account of his "gigantic scheme of godless education."

As a scholar Gladstone stood high. His love for the classics ranked almost next to his devotion to his religion. Any proposal to introduce pure science, natural science, modern languages, and modern history as subjects equivalent to Latin and Greek he refused to consider as possible, all of the new subjects he regarded as "auxiliary" to classical training. And his argument for classics was based not only on their cultural and disciplinary value but on the fact that "European civilization from the middle ages downwards is the compound of two great factors, the Christian religion for the spirit of man, and the Greek, and in a secondary degree the Roman, discipline for his mind and intellect." At the same time he recognized that such an education was for the élite only, "it can only apply in full to the small proportion of the youth of any country who are to become in the fullest sense educated." While Gladstone's influence on English education was very slight, the point of view of the leader demands attention, for it is representative of the opinions prevailing in England in the middle of the nineteenth century.

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**GLASGOW, THE UNIVERSITY OF.**—A coeducational institution situated in Glasgow, Scotland, founded (1451), like most other ancient universities, by the authority of the Church of Rome. The Bishop of Glasgow and his successors in office were appointed to rule over the college. Up till 1460 the university seems to have had no permanent home, but in that year, James, Lord Hamilton, bequeathed to the Principal of the College of Arts, and his successors in office, a tenement with four acres of land adjoining, situated in the old High Street of the city. In buildings on this site, the classes of the university continued to meet for upwards of four hundred years, until the new university buildings situated at Gilmorehill were ready for occupation in 1870. Owing to the ecclesiastical changes, and the political conditions of the country, the university passed through many vicissitudes during the first two

hundred years after its establishment, and it was not until the beginning of the eighteenth century that it began to make steady, continuous, and permanent progress. This manifested itself in (1) the specialization of the teaching within the University, and (2) in the establishment of new chairs. During the last decade of the seventeenth century and the whole of the eighteenth century, eight new professorships were established, viz. mathematics (1691), humanity (1706), oriental languages (1709), civil law (1712), medicine (1712), history (1716), anatomy (1718), and astronomy (1760). Thereafter, for nearly fifty years, no additional chairs were added, but beginning with the establishment of the chair of natural history (1807) there came the establishment of professorships in surgery (1815), midwifery (1815), chemistry (1817), botany (1818), materia medica (1831), institutes of medicine (1839), forensic medicine (1839), civil engineering (1840), conveyancing (1861), English language and literature (1861), biblical criticism (1861), clinical surgery (1874), clinical medicine (1874), naval architecture (1883), history (1893), pathology (1893), and political economy (1896). During the present century separate chairs have been founded in geology (1903), zoology (1903), and mining (1906). Further, since 1892 many additional lectureships have also been established, the more important being those of French, German, Italian, and Celtic in the Department of Language and Literature, education, psychology, and political philosophy in the Department of Philosophy, constitutional law and history, and economic history in the Department of History and Law. In addition, both in medicine and in science, lectureships in the more specialized departments of these subjects have been recently instituted.

The present buildings in the west of the city were opened in 1870. In addition to the buildings used for teaching, there is also the Bute Hall, the gift of the late Marquis of Bute. Here are held the graduation and other important ceremonies of the university. Residences are provided within the grounds for the principal and several of the professors. In 1893, as a result of the admission of women students to the universities of Scotland, the Governors of Queen Margaret College, an institution for the higher education of women and housed in North Park, handed over to the university its buildings and grounds for the use of the women students. Since then Queen Margaret College has ceased to be an independent institution and has been wholly incorporated with the university. Within recent years, extensive additions have been made to the original buildings at Gilmorehill, including (a) classrooms and laboratories for the teaching of engineering; (b) lecture rooms, a museum and herbarium for the teaching of botany, and (c) an extension of the anatomical depart-

ment Two other groups of buildings have lately been added, one for the teaching of physics, the other to provide better accommodation and equipment for the teaching of physiology, materia medica, and forensic medicine.

The present constitution of the university dates from the passing of the Universities (Scotland) Act of 1858, and as amended by the Act of 1889, and is similar to that of Edinburgh (*qv*) and other Scottish universities. The University Court, now composed of fourteen members, representative of the General Council of graduates of the *Senatus Academicus* and of the students, is the chief governing and administrative body; the duties of the *Senatus* being mainly concerned with the regulation and superintendence of the teaching and discipline within the university. The work of the university is, at present, divided into five faculties or departments, viz: the faculties of (1) arts, (2) science, (3) medicine, (4) law, and (5) divinity.

The Faculty of Arts is the largest in the university and is attended by more than 1200 students yearly. It provides a course for graduation in arts. The work of the faculty is divided into four departments, viz: those of language and literature, of mental philosophy, of mathematics and science, and of history and law. The course for graduation may be taken either in five or six subjects, provided that when a course of five subjects is taken, two of these must be studied during two sessions, and an examination passed on a higher standard than in the other three subjects of the course. If a curriculum of six subjects is chosen, one of these must be studied during two years, and of the other five, two must be cognate (*e.g.* logic and moral philosophy) and must be taken up in separate sessions. A further regulation enacts that every curriculum for the ordinary degree in arts must include a philosophical subject, either logic or moral philosophy. The degree with honors in arts may be taken in the following departments of study, viz: (a) classics, (b) philosophy, (c) mathematics and natural philosophy, (d) English, (e) history, (f) economics, (g) French and German, (h) French, Italian, Latin (any two), (i) Germanic language and literature (with English), (j) Celtic language and literature (with Latin), (k) Semitic languages (Hebrew and Arabic).

In the Faculty of Science, in addition to the course leading to the degree of Bachelor in Pure Science, courses are also provided in applied science, leading to the bachelor's degree in (a) engineering, in (b) agriculture, in (c) public health, and in (d) pharmacy. Higher degrees in both science and arts may be conferred on graduates on the presentation and approval of a thesis after five years from the date of their graduation.

In the Faculty of Medicine, courses are provided for students leading to the degree of

Bachelor of Medicine and Bachelor of Surgery (M B, C M). The course normally extends over five years. Holders of the lower degree may on certain conditions proceed thereafter to the degree of Doctor of Medicine (M D) or Master of Surgery (M Ch).

The Faculty of Law provides two degree courses, one open only to graduates and leading to the degree of Bachelor of Laws (LL B), and the other and lower degree of Bachelor of Law (B L) open to non-graduates in arts on certain conditions. The faculty of divinity provides a course for graduates in arts leading to the degree of Bachelor of Divinity (B D). Honorary degrees may also be conferred in law (LL D) and in divinity (D D).

The total number of students in attendance during session 1909-1910 was 2728, made up as follows: arts, 1253, medicine, 698, science, 443, law, 204, divinity, 61. Enrolled in more than one faculty 20, single-course students, 48. Since 1892, when the University was thrown open to women students, the number has gradually increased. In session 1909-1910 women students numbered 642, of whom 534 were enrolled in the Faculty of Arts and 71 in the Faculty of Medicine. The staff of the University, at present, embraces 32 professors and 52 lecturers (exclusive of assistants to professors). A D

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#### GLENALMOND, TRINITY COLLEGE —

See GRAMMAR SCHOOLS, ENGLISH, COLLEGES, ENGLISH, PUBLIC SCHOOLS

#### GLOBES — See MAPS

**GLOMERY** — This word is simply a corruption of the word "grammar," dating (apparently) from the thirteenth century. Owing to its use at Cambridge as late as the sixteenth century, where the Master of Glomery (*Magister glomeræ*) in 1533-1544 exercised the functions, afterwards performed by the professor of Greek and the Public Orator, of presenting for degrees, a great deal of wild guessing took place as to its meaning. Fuller, in his *History of the University of Cambridge*, published in 1659, leaves it as a mystery. "Let it suffice us to know that the original of the word seems barbarous, his office narrow and topical (confined to Cambridge) and his certain use at this day antiquated and forgotten." Even Dr Rashdall, in his *Universities of Europe*, speaks of the Master of Glomery as a "wholly peculiar Cambridge institution." Dr Caius, the Elizabethan historian of Cambridge, had derived the name "as



if so called a *glomerando* from 'going round about' the Regent-houses to collect the votes at congregations, or from 'gathering their votesglomerated,' that is, rolled and rounded up in a piece of paper."

In point of fact the Master of Glomery at Cambridge was at first nothing more than the grammar schoolmaster. The first extant notice of him is in a document of the year 1276, in which the Bishop of Ely regulated the relations and defined the area of jurisdiction of the Master of Glomery, the Chancellor of the university, and the Archdeacon of Ely. The grammar master is to have exclusive jurisdiction in all cases in which grammar scholars (*glomerelli*) are dependents, as other masters have in the cases of their scholars, so that whether university scholars or laymen wish to convene grammar scholars or get anything from them by judicial process they shall do it before the Glomery Master unless it be a question of rent of lodgings or involving loss of university rights when the Chancellor is to decide. The grammar beadle was not to carry his mace in university convocations nor before the Chancellor, but he might continue to do so elsewhere, especially when executing his office. This document is of great interest in the history of universities as it showed how the later jurisdiction of the Chancellor of the students of the higher or university faculties had eclipsed the glory of the preexisting grammar schoolmaster. That the Glomery Master was nothing more is clear from the oath which he took on admission by the Archdeacon of Ely to discharge all the duties of the glomery school of Cambridge (*opera scholarum glomeriæ Cantabrigiæ*) without any extortion from the scholars. The oaths and names of the Glomery Masters until 1437 are preserved in the Archdeacon of Ely's book now at Caius College. The Glomery School was, under the title of Gramer Scole, granted to trustees of King's College and incorporated in its site in 1440, but the lane in which it had stood was still called Glomery Lane when Dr Caius wrote in the reign of Elizabeth. After 1437 the Glomery Master appeared to have been merely the superintendent of the grammar schools in Cambridge and head of the grammar faculty presenting candidates for the degree in grammar. The last who enjoyed the title was Sir John Cheke (*qv*) in 1533-1534, and it is presumed that his office was deemed to be merged in that of the Professor of Greek. That the term is not peculiar to Cambridge appears from the earliest account roll of the grammar school attached to Merton College, Oxford. In the year 1277, 20s was paid to the grammar master (*magistro glomerie*) for five boys for one term, or at the rate of 4s. a head. At Bury St Edmunds, in 1288 or 1289, an official issued a mandate against certain pedagogues wrongfully usurping the title of master who presumed to keep adulterine schools, pretending

to teach dialecticians, grammar scholars (*glomerellos*) against the will of the schoolmaster of St Edmunds, and directing their excommunication. A similar mandate, a few years later, was directed against John Harrison for teaching *glomerellos* and other pupils. At Salisbury in 1308 the grammar schoolhouse is described as *scole glomerie*, which in 1322 appears as *scole gramaticales*, thus establishing the identity of meaning beyond doubt.

The corruption is probably of French origin as it appears in the *Battle of the Seven Arts* of Henry d'Andely written about 1250 (ed A Heion, 1881) in which the glomerians assemble at Orleans, where classics were still the predominant study, under the banner of grammar, to attack the logicians intrenched at Paris.

A F L

#### GLOSSARIES, GRÆCO-LATIN — See VOCABULARIES

**GNOSTICISM** — During the second century of the Christian Era there arose a strange medley of doctrinal speculations, known as Gnosticism, which disturbed the peace of the Church and necessitated the development of a Christian theology. They represented a systematic effort to fuse Christianity into the vast fabric of speculation erected by philosophic thought. Men of keen intelligence, having embraced Christianity, naturally applied to its investigation the methods of Jewish learning and Greek philosophy. There soon sprang into existence a multitude of pantheistic-idealistic sects, varying widely in their ideas, but agreeing upon certain basic principles. They all professed a *gnosis* or spiritual enlightenment. They regarded Christianity as a system of metaphysics to be expressed in the categories of speculative thought. They held that the soul attains its rightful end, not by faith and works, but by receiving a tradition of knowledge, communicated only to the initiated few and to which the masses of mankind could not attain. This doctrine of salvation by knowledge limited the enjoyment of religion to a few illuminati. The Gnostics were "those who knew," a superior order of beings apart from ordinary believers. Most of them were dualists. Adopting the familiar axiom of the philosophers, "evil inheres in matter," they despised the physical world as the creation, not of the Supreme Deity, but of a Demiurge, a limited secondary god. Some said matter was eternal, others explained it as rubbish remaining after the completion of the spiritual *pleroma*, the result of accident or negligence in the process of creation. They regarded the human body as an incumbrance in which the soul is held captive and from which it will escape at death. They denied the resurrection of the body and explained away the Incarnation of Christ, generally adopting the *docetic* theory, that Christ was a pure spirit with a phantasmal

or apparitional body. To account for the evolution of the universe, they called into existence a series of "endless genealogies," a long chain of lower gods or *æons*, connecting the world with God. The Demurge and the material world were more or less antagonistic to God, and this present existence was essentially evil. Thus Gnosticism was a philosophic and religious pessimism. It was too speculative to be bound by scriptures, creeds, and sacraments. There was no central authority. Every Gnostic teacher shaped his theories to suit himself and garnished them with "great swelling words." The Gnostics were more active than the orthodox Christians in literary and educational work. Their great teachers — Basilides (c 125), Valentinus (125–140), Bardesanes (154–222), Heraclion (c 160), and Marcion (c 150) made many disciples who became famous educators and founded colleges in Antioch, Alexandria, and other centers of learning to which multitudes of students were drawn. They produced a vast and varied collection of writings, most of which have perished. The Gnostic theories possess a curious interest for the scientist, and especially the psychologist, because of their original and often fantastic efforts to solve the great problems of life and mind. W R

See ALEXANDRIA, SCHOOLS OF

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**GODDARD, WILLIAM STANLEY** (1757–1845) — One of the most influential Headmasters of Winchester College. Himself educated at Winchester and Merton College, Oxford, where he graduated B A in 1781, he became usher or second master at his old school in 1784. Under Dr Warton, headmaster at this time, the numbers had dwindled, discipline was lax, and scholarship was low. As a result of a "rebellion" of the pupils, Dr Warton resigned and was succeeded by Dr Goddard in 1796. He introduced a new spirit into the school; the numbers increased, the standard of scholarship was raised, but above all he showed great tact in managing boys, in putting trust in them, and in permitting a certain measure of self-government. Dr Arnold was a pupil at Winchester under Goddard, and there can be no doubt that he owed much to his influence and to Winchester traditions, to Goddard's tact. Dr. Arnold frequently recurred. A large number of boys educated at Winchester at this period attained eminence in later life. Dr Goddard retired in 1809, became prebendary of St Paul's in 1814, canon of

Salisbury in 1829, and died in 1845. He gave, during his lifetime, £25,000 to his old school to be used for masters' salaries in place of the iniquitous system of gratuities.

See WINCHESTER COLLEGE

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**GODWIN, MARY WOLLSTONECRAFT** (1759–1797) — An English author, the wife of William Godwin (*qv*), whose political and social theories she shared. Impatient with a system of female education which made puppets of girls and killed individuality, she wrote, in 1792, the *Vindication of the Rights of Women*, a remarkably capable plea for the political, social, and intellectual enfranchisement of women. Her general thesis is "make women rational creatures and free citizens and they will quickly become good wives and mothers; that is, if men do not neglect the duties of husbands and fathers." Women should be "free from all restraints by allowing them to participate in the inherent rights of mankind." Hence she was strongly opposed to the type of education proposed by Rousseau for Sophia. In a chapter on National Education, Miss Godwin takes occasion to criticize severely private education and private and boarding schools, which are marked by tyranny and slavery to forms. The private schools give little thought to moral training, the masters considering their duty done if they teach Latin and Greek and send a few good scholars to the universities. But "it is not for the benefit of society that a few brilliant men should be brought forward at the expense of the multitude." Hence she advocates a system of national education in the first years, at least, on a purely democratic basis. A national system should provide a common school for children of all classes from the age of five to nine. Reading, writing, and arithmetic, natural history, simple experiments in natural philosophy, botany, mechanics, astronomy, religion, history, and politics would make up the curriculum, but play in the open air must never be neglected. After the age of nine the poorer children would go to industrial schools for vocational training, while the rich would study languages, science, history, and politics. Both sexes were to be educated together, for coeducation serves to perfect both not only morally, but for companionship through life.

In her other work, *Thoughts on the Education of Daughters* (1787), she also attacks the narrow training of girls for the drawing room, which was so characteristic of the time. Suggestions are here offered for the education of girls which would replace the prevailing superficiality, weakness, dependence, and affectation of women by a healthy independence and desire

to share in the world's work as the companions of men. Mrs Godwin, always devoutly religious, took a strong interest in moral training of children, and translated Salzmann's *Moralisches Elementarbuch* (*Elements of Morality*, 1790), with modifications to suit English conditions (See SALZMANN, CHRISTIAN GOTTHILF)

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**GODWIN, WILLIAM** (1756-1836) — English political philosopher, novelist, and anti-quarian, the son of a dissenting minister and himself a minister from 1778 to 1783, when he came under the influence of the French philosophers and English republicans. He sympathized with the theory of the French Revolution, but hardly with the methods of procedure. He associated with the most prominent English radicals, and in 1793 his *Enquiry concerning Political Justice and its Influence on Morals and Happiness* placed him at the head of the extremists. This work, which attracted considerable attention and was a source of inspiration to many young men, was an attack on all forms of government as means of constraint and control. The relations of individuals in society should be regulated on a basis of justice, "a principle which proposes to itself the production of the greatest sum of pleasure and happiness," and this principle in turn depends on reason. Godwin's belief in the perfectability of man was connected with his belief that reason could be improved indefinitely. Hence he believed in the boundless possibilities of education, of which all alike were capable. In this work Godwin held that the differences between individuals due to heredity were of small account and would disappear under the influence of a common education. The administration of education he would not leave in the control of a national government, since it would tend to perpetuate its own opinions and would prevent the development of an open mind ready to search for truth rather than to accept opinions, and, further, private endeavor on the part of teacher and taught would be accompanied by "enthusiasm and energy." But while this work was evidently written under French influence, there is little trace of Rousseau in Godwin's educational writings. *The Enquirer, Reflections on Education, Manners, and Literature* (London, 1797), and *Thoughts on Man; his Nature, Production, and Dis-*

*coveries* (London, 1831). In the Preface of the earlier work the author declares his belief in the intimate connection between the cause of political reform and the cause of intellectual and literary refinement. The objects of education are the attainment of happiness, virtue, and wisdom, each of these depending on the other. In discussing the value of private (tutorial) or public education (*i.e.* in school) Godwin argues in favor of the latter on social grounds, for "to practice upon a smaller theater the business of the world must be one of the most desirable sources of instruction and morals," and further, the child learns more from intercourse with his companions than from the teacher. The purpose of education is to "provide against the age of five and twenty a mind well regulated, active, and prepared to learn." Hence the importance which he attaches to habit formation in the young; the school is not to impart knowledge so much as habits of intellectual activity. Godwin accepted the disciplinary value of the classics, for the retention of which he states arguments which have not since been improved upon by their advocates. But the most remarkable pronouncement is that on method in the essay *Of the Communication of Knowledge*, an anticipation of the doctrine of interest. "The best motive to learn is a perception of the value of the thing learned, the worst motive . . . may well be affirmed to be constraint and fear, there is a motive between these . . . desire not springing from the intrinsic excellence of the object, but from the accidental attractions which the teacher may have attached to it." If his plan of giving the pupil a motive to learn and smoothing out his difficulties is adopted, the author believes that the face of education will be changed and "no such characters are left upon the scene as either preceptor or pupil." According to the new method "the pupil should go first and the master follow." While he admires "the treatise of Rousseau upon education" as "probably a work of the highest value," he criticizes his system severely because of lack of frankness on the part of the tutor and because of the deception played on the pupil, for "his whole system is a series of tricks, a puppet-show exhibition, of which the master holds the wires, and the scholar is never to suspect in what manner they are moved."

In the *Thoughts* Godwin has clearly made some advance in educational theory. While he still has faith in the great educational value of the classics, he advises that a pupil who has no ability for language should be taken away from those studies. More respect should be shown to individuality; the capacities of a scholar should be studied and his career and education should follow accordingly. An ill-adapted curriculum is frequently at fault rather than innate stupidity, for "nature never made a dunce." Godwin is thus compelled to recommend a wider curriculum, including

"the rudiments of all the sciences that are in ordinary use," than he had done in the *Enquirer*. In this volume there is also an attack on phrenology and insistence on the unity of the mind. The author discredits the view put forward by the phrenologists that an individual is endowed with special abilities, and shows that a child may be born with general ability which can be directed to special ends. Godwin's political work was soon forgotten, and his educational writings, though full of sound common-sense views and sympathy, did not exercise any marked influence.

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**GOETHE, JOHANN WOLFGANG** (1749-1832) — Although Goethe has not formulated any connected system of education, his works contain some of the deepest and most fruitful pedagogic thoughts. His interest in education was early aroused through the works of Basedow and Rousseau, in Weimar he directed the education of the son of Frau von Stem, a young man of rather mediocre talents, whom Schiller, however, pronounced a "pedagogic masterpiece", and, as a minister, he exerted a great influence on the educational affairs of the duchy of Weimar. Above all, Goethe studied the development of his own mind, striving to raise himself to higher and higher levels. This conscious process of self-education, coupled with the poet's profound insight into human life, invests Goethe's ideas on education with a great interest and significance. Goethe realizes the necessity of education, although he believes that the educator cannot put anything into the mind which is not already there by nature. The method of education must be self-activity, education must be positive and not repressive, education through fear is the worst of all.

The object of education, according to Goethe, is the development, from within, of all the powers of the human mind, so as to produce an harmonious personality which will be active in the service of society. This social view of education finds expression in the description of the "pedagogic province" of his novel *Wilhelm Meister's Wanderjahre*. In this province, which forms a small state in itself, and from which all unpedagogic influences are carefully excluded, boys are educated in common, each for that kind of occupation for which he seems to show the greatest aptitude. Their education is thoroughly practical, and is permeated by an ethical spirit to which Goethe gives the name of "reverence". Three kinds of reverence are inculcated: for that which is above us, that which is around us, and that

which is beneath us, in other words, for God, Humanity, and Nature. From these three reverences springs the highest, which is self-reverence. These ethical teachings are embodied in appropriate symbols and transmitted by song. **F. M.**

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**GOLDEN SECTION.** — When a spacial figure is so divided that it obeys the formula — the longest side is to the shortest side as the sum of the two sides is to the longest side, the division is especially pleasing to the observer and is designated the golden section. This formula is obeyed by ornamental crosses, by books and pictures, to such an extent that it is evident that the relation is common and natural to even untrained individuals. The explanation of the satisfactory character of this division is not easy to give. Such a division departs from absolute symmetry enough to give variety, and it is near enough to symmetry so that neither dimension is extravagantly different from the other. **C. H. J.**

See **ÆSTHETICS**

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**GOLDSMITH, OLIVER** (1728-1774) — The English poet and writer has left among his writings some excellent descriptions of the life of an assistant or usher and a criticism of the education of his day. As a boy he had been moved about from school to school with but little intellectual profit from any of them. It is supposed that it is the master of the second school which he attended, Thomas Byrne, a retired soldier, who is the prototype of the Village Schoolmaster in the *Deserted Village*: —

"And still they gazed and still the wonder grew  
That one small head could carry all he knew"

As a student he was at Trinity College, Dublin, at Edinburgh, and at Louvain. For a time he assisted in a school kept by his brother, served as private tutor in Ireland, and was usher at Peckham Academy, so that his account of the humiliating position of the usher is based possibly on first-hand experience. It is in the same essay that he criticizes the declamatory style of educational writings and asks for a more scientific manner of presentation and for "didactic simplicity". Goldsmith attacks the numerous private boarding schools of the period. "Is any man unfit for any of the professions,

he finds his last resource in setting up school," with no small profit to himself. The state should interfere and at least "cast its eye to their instructors," a suggestion which still remains to be put into effect in England. Better salaries are required to secure abler men for the teaching profession. The public schools are superior to private schools, for "it is not from their masters, but from their equals youth learn a knowledge of the world." Temperance and frugality, qualities which Goldsmith had negatively discovered to be desirable, should be taught in school, and moral tales should be introduced. Goldsmith further attacks the teaching of rhetoric and elocution, where conviction and a knowledge of the subject and language are of greater value. He was also opposed to the encyclopedic curriculum of his day, by which "the child soon becomes a talker in all and a master in none." Clearly something of "soft pedagogy" was already creeping into the schools, for Goldsmith mentions the futility of teaching language through textbooks with text on one side and literal translation on the other. Further, he says, "attempting to deceive children into instruction is only deceiving ourselves, and I know no passion capable of conquering a child's natural laziness but fear." In another work (*Present State of Polite Learning*) the author discusses the relative merits of travel and study in college, and decides in favor of the latter for the young man. The universities he divides into three groups: those which retain the scholastic tradition, — Prague, Louvain, and Padua, those which do not prescribe the length of residence for a degree nor control the students, — Edinburgh, Gottingen, Leyden, Geneva, and those which have a prescribed period of study and some control, — Oxford, Cambridge, and Dublin. Dealing with the general characteristics of the universities he controverts the belief that they are places to advance learning, for "new improvements in learning are seldom adopted in colleges until admitted everywhere else. And this is right, we should always be cautious of teaching the rising generation uncertainties for truth." And lastly this modern touch may be added, "Learning is most advanced in populous cities, where chance often conspires with industry to promote it."

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**GOLDTHWAITE, WILLIAM C** (1816-1882). — Educational author, educated in the public schools of Massachusetts and at Amherst College. He was engaged in secondary school work in Virginia and New Jersey for a number of years and was principal of the academy at Westfield, Mass., from 1844 to 1868. He was

one of the founders and editors of the *Massachusetts Teacher*, and the author of geographical textbooks  
 W S M.

**GOLIARDS** — The name of a class of wandering students of the middle ages. They were drawn from the clerical orders and consisted of those who had no cure or office. The term is derived, according to Wright, from *gula*, and refers to their gluttonous and intemperate habits. They wandered from university to university as hangers-on of the higher clergy, or from one court to another, and led a riotous existence, living generally from hand to mouth. The bond which bound those who adopted this form of life together into a sort of fraternity was adherence to a mythical patron, Gohas or Goliath the Bishop, referred to also as *primas* and *archipoeta*. In his name and in his honor were perpetrated all the vices and pleasures which were incidental to a tramp life. To him were dedicated all the songs and literature which originated with this class, and under his patronage were made all the attacks against ecclesiastical authority and everything that was considered sacred, as, for example, the *Apocalypse Goliæ*, a parody on the Apocalypse of St John. The songs have been collected and published under the title of *Carmina Burana* (q v)

See BACCHANTS

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**GONZAGA COLLEGE, SPOKANE, WASH.**

— See JESUS, SOCIETY OF EDUCATIONAL WORK OF

**GONZAGA COLLEGE, WASHINGTON, D C**

— See JESUS, SOCIETY OF EDUCATIONAL WORK OF

**GOODNOW, ISAAC T** (1814-1891) —

A pioneer of the common-school movement in Kansas, was educated at the Wesleyan academy at Wilbraham, Mass., and was engaged in secondary school work first in Massachusetts, Maine, and Rhode Island, and later in Kansas. He was president of Bluemont College from 1856 to 1863 and state superintendent of Kansas from 1863 to 1867  
 W. S. M.

**GOODRICH, CHAUNCEY ALLEN** (1790-1860) — Lexicographer; graduated from Yale College in 1810. He was tutor at Yale from 1812 to 1814 and professor from 1817 to 1839.

He was the author of several Greek and Latin textbooks, edited the *Quarterly Spectator*, and brought out numerous revised editions of the dictionary of his father-in-law, Noah Webster (*q.v.*).  
W. S. M.

**GOODRICH, SAMUEL GRISWOLD** (1793–1860) — Author of the Peter Parley books, published eighty-four textbooks and reading books for children. His textbooks include, besides readers and primers, histories, geographies, spelling books, and science books.  
W. S. M.

**GORDON, ROBERT** (1668–1731) — Founder of Robert Gordon's College, an institution for the education of boys in Aberdeen, Scotland; was born in 1668 and died in 1731. For many years he carried on business as a merchant in Dantzic and amassed considerable wealth. On his death, he left his fortune in trust to the magistrates and ministers of Aberdeen for "the building of an Hospital and for the maintenance and education of boys whose parents are poor and indigent and not able to maintain them at school, and to put them to trades and employments." The erection of the Hospital buildings was begun soon after the testator's death, but it was not until 1750 that the school was formally opened with fourteen boys, under the mastership of a Robert Abercrombie, minister at Fortde. From its foundation down to 1881, the institution was conducted on the basis of the original foundation as a hospital or boarding school for the sons of indigent burgesses. In the latter year, acting under powers conferred by the Endowed Institutions (Scotland Act), it was agreed to convert the Hospital School into a college or day school in which the chief subjects of instruction should be the English language and literature, history and geography, modern languages, mathematics, and the elements of physical and natural science. Provision was also made for the establishment of evening classes for youths and adults. The institution was hereafter designated as "Robert Gordon's College in Aberdeen." Quite recently, in 1910, the Constitution of the College has again been changed, and, in the future, Robert Gordon's College will become an integral part of the Aberdeen and North of Scotland Technical College, an institution designed to provide higher technical education for the North of Scotland, similar to that provided in the Glasgow and West of Scotland Technical College and in the Edinburgh Heriot-Watt Technical College.  
A. D.

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**GORDON COMPREHENSIVE METHOD**

— See READING

**GORDY, J. P.** (1851–1908) — Educational writer and professor, educated in the western University of Pennsylvania and the University of Leipzig. He was professor of the history of education in the Ohio State University (1886–1900) and New York University (1901–1908). Author of *Growth and Development of the Normal School Idea in the United States*; *Education in the Elementary School*; and *Text-book on Psychology*.  
W. S. M.

**GORHAM, JOHN** (1793–1829) — Author of textbooks in chemistry and physics; was educated at Harvard College and the University of Edinburgh and was professor at Harvard.  
W. S. M.

**GOTHA, SCHOOL REFORM IN** — The small state of Saxe-Gotha, situated almost in the center of Germany, holds a position in the history of education which is almost unique. The earliest record of a school in the duchy is in 1299 when reference is made to a school in connection with the church in the town of Gotha. In 1327 two schools are mentioned, and a few years later a school of girls is referred to. Considerable activity was shown during the period of the Reformation. Myconius, a friend of Luther, became pastor and superintendent in Gotha in 1524. Influenced by Luther's *Letters to Councilors* and the *Letters to Pastors*, Myconius attempted to introduce some form of elementary education. The elements of a system are found in the instruction in reading which the pastors and sextons were ordered to give on Sundays. This lasted until the Thirty Years' War, when the small duchy was reduced to poverty and chaos like so many of her neighbors. But from this state of depression Gotha was raised through the efforts of a ruler whose interest in the welfare and education of his people placed him in the forefront. With a firm belief in education imbibed from his mother, Dorothea Maria, pupil and patron of Ratke (*q.v.*), Duke Ernest the Pious recognized that this was the only means for the regeneration of his country. Already in 1640 he ordered a school and church visitation to gather information as a basis for further action. He himself made some visits personally. For the reform of schools and the establishment of a system of education he summoned to his aid Andreas Reyher (*q.v.*) who had been a member of the philosophical faculty at Leipzig, rector of a gymnasium, and author of several school texts. Reyher was appointed rector of the gymnasium at Gotha in 1640. He was abreast of the best educational thought of his day, and was acquainted with the work of Alsted, Ratke, and Comenius (*q.v.*). The Duke commissioned him to draw up a *Methodus docendi* primarily for lower forms of the gymnasium, but useful also for other schools of the state. The result was the *Schulmethodus* (*School Method or Special and particular report, stating how, under the*

protection of the Lord, the boys and girls of villages, and the children belonging to the lower class of the population of towns, of this principality of Gotha can and shall be plainly and successfully taught. Written by the order of his Grace the Prince and printed in Gotha by Peter Schmieden in the year 1642) This work, which was carefully revised by the Duke, appeared in 1642 and again in 1648, 1658, 1662, and 1672 Attendance at school was made compulsory on pain of a fine not only for absence but for tardiness The teachers were ordered to be humane, and to avoid abuse and severity A fully prescribed time-table was issued The chief stress was laid on religious instruction, and the teachers were to avoid mere memory drill Writing, spelling, reading, and arithmetic became regular subjects for the elementary school The most remarkable addition was the study of natural and other useful sciences, including mensuration and surveying for boys, natural phenomena, geography, zoology, information was to be given on all natural objects in the neighborhood "Everything that can be shown to children should be shown" The oldest children were to be taught civics, something about the government of the state and the importance of education. An annual examination was to be held at which the superintendent was to examine the records of the previous year and compare with the progress made at the time of the examination

Twenty model schools were established, new inspectors were appointed, better teachers were secured, textbooks were written and distributed gratis to school children Among the textbooks which were written by Reyher may be mentioned the *Deutsch ABC- und Syllabenbuchlein für die Kinder im Fürstenthumb Gotha* (The German Hornbook and Speller for Children in the Principality of Gotha) 1641, *Teutsche Lesebuchlein* (German Reader) 1642; *Arithmetica*, and in 1656 the *Kurtzer Unterricht* (Short Instruction in natural objects, in some useful sciences, in ecclesiastical and secular institutions of the country and in some domestic rescripts) For the training of children in manners a *Short instruction on the behavior of children* was published in 1654 on conduct of children on rising, dressing, at meals, at school and church, at play, and among strangers The teachers were advised to study by themselves or with pastors and inspectors Their salaries were raised, a sick fund was established, and some provision was made for the maintenance of teachers' widows and orphans Although he realized the importance of training teachers, Duke Ernest could only charge his successors with the duty, since his own means would not permit the establishment of a system in his own day

But reforms were not confined to the elementary schools alone Under Reyher the gymnasium at Gotha gained a great reputation, and pupils were drawn from the noble classes from all parts of Europe The number of

classes was increased, and special attention was paid to the preparation of the older scholars for the university. The Duke frequently visited the school and took a special interest in the conduct of the pupils Many of these proceeded to Jena, but, while the influence of the Duke was limited in this university, he issued a regulation in 1657 for those of his own subjects who attended there, dealing with the aim of studies, the means to this end, and the distribution of time For the education of his own children, of whom he had eighteen, he drew up a rigorous regulation dealing with every hour of the day

But such a system could only last so long as he who inspired it lived The "Prince among educators and educator among Princes" died in 1675 and had already been preceded by his able assistant, Reyher, in 1673 From that date until the middle of the last century the educational history of Gotha is one of continued decline, due in some measure to the fact that the duchy was divided among the sons of Duke Ernest, and largely to the extravagance of the petty rulers who spent the country's wealth in cheap imitations of the Court of Versailles The decline was arrested for a brief period under Ernest the Wise (1772-1804), who, assisted by Haun, inaugurated a reform of the decayed schools of the state, teachers were trained, schools were inspected, harsh discipline was stopped, the appointment of old servants to schools was checked, better methods of teaching were introduced by the issue in 1801 by Haun of *The common school methodus or practical instruction for inspectors and teachers of every kind of elementary schools, also for private teachers, illustrated by correct tables constructed by J. E. Christian Haun* But the party of reaction again seized control on the death of Duke Ernest the Wise, and a real and lasting reform was not introduced until 1863, on the basis of which a system has been evolved which places the small duchy of Gotha among the leaders in the German educational system See ERNEST I, THE PIOUS; ERNEST II

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**GOTHENBURG, UNIVERSITY OF, SWEDEN** -- An institution founded in 1887 and opened in 1891 as a result of municipal aid and private beneficence Lectures and courses had been organized in the town since 1841 under the auspices of the Royal Society for Science and Literature, and these had been subsidized by the municipal authorities since 1874 The university at present has only the faculty of arts Although it is not a state university, the professors at Gothenburg must be approved on appointment by the King, and since 1909, when the institution received permission to

## GÖTTINGEN

conduct certain examinations, it has been placed under the authority of the Chancellor of the State Universities. In 1910 there was an enrollment of 166 matriculated students and 41 auditors.

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## GÖTTINGEN, THE ROYAL GEORGE AUGUSTUS UNIVERSITY OF

— Founded by King George II of England, in his capacity as Elector of Hanover, the opening of the institution being celebrated with great ceremony in 1737, although instruction had actually begun three years prior to this date. The university forged to the front rapidly, and is to this day one of the most renowned of the German institutions of higher learning, having attracted a large number of English and American students, among the latter being Emerson, Longfellow, Baneroff, and Motley. Benjamin Franklin paid a visit to the university as early as 1766, and was made a member of the Royal Society of Science.

The university in its beginnings differed from those established during the second half of the sixteenth and during the seventeenth century in that the theological (Protestant) faculty was not emphasized to the detriment of the others, the healthy early development of the institution being attributable in large measure to the excellent administration of the Hanoverian minister, Von Munchhausen (until 1771). During the years of storm and stress at the beginning of the nineteenth century, Göttingen was included for six years in the Kingdom of Westphalia, but after the War of Liberation it was reunited to Hanover, which had been raised to the rank of a kingdom. A new era of prosperity was now ushered in, which unfortunately received a severe setback as a result of the dismissal in 1837 of seven of the most celebrated teachers of the university who had opposed the government in the constitutional conflict, the number including Jakob and Wilhelm Grimm and the historians Dahlmann and Gervinus. In 1866 Göttingen became a Prussian institution, but its loss of independence—it had been the sole Hanoverian university—was by no means accompanied by a decline in efficiency, as the Prussian Ministry has always evinced a warm interest in the institution, which has been manifested in recent years by the erection of a number of splendid medical institutes.

The faculty of philosophy is by far the largest branch of the university, and includes the oldest philological seminar in Germany, as well as a picture gallery and a collection of engravings as adjuncts of the work in the history of art. The anatomical institute contains Blumenbach's famous collection of skulls. Considerable emphasis has been and is still laid at Göttingen upon the subject of mathe-

## GOUCHER COLLEGE

matics, while the departments of physics and physical chemistry are also widely known. The university library, an important collection from the very first, contains over 550,000 volumes and almost 7000 manuscripts, it being the largest university library in Germany. The university also contains a riding academy and a swimming pool. A German institute for foreign students, the Bottinger Studienhaus, established by an Elberfeld merchant in 1909, was transferred to the university of Berlin (1911). The annual budget of the university amounts to about \$400,000. The town is also the headquarters of a famous Royal Society of Science (*Gesellschaft der Wissenschaften*—1751, 1893), and contains a professional school for *Feinmechanik*.

In addition to the scholars referred to above, mention may be made of Albrecht von Haller in science, Heyne in philology, Wilhelm Weber in physics, Wohler in chemistry, Gauss in mathematics, Curtius, Wartz, and Roscher in history, Jhering and Planck in jurisprudence, and more recently Moritz Heyne in Germanic philology. Heinrich Heine was a student at Göttingen from 1820 to 1821, Bismarck from 1832 to 1833.

During the winter semester of 1909-1910 Göttingen ranked seventh in point of attendance among the German universities, enrolling 2342 students (217 women), of whom 112 (57 women) were auditors. As at a number of other German universities, there are more students (1419) enrolled in the faculty of philosophy than in all of the others combined, including the great majority of matriculated women. The law faculty, which enjoys a high reputation, also has a large attendance (432), the school of medicine attracting 262 students and that of theology 117. In the winter semester of 1910 there were 2233 students in attendance.

R T, Jr.

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## GOUCHER COLLEGE, BALTIMORE, MD.

— An institution for the higher education of women, founded in 1884 by the Baltimore Conference of the Methodist Episcopal Church as the Woman's College of Baltimore. The college was opened in 1888. The present name was adopted in 1910. The entrance requirements are fifteen units of high school work, and the A B degree is conferred at the end of a four-years course, consisting of certain required and elective subjects, with a major in one department. In cooperation with Johns



## GOUGE

Hopkins University a College Course for Teachers is conducted by the faculties of both institutions, women students satisfying the requirements of these courses are admitted to the A. B. degree of Goucher College. The number of students enrolled in 1909-1910 was 367. There were thirty-three members on the instructing staff.

**GOUGE, THOMAS** (1609-1681) — Dissenting minister and philanthropist, educated at Eton and Cambridge. Until the Uniformity Act of 1662 he held a living in London, in which he conducted catechetical classes and employed the poor in spinning flax and hemp, a type of poor relief taken up on a wide scale by his friend Firmin (*qv*). Gouge's most important work, however, was the evangelization of Wales, which he undertook in 1672. He established schools, and employed teachers to give instruction in English and the catechism. Ultimately about three hundred schools were established. In addition he also distributed, mainly at his own expense, religious literature. In 1674 a trust for this purpose was established, including eminent churchmen and dissenters, and the Bible, Book of Common Prayer, Church Catechism, and other works were made accessible to the Welsh either through free distribution or at a very low price. So far as Gouge's schools are concerned, it would seem from Strype's evidence that they continued after his death until the Society for the Promotion of Christian Knowledge (*qv*) became active in Wales (1730). Gouge, probably through the influence of Firmin, a governor of the institution, also devoted himself to catechizing the scholars of Christ's Hospital.

See CHARITY SCHOOLS.

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**GOULD, BENJAMIN APTHORP** (1787-1859) — The author of a series of Latin textbooks, was educated at Harvard and was headmaster of the Boston Latin School from 1814 to 1829. W S M

**GOVERNMENT AID** — See ENGLAND, EDUCATION IN; NATIONAL GOVERNMENT AND EDUCATION.

**GOVERNMENT OF CHILDREN** — See REWARDS AND PUNISHMENTS; SCHOOL MANAGEMENT.

**GOVERNMENT, SCHOOL** — See SCHOOL MANAGEMENT.

**GOVERNMENT, SELF, IN SCHOOL.** — See SELF-GOVERNMENT OF PUPILS; SCHOOL MANAGEMENT.

## GRADE MEETINGS

**GOVERNMENTAL PUBLICATIONS ON EDUCATION.** — See OFFICIAL PUBLICATIONS, and articles on National Systems of Education.

**GOVERNORS, BOARDS OF** — See BOARDS OF CONTROL.

**GOWNS** — See ACADEMIC COSTUME.

**GRACE** — A term which originally meant a dispensation granted by a university or some faculty in it from the "elaborate and complicated regulations" required from candidates for degrees. In the early period few candidates required "graces," but by the fifteenth century the "grace" was asked for as a regular practice. At Oxford it was granted by the Congregation of Regents. Conditions were frequently imposed on the granting of graces involving the performance of some action or a contribution for some purpose, charitable or otherwise. Later a grace came to mean any decree of a university which involved a dispensation from statutory requirements. The term is still used in this sense of decrees of the Senate at Cambridge. A further use of the word is with reference to the permission given by a college or hall for one of its members to take a degree.

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**GRACELAND COLLEGE, LAMONI, IA** — A coeducational institution opened in 1895 under the auspices of the Reorganized Church of Jesus Christ of Latter Day Saints. Preparatory, collegiate, normal, commercial, music, and oratory departments are maintained. An industrial department is provided to enable students to defray part of their expenses. The entrance requirements are equivalent to twelve units of high school work. The degrees of A. B. and B. S. are conferred on completion of the requirements. There is a faculty of thirteen members.

**GRADATION, GRADES, GRADED SCHOOLS.** — See GRADING AND PROMOTION.

**GRADE GROUP PLAN** — See GRADING AND PROMOTION.

**GRADE MEETINGS** — Teachers in service are given instruction through teachers' meetings variously composed. When the basis of determining the attendance is the grade or grades taught by the teachers, the name "grade meeting" is applied. Thus, there are first grade meetings, third and fourth grade meetings, or grammar grade meetings. H S  
See SUPERVISION OF TEACHING; TEACHERS IN SERVICE, TRAINING OF.

**GRADING AND PROMOTION** — As school systems become organized, the necessity of teaching children in groups composed of those of substantially equal attainments produces the graded system or graded school. An ideal system of grades presupposes that all the children in a given group shall be about the same age and of equal capacity for school work. A system of grading or classification or grouping by classes begins with the entrance into school of a large number of children not yet trained in school subjects. Those who advance regularly through a course of study have their progress marked at certain intervals by promotion, which is essentially a stage when reclassification seems desirable. Naturally the course of study is the foundation of grading. This program of work and of standards to be reached indicates divisions appropriate to each year or other interval. The course of study may be so framed at any given stage as to be capable of mastery by a large or small proportion of the children. It may lay stress on formal elements of subjects in which special details may be placed at a premium, thus resulting in the failure of a considerable number of ungifted children.

At any stage the object of a system of grading is to produce groups or classes that are fairly homogeneous as regards attainments at the moment, and also capacity to make a certain rate of progress throughout the course of study as organized. Grading and promotion thus come to be focusing points of a variety of problems growing out of the teaching of children in groups. Mechanization of school work first expresses itself in an inflexibility of grading and in a rigidity of promotion from one stage to another in the course of study.

The first fact to be noted is that the homogeneity of any group of children can be approximate only. Children of the same age not only differ among themselves as regards attainments in general, but also vary largely according to the particular type of attainment considered, for example, of two children A may be inferior to B in arithmetic, but superior to B in music. Furthermore, children of substantially equal attainments at a given time may differ considerably as regards their rate of learning the subject matter. The rate commonly employed in practice is that which has been determined by experience as one suitable to a majority of normal children. Manifestly such a rate must fail to take account of individuals who differ considerably from the normal. In general, consideration of the individual pupil tends to produce criticism of the graded system, because in any such system it will be found that not only are numerous individuals quite unsuited to its requirements, but that every individual at some point loses in opportunities because of the system employed. On the other hand it must be recognized that a system of grading is a necessary

measure of economy wherever children must be dealt with in large numbers.

Starting with the assumption that some system of grading is necessary and that the end of a system of grading is to produce groups so homogeneous as to make the maximum progress of all the individuals composing the group possible, the various attempts to modify the effects of its too great mechanization may be discussed. If, from a large number of children, there be removed the comparatively small number of individuals who vary greatly from the normal, there is a system of grading and promotion supplemented by the existence of special classes (*qv*), into which might be put those who by reason of excessive age are ill adapted to given grades, or those who, having deficient sense organs or being weak mentally, are manifestly incapable of keeping pace with any group of normal children. This removes from the grades the strongly marked variant cases, and gives the teacher opportunity to devote her efforts to a class more nearly homogeneous. Similarly such pupils as may retard the work of a class through increasing the difficulties of discipline may be put into special disciplinary classes (*qv*).

Even among fairly normal children it is found that not all can make the same rate of progress. Where a pupil is so obviously unable to maintain progress in his grade, without being in any sense defective, he may be transferred to a grade lower than his own. (See DEMOTION.) A system of grading has been devised whereby groups shall proceed, as it were, along parallel lines. This is sometimes known as the Cambridge system, and may be so systematized that a given course of study shall be completed in respectively seven, eight, or nine years, so far as given individuals are concerned. Fully carried out, this system not only provides for pupils who are persistently unequal in their ability to make progress, but also for those who at one stage of their school career may proceed rapidly and at another slowly. In large schools it is possible to still further extend the principle involved in the Cambridge system. Under close oversight of principal and teacher, pupils may be formed into groups as nearly homogeneous as possible, and the rate of progress may then be determined without reference to any fixed program, but with reference solely to the capacity of the group. The system has been made so elastic that individuals may be frequently shifted from one group to the other, according as they manifest capacity to proceed more rapidly or to require more time. This is sometimes referred to as the group system, and provides the maximum degree of elasticity in this direction. In a few instances it has been carried so far as to allow for a measurable shifting of pupils from group to group according as different subjects are being taken, but this requires extremely close supervision, and is

possible only in a school of very large size. Such classification or grading pupils by subjects is an arrangement which is more possible in schools with the departmental system (*qv*) than in others. Not only is such a system an element in flexible grading, but in the later years it makes articulation with the high school possible.

Flexibility of grading is sometimes attained by varying the demands made upon pupils for amount of acquisition in any given grade. This takes several forms. The class may be carried over a given section of the course of study at such a rate as to allow the more capable pupils to meet all the requirements, but the less capable to require a review. The first group may then be promoted, or, more commonly, may take additional work in the ground covered, while those less capable are acquiring necessary proficiency in the essential subjects. A more extended form is found where two groups of pupils are carried along side by side, the one containing the more capable, the other the less, the latter being required to take only the minimum amount of work and to reach the minimum standard required for promotion, while the former takes an enriched course of study, not necessarily advancing them in the essential branches. Both divisions are expected to cover substantially the same ground in the subjects essential to promotion. A further modification of this plan rests on a differentiation of teaching. It is sometimes known as the Batavia plan (*qv*), involving two teachers in a room, the first of whom gives mainly class instruction, while the second coaches individuals who need additional assistance in order to make the required rate of progress. A plan which is very similar is the division of a class into two groups, each alternately receiving the attention of the teacher, so that while one group is studying, the other is reciting. (See ALTERNATING SYSTEM)

All these systems are yet more or less in the experimental stage, and some of them involve administrative difficulties which can be met only in exceptional situations. It is evident, however, that all of them constitute important attempts to produce a system, which, while utilizing the economies and efficiency that result from a training of children in homogeneous groups, shall nevertheless have due regard to the individual in respect to those points at which his interest demands some variation from the standards imposed upon the group.

It should be noted that a few educators believe that a radically different system of grouping children may eventually prove more satisfactory. Instead of a homogeneous group, the late Professor Jackman of Chicago University believed that a group heterogeneous so far as the years and attainments of individuals were concerned could yet be formed into an

organic unity which would result in the maximum opportunities for progress of the individuals composing it. From his point of view a system of training based largely on activities would find in a given group old and young children, some bright and some dull, but each carrying on learning activities in conjunction with others in such a way as to finally attain a maximum result. This system of classification would naturally require the elaboration of pedagogical theories which are yet very hypothetical.

The passage from one grade to another in a systematized course of study is commonly called promotion. The failure of a child to pass this stage gives the phenomenon of retardation (*qv*), which is by some assumed to be an index of the efficiency of the results of teaching. In the search for incentives among school children, promotion and non-promotion are often utilized as sources of motive. The fear of non-promotion among some children can be the most powerful incentive to exertion, while with others who are inclined to be mischievous it may serve as an excellent deterrent to insure good conduct. At certain stages in the educational career of youths where promotion means advancement into other types of schools or into other types of opportunity, the event becomes comparable in its importance to the ceremony of initiation in primitive life. The ability of the German boy to pass the imperial examination, which entitles him to exemption from compulsory military service and barrack life, becomes an important factor in the social standing of the youth and his family.

Tests for promotion from one grade to another become important features not only in the administration of schools, but in determining fundamental characteristics in the course of study itself. A highly mechanical system tends to introduce external examinations as a basis for promotion and graduation. A system in which the teachers must be stimulated by external aids makes free use of written examinations. These developments were best exemplified in the English practice during the period of the so-called "payment by results" plan and in American cities during the period from 1870 to 1895. Even slight consideration will show that a system of written examinations will test certain forms of learning only, and will quite fail to test others. Where written examinations prevail, subjects susceptible to this form of test will be at a premium. Present American practice, however, tends not only toward flexible grading, but toward flexibility in the conditions for promotion. The teacher's judgment of the pupil's ability to proceed enters as a factor, as do also formal records made of a term's work. (See EXAMINATIONS)

In secondary schools there is an increasing tendency to grade the pupil on his ability in an individual subject rather than in all subjects

## GRADING AND PROMOTION

taken together Promotion by subject then comes to be the rule, and graduation is possible when a definite number of units have been reached

The future development of grading and promotion will rest more largely than in the past on a study of the needs and possibilities of children. The study of retardation (*qv*) is serving to analyze the causes of the non-promotion of children. Some of these causes are found in the course of study itself, some in matters like illness and irregular attendance, over which the school may have little control, and some in a failure to reach the individual as far as possible by more scientific grading. It is possible that future developments will show that certain of the subjects recognized in a course of study are of such a nature that definite stages of attainment or power not only can, but must, be recognized as a basis of grouping, whereas other subjects have only a secondary bearing on the ability of the child to work in one group rather than in another. Thus differentiation may indeed rest, to a certain extent, on the social importance of the subjects. For example, arithmetic is a subject lending itself easily to a graduated statement, and is also sufficiently important to be imposed as a condition of promotion. Nature study, on the other hand, is not easily graded, and its importance may be such as to make it a matter of indifference whether the pupil has completed it or not when the question of promotion is being considered. In some school systems a deliberate differentiation is now being made between "essential" and "additional" subjects, the former only being considered in connection with questions of promotion.

The operation of a flexible system of grading as described above will be affected by conclusions yet to be reached as to the number of different groups of pupils which a teacher in a given room may handle to advantage. Practice in many places now assumes that a grade to a room is the desirable condition. It is not clear, however, but that a more effective mastery of the art of teaching might not enable a teacher to carry at least two different grades or groups along side by side, with the maximum advantage to all concerned. D S

See GRADING, HYGIENE OF, RETARDATION, ELIMINATION AND ACCELERATION OF PUPILS

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## GRADING, HYGIENE OF

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GRADING BY PROMOTION. — See GRADING AND PROMOTION

GRADING, FLEXIBLE — See GRADING AND PROMOTION

GRADING, HYGIENE OF — Modern investigations have revolutionized the problem of grading. With the older pedagogy it was a relatively simple thing to classify pupils merely according to their scholastic attainments. Now many other factors must be considered, — physiological age, psychological age, ability to work and to resist fatigue, general physical condition, mental type as regards imagery, attention, and the like. Hence to-day the problem of grading is quite as much an hygienic as a pedagogical one.

Roberts, the English anthropologist, was one of the first to put special emphasis on the need of considering physical development in allotting pupils to the different grades. He made out a table giving the statures and weights of boys at different ages and the amount of time that should be allotted for study and sleep and rest, and he maintained that age alone is not sufficient to determine a child's position in such a table, that "A child who is much below the mean height and weight of his age should be placed a year below, and one who is a good deal above the mean, especially if the weight be good, may be advanced a year above that which his actual age requires," and that the same principles should be considered in the grading of girls as in the grading of boys. Dr Brahn and others have maintained that children should be graded according to their ability to work and to resist fatigue. Recently a demand for more than this has arisen. The studies by Crampton and others have shown the hygienic necessity of considering physiological age in all questions of grading and the like. His study was based on investigations of high school students, and his general conclusion was that, "In future all our thought concerning the years nine to seventeen must be released from the idea of chronological age. Statistics for groups or individuals respecting weight, height, strength, scholarship, mental or physical endurance, medical or social conditions, that are not referred to physiological age are inconsequential and misleading."

Dr Crampton's investigations were based on actual physical examinations. Sometimes under present conditions this is not practicable, and in lieu of this Mr Foster maintains that height is a good index of physiological age, and the investigations by Quirsfeld support this view. Professor Rotch of Harvard strongly maintains that the appearance and ossification

of the epiphyses of the wrist and fingers are a trustworthy index of the general osseous development, and this in turn of general physiological development. Hence he takes X-ray photographs of these bones, and determines physiological age from them. He distinguishes chronological age, anatomical age, physiological age, and functional cerebral age, and maintains that the normal correspondence of all these ages should be the standard for grading children, and that any other method of grouping is impractical and illusive. There is at present no consensus in regard to what is the best method of determining physiological age. More studies of this problem are greatly needed.

Psychological age also must of course be considered. But though tests of psychological ability and maturity have been advocated, none altogether satisfactory have yet been devised. The most important practical attempts have been in the use of mental tests, particularly the Binet tests, for detecting cases of arrested mental development. While idiots are not likely to be found in the public schools, imbeciles and feeble-minded of the higher grade, the so-called morons, are not infrequently found. The importance of detecting such cases has been vividly shown by Dr. Goddard, and further investigations and the perfection of such tests is greatly needed.

The public school must provide for three main classes of pupils, — the normal child of good ability, including the supernormal, on the one hand, the defective children on the other, including those mentally and physically deficient, and between these two groups the large class of children who are more or less backward from various causes. All these cases will be found discussed under the separate titles as BACKWARD PUPILS; BLIND, EDUCATION OF THE, CRIPPLED CHILDREN, EDUCATION OF THE, DEAF, EDUCATION OF THE, DEAF-BLIND, EDUCATION OF THE, DEFECTIVES, SCHOOLS FOR, EXCEPTIONAL CHILDREN, NERVOUS CHILDREN, EDUCATION OF, OPEN-AIR SCHOOL, RETARDATION AND ELIMINATION OF PUPILS, SPEECH DEFECTS, EDUCATIONAL TREATMENT OF, SPECIAL CLASSES, SUPERNORMAL CHILDREN, TUBERCULOUS CHILDREN, EDUCATION OF, etc.

Many special plans have been adopted. The plan which has received the widest attention, and which in a general way illustrates the principle upon which there is now a consensus, is the system of grading that has been used for many years in the schools of Mannheim in Germany. The main features of it are as follows, there is the ordinary school course of eight years, and besides the course for defectives, *Hilfsschulen*, such as are found in many German cities, with a four years' course, and between the ordinary course and the *Hilfsschulen* a course of six years which covers the same ground as the ordinary school course,

but has to do less with details, has smaller classes, and specially equipped teachers. Transfer from the shorter course to the fuller course or the reverse is easy at the end of each year (See GERMANY, EDUCATION IN). There have been many criticisms of this Mannheim system; but some plan of this kind is obviously necessary, and such a system seems to come nearer than any other which has been tried to meeting the demands upon which there is a consensus. This will not, however, solve the deeper problems of grading. While, if the plan is carried out with the cooperation of a school physician, as Dr. Moses maintains is always necessary, physical conditions will be regarded in the grading, nevertheless much more than this is desirable and some plan of grading that shall be based upon classification according to physiological age and ability scientifically determined must be devised.

While there is at present no consensus in regard to the methods of determining such development, the announcement of the principle is an important contribution. Grading merely according to scholastic attainments and chronological age can no longer suffice. Even pedagogical efficiency demands more than this. From the point of view of hygiene it is imperative that both in the vertical and the horizontal grading regard should be had for the physical condition and the stage of development. Modern studies have shown that from a third to one half of the children in any school are likely to be physically defective or suffering from chronic disease. Serious results are likely to follow when the weak and defective are required to do what the strong ought to do. Some of the normal have much greater endurance than others, some of them belong to one mental type, others to different types, and besides all this there are great individual differences. If we are to make any pretense to scientific pedagogy, to say nothing of hygiene, we must consider these facts and have a thoroughly different plan of grading based upon physiological and psychological age as well as scholastic attainments.

W. H. B.

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## GRADUATION

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### GRADUATE SCHOOLS, GRADUATE STUDY. — See UNIVERSITIES

**GRADUATE WORK** — A term commonly used in America to indicate work done in the combined university-college institutions beyond the bachelor's degree, in other words, university work as opposed to collegiate work

See UNIVERSITIES, AMERICAN

**GRADUATION** — See COLLEGE, AMERICAN, section on Length of College Course, COMMENCEMENT, DEGREES, also GRADUATION, AGE OF; GRADING AND PROMOTION, UNIVERSITIES.

### GRADUATION, AGE OF, FROM AMERICAN COLLEGES.

— The question of age of graduation from college has constituted an important factor in the discussion of many college problems of the present. It has been popularly supposed that the age of graduation from colleges had gradually risen from generation to generation, and that the typical college student of the present is more mature than in the past; consequently that the college course of the present together with its administration might and should be a very different thing from that of the past and that the relation of college course to secondary school on the one hand and to the professional school on the other should be determined altogether irrespective of past conditions. The further assumption was that such relationships were not so determined, and that existing problems (see Problems of the College, under COLLEGE, AMERICAN) were thus created.

The accurate investigations into the facts do not reveal grounds for this general assumption. On the contrary, while there is a certain conflict of tendencies in different institutions, the slight preponderance of the tendency is toward a decrease of age rather than an increase. The most extensive investigation made was that by Professor W S Thomas, in 1903, involving eleven institutions and more than 20,000 students, and covering substantially the entire nineteenth century. The actual results of this investigation shown by ten-year periods is given in the following table:—

MEDIAN AGES OF GRADUATION BY DECADES

	DARTMOUTH		MIDDLEBURY		BOWDOIN		UNIVERSITY OF VERMONT		ADELPHI	
	Age	No.	Age	No.	Age	No.	Age	No.	Age	No.
1770-1779	23-0	78								
1780-1789	23-1	150								
1790-1799	23-2	336								
1800-1809	22-6	323	22-10	76						
1810-1819	22-9	330	23-1	184	20-4	106				
1820-1829	23-1	328	23-0	187	20-8	258	22-4	59		
1830-1839	22-5	384	23-4	242	21-7	289	22-7	80	23-0	41
1840-1849	23-1	586	22-8	109	21-9	356	22-0	184	23-2	125
1850-1859	23-8	558	23-3	121	22-1	335	22-4	168	23-0	98
1860-1869	23-1	491	23-5	132	22-10	348	22-6	91	22-10	160
1870-1879	22-10	593	23-4	111	22-5	321	22-6	98	22-9	217
1880-1889	22-10	527	22-11	86	22-8	303	22-8	108	23-0	251
1890-1899	22-9	678	23-2	125	22-7	481	22-9	215	22-9	156

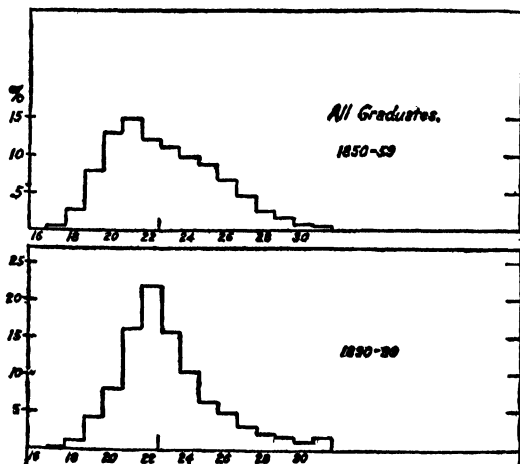
	UNIVERSITY OF ALABAMA		NEW YORK UNIVERSITY		WESLEYAN		OBERLIN		DE PAUW		SYRACUSE	
	Age	No.	Age	No.	Age	No.	Age	No.	Age	No.	Age	No.
1830-1839	20-4	57	20-2	73	23-0	107	24-11	34				
1840-1849	20-3	126	20-3	147	23-3	231	25-6	122	21-7	63		
1850-1859	20-9	173	20-7	102	23-4	231	25-2	120	22-9	89		
1860-1869	20-0	48	20-8	128	24-0	260	24-0	176	23-2	115	23-11	28
1870-1879	20-3	66	21-0	141	23-8	325	24-3	270	23-1	230	24-6	138
1880-1889	20-0	209	21-1	154	23-3	321	24-3	267	23-2	317	23-9	224
1890-1899	20-2	270	21-8	115	23-6	156	23-11	403	23-9	371	23-11	264

## GRADUATION

This table indicates that the median age for Dartmouth has fallen (three months in one hundred and thirty years); that for Middlebury has risen (two months in seventy years), for Bowdoin the median age has risen two years since 1810, but has been falling for the past sixty years. In only two of the eleven institutions, the University of Alabama and Syracuse University, has the median age remained unchanged. It is evident that, whether this slight change has been an increase or a decrease, it is chiefly a matter of the individual colleges.

An averaging of the median ages of the several colleges also shows that since 1850 there has been a gradual but slight decline in the age of graduation, amounting to two months in all. A study of the average ages of graduates instead of the median ages brings the same relative results, though the arithmetical average runs a few months higher throughout the entire period than does the median age. This is because the few students that are relatively much older than the average of the group, of whom every college has some, diverge much more from the median than do those below the median, and tend to bring up the average disproportionately. It is the gradual disappearance of this group of very mature students during the past half century that is tending to lower both median and average age of graduation.

Of greater importance than the average or median age of graduation is the distribution of the graduates by years. A comparison of the aggregate of all graduates of these eleven colleges for the decade at the middle of the century with the decade at the close shows that not only the average and the median have remained practically the same, but that the distribution of the students is becoming far less wide. This is indicated by the following diagram, which gives the distribution of all students graduating in these eleven institutions for the two decades under consideration.

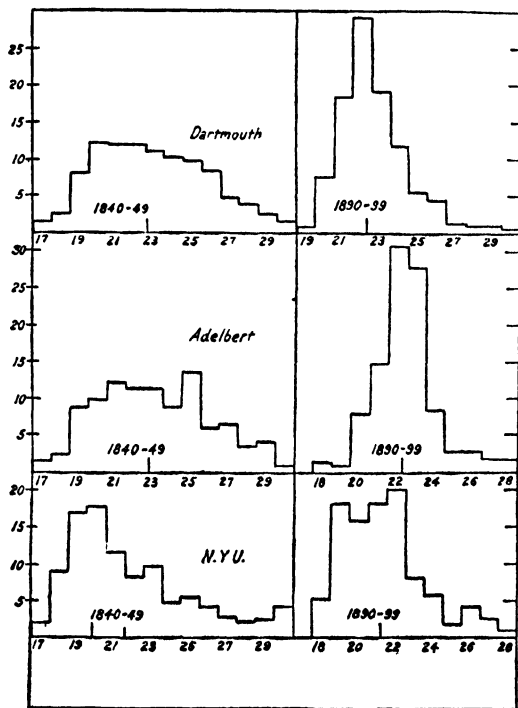


## GRADUATION

While the median age of graduation remains practically the same, 22 + years, the greater number are concentrated in the twenty-first, twenty-second, and twenty-third years. A further change is indicated by this diagram, which seems to bear out the old contention that the age of graduation was rising. The mode, indicating the year in which the greatest number of students graduated, falls in the first diagram in the twenty-first year, in the second in the twenty-second.

The significant fact which is indicated by this as well as by other data is that the student body is being unified and standardized as to age, as it never has been before, and that the entire group of college students is coming to be a body of young men between the ages of eighteen and twenty-three or twenty-four. The graduating body is largely concentrated in the years twenty-one to twenty-four.

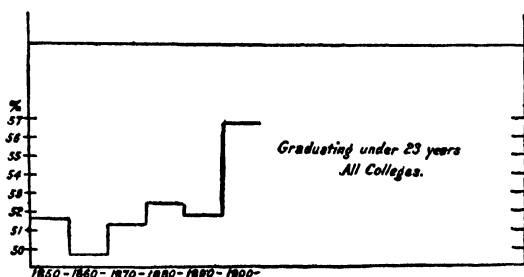
The following chart giving the distribution for these colleges for the two decades, half a century apart, indicates this very definitely.—



The gradual disappearance of the very mature student accounts in a large measure for this aspect of the change. While the median age has remained approximately the same, the number graduating before the twenty-third year has greatly increased. The following chart shows this distribution for the past fifty years for the entire group of colleges studied.

The percentage of the graduates under twenty-three has risen from 50 to 57 per cent, indicating again that the impression, so generally held,

that the age of graduation had increased was based on the extreme or isolated instances.



A more recent investigation by Professor George D. Strayer, based upon ninety-three selected colleges and covering the first decade of the present century, shows substantially the same conditions. The median ages of graduation for the middle 50 per cent of the colleges are included within the limits, 22 years and 6 months and 22 years and 9 months. For women the median age is 22 years and 8 months, the middle 50 per cent falling between the limits 22 years and 23 years and 3 months.

The investigations conducted each quinquennial period by the authorities of Harvard University into the age of the entering class support substantially the same results. The average age of the entering class was 18 years and 9 months in 1876, and from that time to 1900 gradually increased to 19 years and 4 months, since which time it has, with slight variations, gradually decreased.

In general we may say that the assumption that there has been a great advance in the average age of the college graduates was an error; that there are but few institutions where such an increase has occurred, that this is offset by a corresponding decrease in other institutions; and that the change either way for the larger part of the nineteenth century was very slight. What is occurring is the elimination of the very young students and the very mature, and the standardizing of the entire group.

As in the early part of the nineteenth century the curriculum itself had a fixed organization and the student body was much differentiated in age, the reverse comes to be true toward the close of the century: the curriculum loses its fixed character and becomes fluid, but the student body becomes standardized as to age and the college comes to take a very definite place in our system of education of four years in length following four years of high school or preparatory and eight years of elementary school work, and approximating the eighteen to twenty-two years of the student life.

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**GRAFE, HEINRICH** (1802-1868). — A German teacher and educational writer, born in Buttstadt in Thuringia. After studying mathematics, philosophy, and theology in the University of Jena (1820-1823), he first became a clergyman, then the principal of the city school at Jena. In 1840 he was appointed professor of pedagogy in the University of Jena, a position which two years later he changed for the principalship of a Realschule in Cassel. He took part in the political struggles of the year 1848, which caused his imprisonment, and afterwards forced him to flee to Switzerland. From there he was called as a principal to Bremen in 1855, and remained there until his death. His chief works are: *Allgemeine Pädagogik* (*General Pedagogy*, Leipzig, 1845), and *Die deutsche Volksschule* (*The German Public School*, Leipzig, 1847). F. M.

**GRAMMAR, ENGLISH — Historical Development** — The first work on this subject was actually written in Latin, viz the *Grammatica Anglicana* by P. G., who is supposed to be a certain P. Greenwood, in 1594. It is a booklet, containing short chapters on letters, syllables, parts of speech. The book professes to deal especially with those points in which English differs from Latin grammar. It is of interest because it contains a vocabulary of Chaucerian words, together with their signification. There is also the first treatment of the parsing, or, as it is called, "analysis" of English. In 1624 John Hewes published *A Perfect Survey of the English Tongue*. He claims that his book serves for the exposition of Lily's Latin Grammar rules. The author endeavors to deal with English expressions, *a posteriori*, as the groundwork for the Latin. Hewes thus treats of moods, tenses, cases as found in English, and thus leads on to the Latin. Hewes was succeeded by William Walker (1623-1682), who follows the same method, but develops it more fully in his famous *Treatise of English Particles* (published before 1660). Walker expounds English particles as the preliminary to learning to write Latin composition. In 1633 Charles Butler wrote the *English Grammar*, a work which gives a real English accidence independent of Latin. It goes into questions of spelling and gathers from Sir John Prince the story of four good secretaries writing in English from dictation, making many differences of spelling, whereas four noblemen writing the same in their language all wrote exactly the same letters. Butler traces the uncertainty in English spelling to the imperfection of the alphabet. Both Butler and Gill utilize the Anglo-Saxon signs for the different sounds of *th*. In 1640 Simon Daines published a book, exactly described by the title: *Orthoepeia Anglicana, or the first principall part of the English Grammar Teaching the Art of right speaking and pronouncing English, with certaine exact rules of Orthography, and rules of spelking or combining of syllables*,



and directions for keeping of stops or points between sentence and sentence. A work in itself absolute, and never known to be accomplished by any before. No lesse profitable than necessary for all sorts, as well Native as Foreigners, that desire to attaine the perfection of our English Tongue. Methodically composed by the industry and observation of Simon Daines, School-master of Hinthlesham in Suffes Lond 1640. The next English grammar was that "made" by Ben Jonson, the dramatist, "for the benefit of all strangers out of his observation of the English language how spoken and in use."

The grammar unfinished and not published until 1640, three years after Jonson's death, is accompanied with a Latin commentary. Jonson quotes first the older writers, e.g. Chaucer, Gower, Lydgate, Foxe, More, Ascham, Cheke, Jewel, so as to illustrate and authorize particular usages of grammar, and supplies items of historical treatment of syntax. In 1653 was published *A New English Grammar* by J. Wharton. This was professedly useful for scholars before entrance on the Latin tongue, and therefore starts a new period in the teaching of English. It was also devised, like Jonson's, for the use of strangers learning English. Wharton points out that English is "happy beyond both Latin and Greek," in that it "needeth little or no grammar at all." In the years 1711 and 1712 no less than three English grammars were published, viz that of John Brightland (*qv*) and Michael Marttaire (*qv*) and that of James Greenwood (*Essay towards a Practical English Grammar*). These grammars provoked an attack by the anonymous writers of *Bellum Grammaticale*, consisting of reflections on the three English grammars "published in about a year last past" in 1712. In 1762 Robert Lowth, Bishop of London, published *A Short Introduction to English Grammar*, which strongly emphasizes the question of good use in grammar. This was a work of considerable merit, ran through many editions in England, and was republished at Cambridge, Mass., in 1811. Lowth's work was criticized by William Cobbett in his well-known *Grammar of the English Language* in a series of letters, 1818. Cobbett states that his *Grammar* was intended for the use of schools and of young persons, "but more especially for the use of soldiers, sailors, apprentices and plough-boys." But still more popular than Cobbett's book was the *English Grammar* of Lindley Murray (*qv*), published in England in 1795. Both in England and America this was for many years the chief, almost only, English grammar used, particularly in girls' schools, for which it was first written. It went through some fifty editions, and an abridgment, first published in 1818, reached over 120 editions of ten thousand each. (See *Dictionary of National Biography*.) The first writer of an Anglo-Saxon grammar was Elizabeth Elstob (*qv*), 1715. The pioneer in the school teaching of historical English grammar

in England was Dr. Richard Morris, Headmaster from 1875 to 1888 of the Royal Masonic Institution for Boys at Wood Green near London. In 1872 he wrote his *Historical Outlines of English Accidence*, which went through twenty editions before his death, and, making the subject matter more and more elementary, he published in 1874 his *Elementary Lessons in Historical English Grammar*, and in the same year the *Primer of English Grammar*. F W

**Grammatical Study** - The grammar of the vernacular has not usually been regarded as a subject for scientific consideration in itself, but the views which have been held with respect to it from time to time, and which have guided instruction in the subject and the composition of textbooks intended for use in instruction, when they have not been merely utilitarian, have been rather a reflection of the prevailing modes of philosophical or linguistic thought in general. Moreover, methods of instruction in English grammar, as exemplified in the textbooks, have been extremely traditional, and have followed a few established models, with the result that though the number of English grammars is legion, they have added relatively little to the development of serious and independent theory with respect to the subject.

Two schools of thought in especial have exerted a powerful influence upon the conception of grammar, first, the systematic philosophic thought of the eighteenth century, and secondly, the modern scientific thought, as exhibited mainly in the sciences of psychology and historical linguistics. The principal inheritance of grammar from philosophy is to be found in the grammatical definition. The conventional definition of the sentence, for example, or of the parts of speech, is based upon the assumption of a correspondence between the forms of speech and the categories of a formal logical system. A grammatical statement of a language, according to this conception, would consist of a statement of all the modes of thought possible in that language. Several important consequences and corollaries have followed from this *a priori*, logical way of regarding the classifications of grammar. In the first place, if there is one logical form of thought to which the forms of speech each respectively belong, manifestly there is one and only one possible definition of a grammatical group of phenomena, and this definition is absolute and right. There thus has arisen in grammar the feeling for the dogmatic character of the definition or rule, and the desire to make the phenomena of language conform forcibly to the rule if they seem to differ from it. So much the worse for the language, says in effect the logical grammarian, if it does not conform to the fundamental laws of the mind. This has been the main defect of the logical method in grammar, that it has preferred a specious appearance of regularity and system to the actual variety and unsystematic wealth of detail of real speech. The

forms of speech do not fall into simple categories, but, as observation quickly shows, they overlap and often shift their functions in a way which can be described adequately only in the terms of a system too complex for practical grammar.

Disregarding the so-called "fundamental laws of the mind," the scientific grammarian has tended to approach the subject from an inductive point of view, and has studied the individual forms of speech in relation to their corresponding moments of mental activity, rather than in relation to any supposed permanent characteristics of the mind. The significance of the definitions, according to this conception of grammar, is something quite different from the significance of the definition according to the philosophical or logical method of systematizing language. The scientific grammarian regards his definition as merely a convenient summary statement of the facts he has observed. It has no final sanction of any sort, but is open to alteration and to extension as new facts are added to the field of observation. The spirit of this method of grammatical study is consequently not dogmatic, but is the spirit of all inductive science in which generalizations are regarded as the summary statements of accumulated details. It follows that the definition, rules, or generalizations which the grammarian of this way of thinking wishes to make must be definitions or generalizations of only such phenomena as those for whom his grammatical system is intended are capable of observing and understanding for themselves. A completely scientific grammar of English would neglect no phenomenon of the speech, no matter how insignificant intrinsically or how limited the extent of its use. The ideal of the philosophic grammarian is to formulate all the activities of the mind into logical definitions, and then to illustrate these definitions by means of examples taken from the practice of the language. The ideal of the scientific grammarian, as unattainable as that of the philosopher, but perhaps a safer guide in actual practice, is to observe all the phenomena of the language as they are exhibited in use, and then to arrive at such principles or rules as will come without misrepresentation of the phenomena upon which they are based. This ideal aim of the grammarian must necessarily be modified in practice to accord with the more limited purposes of teaching and the more limited capacities of students. No matter how elementary the effort, however, the evidence of the vast number of contemporary or older English grammars goes to show that one or other of these two conceptions was uppermost in the minds of the writers, either that the grammar presented illustrations of the observation of immutable, logical laws of thought, or that it was a series of observations, classified and designated on the basis of their similarities, the classification being subject to modification

according as the area of observation was increased or decreased. The grammars of the first type are represented by Murray's and by the large number of grammars which assume the position of arbiters of good use. The grammars of the second type, unfortunately not yet the prevailing one, are represented by modern historical grammars, the purpose of which is to make a descriptive statement of the past facts of the language, and also by an increasingly large number of practical school grammars written not from the point of view of dogmatic good use, but with the purpose of training the student in the observation and valuation of the processes of language. The earliest English grammars were written from the point of view of the Latin and for the purpose of making the study of the Latin easier.

During the larger part of the nineteenth century, grammar held — next to spelling — not only the principal place in English instruction, but, in the upper grades, the principal place in the curriculum of the elementary school. The two most famous grammars of the early days were Noah Webster's and Lindley Murray's, both published near the end of the eighteenth century. Murray's grammar became, like Webster's spelling book, the standard; and the authority of Lindley Murray was sufficient to settle any point of disputed usage or doubtful syntax.

The curriculum of the common schools included, up to the last quarter of the preceding century, little besides reading, spelling, arithmetic, geography, and grammar. In the upper grades grammar vied with arithmetic in the amount of time and energy devoted to it, and in the value and respect accorded to it in the schoolroom and in the community. To be known as a good "grammarian," that is, as a student versed in the grammatical rules as given in the textbook, and skillful in parsing and in syntactical analysis, was to win, in effect, a kind of intellectual preeminence. Moot questions of grammatical construction were often the subject of excited debate, like difficult, or "catch," problems in arithmetic. Grammar was, in brief, the intellectual jousting ground of many sharp and eager, though underfed, intellects. G P K

**Content and Nature of Grammar** — Diversity of purpose, of method, and of content are the most striking characteristics of modern English school grammars viewed as a whole. The constant features are discussions of the parts of speech, of inflections, and, to some extent, of syntax. Some grammars add phonetics, others the composition of words by prefixes and suffixes, or prosody, or the rules of spelling, or of paragraphing, or forms for letter writing, or symbols for proofreading, or tables of weights and measures, etc. This variety in the content of modern school grammars is partly due to the presence of survivals from older and outgrown conceptions of grammar.

The old-fashioned village grammar of general information, planned for students whose entire English training was obtained through the study of English grammar, accounts for some of the topics. Others, like prosody, for example, are merely survivals from the old Latin grammars. In the classical and Renaissance conception of grammar as an art comprehending the appreciation and practice of literature as well as the elementary rules of the language, prosody logically had a place. It survives now in grammars only because there is no other convenient place to put it. Of similar origin is the division of etymology, which is still used to describe a section of English grammar having to do with the forms of words, including inflections, derivation, and composition. In the old Latin school grammars, as for example in Lily, the two main divisions of the subject were etymology, *i.e.* accident, etc., and syntax, *i.e.* concord. But the modern sense of the word "etymology" is something very different from this traditional use of the word, and what the old grammars call etymology would now be called morphology.

An examination of those modern grammars, written by persons of some independence of purpose and of scholarship, shows that three main conceptions of the subject, mixed in varying proportions, are prevalent. The first is the conception of grammar as a guide to good use, the second as the study of the system of the language in its broadest meaning as an expression of thought, and third a narrower definition of the system of the language, corresponding practically to the usual popular understanding of the term "grammar." The conception of grammar as a guide to good use no longer enjoys the favor it once received. This conception is also in large measure an inheritance from the Latin grammar of the Renaissance, in which grammar was defined as "the art of correct speaking or writing." This theory was first taken over explicitly into English grammar by Bishop Lowth in his *Short Introduction to English Grammar* (1767). In his preface, Bishop Lowth declares that "the principal design of a Grammar of any Language is to teach us to express ourselves with propriety in that language, and to enable us to judge of every phrase and form of construction, whether it be right or not." In other words, according to this theory, the purpose of grammar is to serve as a handmaiden to the art of speaking and writing. In communities of mixed racial and social provenience, in which there exists a confused and uncertain use of the idiom in colloquial speech, as is the case, for example, in most American city schools, it is necessary to give much attention to drill in the details of propriety of expression. Yet the tendency of modern theory and practice, which seems to be in the right direction, is to place less stress upon good use as the main principle of the study of grammar. It is coming to be recognized

that the rules of use are so complex and so far beyond the grasp of the child that to place them in a grammar which makes pretense to a reasoned system is bound to end in confusion. Presented merely dogmatically, without attempt at rational or historical explanation, the rules of use find a more justifiable place in the study of written composition or in the drill of the daily colloquial intercourse of the classroom. Although the end, therefore, of inculcating good use may be to some extent attained by the study of grammar, it is now usually assumed that this end should be one of the by-products of such study, and not its main purpose and justification. Such being the case, the custom of introducing examples of bad use into the study of grammar is one of doubtful expediency. The safest rule seems to be to include in the system of elementary grammar only what is recognized as the normal use of educated people, with an exception perhaps in favor of occasional instances of divided use.

The two remaining theories concerning the teaching of grammar have this in common, that they both endeavor to approach the subject in a measurably scientific and systematic spirit. They differ widely, however, in the theoretical limits which they place upon the subject. In the broader conception of the two, the limits of grammar are made commensurate with those of the science of language, or the relations of speech to thought. Thus, according to one writer, "Grammar may be defined as the study of the relation between mental action and the forms of language expression" (Davenport and Emerson, *Principles of Grammar*, p. 1), the main stress being here placed upon logic. Another declares that "Grammar is a systematic description of the essential principles of a language or a group of languages. English grammar gives a systematic account of the English language" (Carpenter, *Principles of English Grammar*, pp. 1-5). A broad theoretical definition of this kind is manifestly impossible in practical execution. No elementary grammar can attempt to study in any systematic way all the principles, either logical or historical, which lie at the base of a language. Whitney (*Essentials*, p. III), with his usual wisdom, states the only position which the scientific study of elementary grammar can maintain. He avoids a positive theoretical definition of the subject, but announces his practical purpose to be "to put before the learner those matters which will best serve him as a preparation for further and deeper knowledge of his own language, for the study of other languages, and for that of language in general."

The study of elementary grammar, either as the science of language or as preliminary preparation to the science of language, is a way of regarding the subject which has arisen naturally from the modern science of linguistics. It would seem, however, that the content and purpose of the teaching of elementary grammar

should be determined by the possibilities and needs of elementary instruction rather than by scholarly theories of the subject. In answer to this conviction, we have a third conception of grammar, which still endeavors to be systematic, but does not try to cover the whole field of linguistics. According to this understanding of the subject, elementary grammar is defined as "an account of the relations which words bear to one another when they are put together in sentences" (Buehler, *A Modern English Grammar*, p. 11). Or again, it is "the science which treats of the nature of words (*i.e.* the parts of speech), their forms (inflections), and their uses and relations in the sentence" (Baskervill and Sewell, *English Grammar*, p. 12). A third definition makes grammar "the science which treats of the Forms and the 'constructions of words'" (*i.e.* of inflections and syntax) (Kittredge and Arnold, *The Mother Tongue*, Book II, p. xv-). Grammar, as thus defined, takes account chiefly of the relationships of words to each other in groups. The unity which it attempts to impress upon the mind of the student is the unity of the word group, and ultimately of the sentence. A unified conception of a science of language, either from the logical or historical point of view, is not implied in these treatments of the subject, and though historical and other considerations may be admitted, if it seems advisable to admit them, it should be recognized that the unity of the sentence is the essential element which determines both the content and method of such teaching of the elements of grammar. Thus limited, the subject becomes practically syntax.

In a strict application of the theory of the study of grammar as the syntax of the sentence, a number of features commonly included under the heads of grammar will be seen to be out of place. In the classification of the noun, for example, the distinctions of concrete and abstract, of common and proper, etc., have purely logical and not syntactical value. Some grammars give a class of "material nouns," glass, wood, iron, etc., which suggests to what extremes a logical classification of nouns could go. In the same way, the gender of nouns is of little syntactical significance. In the grammar of the earlier periods of the English language, when gender was still a grammatical, not merely a natural distinction in nouns, the rules of concord made gender very important syntactically. But in modern English the question of gender in nouns is raised only when the agreement of the personal pronoun of the third person singular with its antecedents is to be determined, and here also the feeling is for logical rather than formal grammatical agreement. The same principles apply to many of the subclassifications of the other parts of speech, *e.g.* of the adverb, as of time, place, manner, degree, distance, etc.; of the conjunction, as concessive, causal, temporal, local, etc.

In a rigid definition of grammar as the study of words in the context of the sentence, such logical subclassification can find a justifiable place only when they make clearer the functional nature of the part of speech in question.

The task of teaching elementary English grammar is harder than it would be if every syntactical construction told its meaning by the forms, or inflections, of its words. English, however, has lost practically all of its inflections, and it is in the necessity of apprehending function, whether with the aid of form or without it, that the teacher finds his main difficulty, as also his greatest opportunity. By a process of abstraction, words are taken up and discussed as parts of speech as though they could have meaning and function independent of their combinations with other words. In considering inflections, this abstract discussion is continued by associating with the noun, for example, the formal marks of numbers, with the pronoun the marks of numbers and case, with the verb the marks of person or tense, in each instance as though number, person, tense, etc., were characteristics which may have existence apart from context. These abstractions, however, are merely the way of approach to the vital organization of the parts of speech mutually dependent upon each other. Having analyzed the elements of speech, the student is then brought to synthesize them in the formation of speech. The language upon which study should be based obviously should not be too remote from the experience of the student—not puzzles of grammar, or the language of literary prose and poetry. It should be normal language of daily use, and the student should realize that the real life of language passes not only in the minds of authors and scholars, but in his own and in the mind of every one who uses the language.

The completed sentence is the largest term in which the language consciousness of the naive speaker or writer moves, and beyond this, in the group of sentences, in the paragraph, and in the essay, etc. As a whole, there is unity, but it is unity of an entirely different kind from the unity of the sentence. One may think and write the English language without the paragraph, but not without the sentence. The sentence is the necessary unit of expression, and the mastery of it entails at least a practical command over the English language. It is in this way that grammar, considered as the study of the sentence, connects with the study of the art of expression. It should be the result of the study of grammar that students become aware of the plastic nature of language, and although questions of effectiveness in speech are not primarily questions of grammar, they are close and material sequences of grammatical speculation. Though the conception of grammar as the study of the functions and the forms of words in sentence-forming combinations may seem narrow as

compared with the broad program of the science of language, it nevertheless leads to what is the practical end and reason for the existence of all language, the expression of thought by means of the grouping of words. The teacher of elementary grammar has no need to feel that he has set his mark too low in endeavoring to bring his students to an intelligent conception of what is meant by the sentence in the study and in the use of the English language.

G P K

**Methods of Teaching Grammar** -- The present tendency in the teaching of English grammar is greatly to contract the instruction, both in time and content, a tendency arising, first, from the current practice of requiring a new educational justification for all subjects in the curriculum, and, secondly, from the crowding of the curriculum by new subjects. In many of the best schools formal grammar occupies not more than three lessons per week for two years, and in some schools even less time. Many distinctions and classifications, such as are referred to above, are omitted, either as having no practical value or as being without meaning to an immature mind. The general value of grammar as formal discipline is now largely discredited. Its worth to the student seems to lie in three things: its occasional guidance in matters of incorrect or doubtful usage, its training in the process of thought as cast in the forms of the sentence, and its assistance to the student in the study of a foreign language. To these may be added its tendency to arouse intelligent interest in language as a subject worthy of intelligent attention, especially when some of the historical features have been incidentally introduced into the study.

The long-recognized difficulty of teaching grammar successfully is due mainly to its abstract nature. Young pupils do not easily or naturally grasp grammatical abstractions, hence the necessity for limiting the amount, for selecting those principles that are simplest or most necessary, for frequent repetition, for confining the work to intelligible sentences, for abundant drill and frequent repetitions, and for connecting grammatical study as closely as possible with the pupils' oral and written use of the language. Even under the best instruction it is to be expected that pupils will often err, often be confused, and generally forget much that they once knew rather well, for abstractions are neither clear nor permanent in most minds.

The order of procedure in the instruction has been under much discussion, two general plans being suggested: from the word to the sentence (the older, and formerly the invariable, plan), and from the sentence to the word. In the former the pupils first learned the parts of speech, that is, noun, verb, etc., with their definitions and with or without examples in sentences; that is, they began with the so-

called etymology. In the second plan the study begins with the sentence (*i.e.* with syntax), considering first the general subject and general predicate, then viewing the sentence as consisting of strict subject and strict predicate (noun and verb), each of them possibly with or without a modifying word or phrase, and so proceeding by steps of analysis to the ultimate elements, *i.e.* the words (see Barbour's *The Teaching of English Grammar*, 1901). Various modifications of this second plan, in combination with the first, are now in general use, textbooks and teachers differing mainly in the stages at which they introduce the detailed study of the various parts of speech. This plan makes it possible to introduce some of the simpler elements of grammar as early as the fifth or sixth year in connection with the pupil's writing, and so to prepare him gradually for the more difficult study of formal grammar in the textbook.

A considerable amount of drill is necessary in all teaching of grammar. But certain changes have been made in the matter and substance of drill. It is important to proceed not merely from the examples to the principles, but also from the principles to the examples, the pupils being required, for instance, not merely to identify adjective clauses and adjective phrases, but to write sentences containing these elements. Parsing, that is, identifying the part of speech of a word and pointing out its relations, has no longer the large place it once had. Its value is doubtful as a means to the real function of grammar, *i.e.* the study of the sentence, and its propriety or even possibility must often be questioned. There are many single words that cannot be parsed. They must be taken in connection with other words, as a group, before their relation to the sentence can be indicated. Nor is it permitted to change the forms of expression to bring words under the rules. Such a change only makes a new sentence. It must furthermore be noted that certain conventional explanations of construction were made before the study of English philology had explained their real origin. An example is the so-called "retained object" with the passive voice, as in the sentences *I was given a book* and in the phrase *one by one*. Many instances could be cited showing the disappearance of inflectional indications of agreement or concord, and other departures from the Latinized conceptions on which our older English grammars were based. (See Gould Brown, *Grammar of Grammars*, Introduction.)

In general, therefore, teachers at home in the subject are inclined to doubt the advisability of much "parsing." Drill in syntax has come to occupy a much more important place, and "diagramming" is still in favor as a short and convenient way of indicating relationships. In the study of both etymology and syntax the old logical conception is rapidly giving way before the more scientific view of

English as an idiomatic speech whose special features are to be explained only by a knowledge of their origins

One important question of method remains to be considered. How far should the study be inductive? We proceed in the main from examples to principles and definitions, but principles must be reinforced by, and reinterpreted in terms of, examples. Some of the more difficult conceptions, as those of verb phrase, conjunction, preposition, are best taught almost exclusively by examples

F T B

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See also the introduction to the various school grammars.

**GRAMMAR GRADES** — The elementary school normally covers eight years of work, which may be begun at about the age of six years. The upper four years of the elementary school are known as the grammar grades, as the lower four are called the primary grades. Sometimes, because of exceptional administrative conditions, the fifth year of school may be included among the primary grades, as in the case where a primary school building includes the first five years of work, or where these first five years of work are set off because the departmental system of instruction by specialized teachers does not cover more than the sixth, seventh, and eighth years. The grammar grades, while normally covering four years, may be four or eight in number, depending upon whether or not the graded system provides for annual or, as is the usual case, semi-annual promotions

H S

**GRAMMAR-HIGH SCHOOLS** — A term used in the school laws of California to designate a two-year high school, to which state aid is given. Such schools represent the first two years of the regular high school, and are to be established where full four-year high schools are not as yet needed. The term corresponds in a general way to the term Township High School, as used in the upper Mis-

issippi Valley to designate short-course schools which have not been "accredited" or "commissioned" as full high schools. (See HIGH SCHOOLS, RURAL.)

E P C.

**GRAMMAR SCHOOL** — To write the history of grammar schools would be to write the history of elementary and secondary education from their dim beginnings in Hellas in the fifth or sixth century B.C. to 1850, when the greater number and the chief of the secondary schools on both sides of the Atlantic were still called Grammar Schools. Even where the title has been dropped for that of Public School, Latin School, Academy, Gymnasium, High School, Lycée, Ginnasio, these are still essentially grammar schools, and, what is more, the chief of them still Greek Grammar Schools.

The term Grammar School (*γραμματεῖον*) simply meant a Letter School, a place in which letters (*γράμματα*), that is, spelling and reading, were taught. But it has always been found that it is impossible to teach even reading properly without teaching much more, and the term *grammata* soon came to connote an ever-widening circle of learning till it became identical with literature in its widest sense. Already in the sixth century B.C., the vases show the boys learning writing as well as reading, and standing up to say their repetition of Homer, while in later days they received prizes for public competitions, not only in "rhapsody," but in successive stages of recitation of tragic, comic, and lyric verse. Naturally, poets had to be explained and understood for effective recitation, and the whole of literary comment, the science of grammar, the art of scholarship, criticism, and composition was developed from the grammar school.

Grammar and the grammar school were developed at Alexandria, where the Macedonian variety of Doric-speaking students of Attic writers perhaps required more assistance from grammar proper. The grammar school was transplanted full grown to Rome. Plautus, c. 210 B.C., used the term in its Latin translation of *ludus literarius*. (For the development of this school, *ludus literarius*, and the later rhetoric schools, see ROMAN EDUCATION; QUINTILIAN; ENDOWMENTS, EDUCATIONAL.) A Greek grammar school had been set up by Livius Andronicus, a Greek, in 272 B.C. At Rome the early grammar schools were more advanced than those of Greece, where the grammar schools were confined to literary explanation and criticism, while according to Suetonius the early grammar schoolmasters at Rome also taught rhetoric and "many of their treatises include both sciences," i.e. grammar and rhetoric. In later days at Rome, as in Greece, the two were separated, the grammar school teaching the boys till about fourteen and confining themselves to literary construction, the rhetoric school including every study which could fit a youth to become a good

speaker Quintilian, whose *Institutes of Oratory* is the only complete ancient educational work which has come down to us, shows that the grammar school had extended its boundaries to include, for instance, the teaching of history and the elements of philosophy, leaving the rhetoric school to be more professionally and professedly a "talking shop." The grammar school and the rhetoric school were ubiquitous through the Roman Empire. From the end of the first century A.D. they came to be largely provided at the public expense by the municipalities or by endowments (see ENDOWMENTS, EDUCATIONAL), while the later Emperors, and particularly Gratian in 376, charged their maintenance on the *fiscus* or the rates and fixed the salaries payable. When the barbarian kingdoms began to settle down, the grammar schools became more than ever necessary, in a sense, for teaching Latin as the foreign tongue, in which new nations found their religion and their law enshrined and administered. While the rhetoric schools, therefore, disappeared, the grammar schools went on, and, so far as the higher studies of the rhetoric school were needed, they were studied in the grammar schools, which passed under the control of the bishops. It is difficult to say when they ceased to be public schools and became episcopal schools, if indeed it is possible to draw any such distinction, for the bishop seems to have stepped into the place of the civil magistrate in respect to public order generally as much as to education. (See BISHOPS' SCHOOLS.) The earliest mention of a school in England distinctly calls it a grammar school. It was when Bede (*Ecc. Hist.* iii, 15) related how in 631 Sigbert, King of the East English, who had been converted to Christianity when an exile in France, desiring to imitate what he had seen well arranged there, set up a school in which boys might be taught grammar (*litteris erudirentur*), and got masters and ushers for the purpose from Canterbury. Alcuin would no doubt have called the school of famous Cathedral York, which he describes a century later (731 to 780), a grammar school. For, though its curriculum included law, music, astronomy, geometry, arithmetic, and theology, yet grammar and rhetoric are put first, the master industriously giving to these the art of the science of grammar and pouring on those the rivers of rhetoric, while the writers on grammar from the Vergilian commentator, Servius, to Probus and Priscian bulked most largely in the school library. At the end of the eighth century (c. 796), Alcuin recommended his quondam pupil, the then archbishop, to separate the grammar school (*qui libros legant*) from the song and the writing schools (*qui cantilenas inseruiant, qui scribendi studio deputentur*). The current custom for bishops to maintain grammar schools at their sees was made general law by the canon of Pope Eugenius in 826,

ordering all bishops to maintain grammar schools (*studia literarum*) in which the principles of the liberal arts should be taught, an enactment repeated by Pope Gregory in a synod at Rome, c. 1073. It is stated in Asser's *Life of Alfred* (c. 1001) that the King's youngest son Ethelward was sent to the grammar school (*ludis literariæ disciplinæ*) with nearly all the noble children of the realm and many who were not noble, a statement which is at least rendered probable, and probably taken from the educational program set forth by Alfred himself in the introduction to his Translation of Gregory's *Pastoral Care*. Alfred (*qv*) desired that all the young English freemen should be set to learn to read English, and those who wanted to continue in learning and reach higher rank should learn Latin. Alfred the Great (*qv*) is credited with the establishment of grammar schools, while Ælfrie's (*qv*) *Saxon-Latin Grammar* (c. 1005), being excerpts from Priscian's grammar, purports to be a grammar as taught in the school of Ethelwold, Bishop of Winchester. So too the Danish king, Canute, is credited by his eleventh-century biographer with founding public schools (*publicas scholas*) to teach boys grammar (*litteris imbuendos*). In the school attached to the collegiate church of Waltham, founded by King Harold when earl, grammar and Latin verse-making were learnt. The earliest use of the actual words "grammar school," *scola grammatice*, as distinct from its Latin equivalent, *ludus literarum*, is in a charter of the last half of the twelfth century, in which Henry, Count of Eu and Lord of Hastings, confirmed the foundation by his grandfather Robert, Count of Eu, who received Hastings from the Conqueror, of the Collegiate Church of St. Mary in Hastings Castle and the division of its possessions into separate prebends among the several canons or prebendaries, including "Auscher's prebend to which belongs the keeping of the grammar school (*regimen scolæ grammatice*)," while "to Wyming's prebend" pertains "the keeping of the Song School (*regimen scolæ cantus*)." It is not clear whether Count Henry is quoting the words of Count Robert or translating them into the language of his own time. But it can hardly be doubted that the Warwick School, Gloucester School, Pontefract School, Thetford School, St. Paul's School, St. Alban's School, Huntingdon School, Dunstable School, and Reading School, — to mention some which are so called in extant grants of the latter part of the eleventh and first part of the twelfth century — would have meant the grammar schools of those places, just as in the present century they would bear the same meaning, though for the most part the masters aspire to drop the qualifying epithet and call them by the place name *tout court*. In the thirteenth to the nineteenth centuries inclusive it was thought more honorable to insert the qualifying epithet of

"grammar" school This became necessary in the thirteenth century to distinguish grammar schools from the schools of the higher faculties at the universities, and the Theological Schools, to which the schoolmasters of cathedral and collegiate church grammar schools, when they changed their name to the less known and intelligible, and therefore more magnificent title of Chancellor (*qv*), confined their ministrations. A notable illustration of the way in which the Cambridge School was shorn of its prestige and glory by the side of the university is to be found in the order made by the diocesan of Cambridge, the Bishop of Ely, in 1276. From this it appears that the Master of Glomery (*qv*) had still jurisdiction to hold legal pleas in which grammar scholars were concerned, as the Chancellor of the University had in those to which university students were parties. He too had a bedell or beadle to bear a mace before him, not only *honoris causa*, but also as the physical implement with which to enforce his jurisdiction, just as the Chancellor had, who was in fact only a higher school-master. Similarly the Canterbury grammar schoolmaster in the years 1310 to 1327 exercised jurisdiction in cases between his scholars and the laity, enforcing by excommunication the sentences he imposed as judge of his court, in school, sometimes expressing his acts as "done in Canterbury school," sometimes "in Canterbury Grammar School." In London, what was called in 1138 the "School of the Arches," or St Mary-le-Bow, appears in 1300 on the appointment of a master as "the Grammar School of the Church of St Mary-le-Bow or of the Arches." (See ARCHES, SCHOOL OF THE.) So at St Alban's, the school over which the famous Alexander Neckham (*qv*) presided in the thirteenth century as St Alban's School, is in 1309 called St Alban's Grammar School. In that year its master, sitting "as Judge of the law of the Grammar School of St Alban's," made statutes in and for it in quasi-regal style "by the unanimous consent of the Master and all the Bachelors" of it. He too exercised his jurisdiction over laymen as well as clerks, forbidding any one to assault or defame any of the scholars on pain of excommunication *ipso facto*, while if any one assaulted the master himself, not only was he excommunicated, but was also subjected to "salutary chastisement in the school from all the Bachelors of it, unless he had previously made satisfaction to God and the church." The common notion, derived chiefly from a misinterpreted passage in Richard of Bury's *Philobiblon* referring only to the masters of small village schools, that the grammar school master was of no importance, a person looked down on, is contradicted by these documents, which also correct the erroneous notions as to the limited character of the curriculum of these schools. No one could become a bachelor in St Alban's Grammar School unless he first

obtained from the master a proverb, on which, as a theme, he had to compose verses, prose, and rhyme (Leonine or rhyming Latin verses?) and also make an oration publicly in the schools. Nor was any bachelor coming from elsewhere to take a seat in the school, unless he had first been examined in the rules of grammar by examiners appointed by the master and was prepared to dispute publicly in the school on them "or any other subject put forward," just as in the university. At Beverley the newly created bachelors had to make presents of gloves to a large number of the officials of the minster, just as they did at Cambridge University. But the growth of the university seems to have stopped this practice of creating bachelors in grammar schools, and we hear no more of them after the fourteenth century.

While the universities competed with the grammar schools in their upper portions, the song schools, which became to a large extent also reading schools, competed with them for their lower boys. Thus at Warwick about 1316 the Dean and Chapter made statutes to define the provinces of the grammar and music schools, assigning the Donatists, or those learning the elementary parts of Latin grammar, the Donat, to the grammar school, while confirming the music master in the possession of those learning their first letters, the *grammata* of the original Greek grammar school. Similarly at Canterbury the parochial school, maintained by the rector in connection with St Martin's Church, was impeached by the rector or master of the Archbishop's or City Grammar School for competition with him in taking grammar scholars, and was after trial by jury found to be customarily entitled to take thirteen grammar scholars only, though it might receive an unlimited number in the alphabet, psalter (*ie* reading Latin), and singing. A century later, the grammar school-master at Saffron Walden obtained a decree from the Abbot as Ordinary of Walden prohibiting the priests of the chantries connected with the parish church from teaching grammar or any higher subjects than the alphabet and the graces (*alphabeticis et graciis*) *ie* the graces before and after meat, for long misinterpreted as *gracis*, and alleged to show a Greek-teaching school in 1425.

As some indication of what was learned in the grammar schools at this time, it may be mentioned that a feeble, or tattered (*debilis*) Horace was bought for the Merton Grammar School boys in 1348 for a half-penny, while several pairs of white tablets for reporting arguments cost 2½d, showing that the dialectic method was applied to grammar as to other subjects. The master of this school at the time was Master John Cornwall (see CORNWALL, JOHN). The successive attacks of the plague in the Black Death (*qv*) in 1349, the Second Plague in 1361, and less well known



but still destructive outbreaks in 1369 and 1380 made such havoc in the knowledge of Latin that special new endowments appeared necessary to restore it. Hence the great increase of endowed grammar schools (see *ENDOWMENTS, EDUCATIONAL*), of which Winchester College, founded in 1382, was the leading example. Never, perhaps, had the superior efficacy of grammar as "the foundation, gate and source of all the liberal arts" — the essential element of a liberal education — been more emphatically proclaimed than in its foundation charter. For the first time a grammar school was made the principal or indeed the sole object of a collegiate church, as important a step forward in educational provision as the foundation of the first collegiate church as a university college in Merton College had been a hundred years before. It is much to be regretted that the object and curriculum of a grammar school was so well understood at the time that the elaborate code of statutes made for "Sainte Marie College of Wynchester" in 1400 contains not a word as to the content of the curriculum, nor the method of teaching, but merely prescribes that candidates are to pass a competitive examination in the "Old Donat" and plain song for admission "to study in grammaticals or the art faculty or science of grammar." An equal parsimony of details is found in the numerous grammar schools endowed in connection with colleges, chantries, guilds, and hospitals from that time to the eve of the Reformation. Though three hundred and more of these grammar schools were founded or refounded, endowed or reendowed, very few of the foundation deeds or statutes have come down to us, but, judging from those which have come down, they would not have greatly enlightened us. The greatest and richest of all the free grammar schools, the College Roiall of Our Lady of Eton (*qv*), was a mere replica in its statutes, as in its foundation, of that of Our Lady of Winchester. Colet (*qv*) was no doubt expressing the sentiments of all, when in his statutes for the refounded and augmented St. Paul's School in 1518, he said, "what shall be taught . . . it passeth my wit to devyse and determyne in particuler." Nor did he unfortunately vouchsafe any details when he went on to say "in generall" that the scholars were to be "taught all way in good litterature" and to denounce the "barbary, corrupcion" and "*Laten adulterate*" which "ignorant blynde folis brought into this world," the "fylthynesce and abusyon" which "rayther may be called blotterature than litterature," and went on to demand the "olde Latyn spech, the veray Romaine tong" of Tully and Vergil, as found in St. Augustine, St. Jerome, Sedulus and Juvenecus, and other Latin Christian writers of the lower Empire. What, besides Alexander de Villa Dei's (*qv*) *Doctrinale*, or grammar in verse, was included in "Blotterature," we can only guess. Colet did not succeed in substi-

tuting the late Latin-Christians for the earlier classical authors in grammar schools in general, though he apparently revived them, as Milton's reading appears to show, at St. Paul's. The statutes of Cardinal Wolsey, for the grammar school of his college at Ipswich, made in 1528, are preserved; and a year or two later we have parts of the curriculum of Winchester and the whole of the curriculum of Eton as sent to Saffron Walden for adoption in the newly refounded and endowed grammar school there. These show that the *Latin Accidence* of Stanbridge, scholar of Winchester and Master of Magdalen College School, of which Wolsey had himself been master, with at Eton the grammar of Lily, first master of the refounded St. Paul's School, and at Winchester that of Sulpicius, a fifteenth-century schoolmaster at Rome, had superseded Donatus and Alexander de Villa Dei. The lower forms read the pseudo-Cato's *Moralia*, as their predecessors had done at Merton in 1308 and centuries before that, and Æsop's *Fables*, which were still in vogue at Highgate Grammar School in 1860. For the rest, they read Lucian's *Dialogues* (in Latin), Ovid's *Metamorphoses*, Terence, Cicero's *Paradoxes*, Vergil's *Eclogues* in the Fourth Form, in the Fifth, Sixth, and Seventh, Sallust, and Vergil's *Æneid*, Cicero's *Letters*, and Horace, with the figures of speech of Mosellanus, a German schoolmaster named Schade, of a pronouncedly Reformation type, scoffing at Saints and Saints' Days, and Erasmus' *Copia verborum*, which was much like Ælfrie's *Colloquy* and word books of the eighth century. Cæsar is the only author mentioned by Wolsey who does not appear in the Winchester and Eton curricula. Greek, it appears, was not taught, though it probably had been a little earlier under Holman.

Five years later the Reformation in England began with the dissolution of monasteries. Its educational first fruits are found in the statutes for the grammar schools attached to the cathedrals of the new foundation of Henry VIII, under the new deans and chapters in lieu of the old cathedral grammar schools, under the immediate cognizance of the bishops. There is no noticeable difference in the curriculum. The master is indeed called by the high-sounding name of *archididascalus*, instead of *Magister Informator* or *Magister scholarum*, and the second master, *hypodidascalus*, instead of *Ostianus* or Vice-monitor. Greek as well as Latin is now required of the master, though Latin only of the usher. The object of the foundation scholars, lodged, boarded, and clothed at the expense of the cathedral endowment, is expressed, as before, to be to obtain a fair knowledge of Latin grammar and to talk and write Latin. No Greek author is mentioned in the curriculum, which includes vaguely the chaste poets and the best historians, and in the Sixth or highest form Erasmus' *Copia* with "Horace and Cicero and

other authors of that class." In none of the re-foundations under Edward VI and Elizabeth is any inkling given of the curriculum contemplated beyond the direction that the newly constituted school is to "endure to all future time for the education, institution, and instruction of boys and youths in grammar" (See FREE SCHOOLS, EDWARD VI, ELIZABETHAN PERIOD IN ENGLISH EDUCATION, REFORMATION AND EDUCATION).

That Greek had by this time crept into the schools is shown only by the salvos of verses presented to the King when he visited Winchester and Eton, perhaps five per cent of which are in Greek. It is not till we come to the statutes made by Queen Elizabeth in 1560 for the grammar school attached to the Collegiate Church of the Blessed Peter of Westminster, which took the place of the abbey dissolved by Henry VIII and reinstated by Queen Mary, that any difference in subject or detailed curriculum is forthcoming. The duty of both master and usher, *ludimagister* and *præceptor*, is defined to be to teach Latin, Greek, and Hebrew grammar, *literæ humaniores*, poets and orators. Cato and Æsop still prevail in the lowest forms with Vives (*qv*), Terence and Sallust in the Third Form. In the Fourth Form Greek grammar appears with Lucian's *Dialogues* in Greek, in the Fifth Form, Isocrates and Plutarch; in the Sixth and Seventh, Demosthenes and Homer as well as Livy and Vergil. Only the Seventh Form was actually to be taught Hebrew, devoting the last hour between five and six every school day to Hebrew grammar with a reading in the Psalms in Greek and Hebrew. That Hebrew remained an integral and effective part of the curriculum at Westminster is clear from the evidence of Charles Hoole's *New Discovery of the Old Art of teaching school* (1659). He testifies that Westminster boys under Busby (*qv*) made orations and verses in Hebrew and also "Arabic and other oriental tongues" "to the amazement of most of their hearers." But though Hebrew was included in many school statutes up to the latter part of the seventeenth century, and Hoole includes it in his ideal school for three mornings a week, and Mills in 1741, in his *Pueritiæ formandæ artifex*, includes Hebrew and *Lips Prophetica* for those boys who "wished to be clerics," it never had real hold in the grammar schools. It is still taught to a limited extent at Merchant Taylor's School, reputed to be founded in 1560, the same year as the Elizabethan statutes were given to Westminster, and was traditionally taught a few years ago at Louth Grammar School in Lincolnshire. The net result of the Renaissance and Reformation on the curriculum and methods of grammar schools was little more than to place Greek in the same position as Latin, with more *éclat* attaching to a real knowledge of it, but less consequence attached and less effort made to attain that knowledge in the majority of pupils.

As to the class which attended the grammar schools, it is certain, notwithstanding oft-repeated assertions and commonly received notions to the contrary, that it was in the main the same as now, that is, the middle class, the younger sons of the nobility, including in that term the whole knightly class and squirearchy, the great and small landlords, the professional classes, which at first were almost entirely the common lawyers, as the medical men and the chancery and ecclesiastical lawyers were mostly clerks and ousted from matrimony, the merchants and tradesmen. The chief difference is that to this class since the Reformation new recruits came forth from above and from below, from the eldest sons of the landed classes and from select individuals of the working classes. In Alfred the Great's family, according to Asser, the eldest son was brought up in chivalry, in hunting, and the arts of war, with only so much literary instruction as to learn Saxon poems by heart and to read Saxon, while the youngest son was sent to the grammar school. This practice was followed in other noble families with few exceptions throughout the Middle Ages, up to the latter part of the sixteenth century, the tincture of literature being probably less in the tenth to the twelfth centuries than in the ninth, and growing as learning grew from the thirteenth century onwards. Throughout, the younger sons even of the noblest families went to grammar schools and acquired learning for the clerkly profession, which included not only bishops and priests, but the whole of the government services, diplomacy and the law, and, increasingly, *la haute commerce*. While William Rufus was a rude soldier, the younger son Henry was sent to school, and learned grammar, and, as William of Malmesbury mentions, when he became king, in all his wars and troubles never forgot his learning or to read books. The celebrated Abélard was the eldest son of a Breton knight and landowner. Thomas à Becket, who is expressly recorded as having passed through the school of the city of London, *i.e.* St Paul's School, before going to Paris University, was the son of a sheriff of London in the days when aldermen were still hereditary landowners and their offices territorial governments. On the other hand, Abbot Sampson of Bury, who also went to Paris University, was so poor that he could not pay the penny fee at Bury School, and at Paris eked out his living by carrying holy water. The archbishops and bishops, deans, archdeacons, and canons, who had all been at grammar schools, and after the twelfth century mostly at universities, were predominantly of noble birth. It was one of the grievances of the chapter of Lincoln, when Bishop Grosseteste (*qv*) wanted to "visit" them, that he was not a gentleman. When Henry III wanted to hang the Oxford scholars, recruited from the grammar schools, who had taken a leading part in the defense of North-

ampton in 1264, he was prevented by the barons of his own side, who protested that they were not going to have the blood of their sons and relations shed. A fourteenth-century list of the scholars of Paris University contains several counts and other nobles of various nations. The first "poor and needy scholars" of Winchester and of Eton were scions of well known county families, and the "Commoners" of Winchester, many of whom became scholars, were by statute bound to be "sons of the nobility" and were so in fact to within twenty years of the Reformation, when the lists cease. The Eton statutes excluded villeins, which included the majority of farmers and artisans. In 1447 the University of Oxford petitioned the Lord Say and also the House of Commons for their help to get Duke Humphrey's library for them, on the express ground that "many of your noble lineage and kinsmen have studied and shall hereafter in the said University." As a matter of fact, we know at least one relation of Lord Say who was a scholar of Winchester and fellow of New College, Oxford, and another who was a scholar of Eton. Macclesfield Grammar School was founded in 1503, expressly for "gentilmen's sonnes and other godemenn's children of the towne and contre therabouts." Colet ordered that his free scholars should provide wax candles for the school at the cost of their friends, when wax was a costly luxury. But perhaps the most striking testimony to the fact that the grammar schools were mostly frequented by the upper classes is the story of the admission of "poor scholars" on the new foundation of Canterbury Cathedral Grammar School in 1541. "More than one or two of the Commissioners would have none admitted but sons or younger brethren of gentlemen, as for others, husbandmen's children, they were more for the plough and to be artificers than to occupy the place of the learned sort." Archbishop Crammer, himself a scion of an ancient family in Nottinghamshire, had to stand up for the new idea of admitting the really poor and to protest not in favor of a majority of poor, but against "utterly" excluding them. At Canterbury, as at Worcester, the names of the scholars admitted are those mainly of the county families of Kent and Worcestershire. The admission of the working classes to participate in the schools was one of the new ideas of the revolution called the Reformation, and was one of the objects of the great increase in free, *i.e.* gratuitous, schools which followed it. At the same time another effect of the Renaissance and Reformation was the increase also of the uppermost classes in the grammar schools, though it was not till the seventeenth century that the eldest sons of great nobles are found in them. It was thought something of a scandal when, in 1569, the heir of Broughton castle, afterwards Lord Say and Sele, became a scholar of Winchester College as Founder's kin. It was not so regarded a century later when Sir Robert Wal-

pole was a "poor and needy" scholar of Eton. Until the distinction grew up in the eighteenth century between the great grammar schools which became known as public schools to which aristocracy flocked, and the smaller schools, the ordinary country grammar schools presented a real mixture of classes. The local nobility and gentry were found in them side by side with the local tradesmen and farmers. The sons of the former, passing on to the universities as commoners at Oxford or pensioners at Cambridge, often took the sons of the latter with them as servitors and sizars. This practice had descended from medieval times, when the servitors who were numbered with the *socii* of a rich man and lived in the same hostel were more often poor relations than of a lower class. The truth is that in the grammar schools, as in the church itself, and the professions as in other institutions, the progress has been from aristocracy and exclusion to democracy and the open door.

It was not considered after the Reformation any more than before that the grammar schools should teach anything but the classical languages. But the later years of Queen Elizabeth's reign were marked in many grammar schools, especially in the smaller country town, by the attempt to introduce English reading and writing and arithmetic in the lower parts of the grammar school under the usher. In the seventeenth century, especially during and after the commonwealth, it became almost a commonplace for the founders of small country grammar schools, of which there were a large number, to prescribe English grammar, and Latin only "if required." But it was not till close on the Commonwealth period itself that it occurred to people to found separate English schools or elementary schools, not grammar schools and commonly free (see FREE SCHOOLS). But the pathetic belief in the magic of Latin grammar as an indispensable talisman to unlock the doors of knowledge prevailed spasmodically even to the nineteenth century, even when the founders were clearly not thinking of providing education for the class who would go to the universities. But at Whittington in Derbyshire, founded in 1681 for "20 of the meanest and poorest mens' sons born in the parish," Latin as well as English and accounts were prescribed, at Lowestoft in Suffolk in 1735 a schoolmaster was to teach forty boys, with preference to fishermen's children of the parish, writing, reading, accounts, and Latin, at Wigglesworth in Yorkshire in 1789 a sum of £1000 was willed for the establishment of Clarke's Free School to teach children born in the township, or whose parents were legally settled there, Latin, English, writing, and accounts.

In the seventeenth century English began to take a more permanent part in the grammar schools, not that it was ever taught as a set subject and studied as a language or literature

in school, but the practice began of making English versions of Latin verse and English essays in classical subjects. At the end of the seventeenth century, though French began to be studied and French dictionaries and phrase-books to be written, it was taught in separate schools. Perhaps the earliest recorded instance of a French master teaching French in an ordinary grammar school known is that of a French usher at Croydon Grammar School, then part of Archbishop Whitgift's hospital, about 1717. But from the rather casual way in which he is first mentioned it is certain this was not the first instance of such ushers.

The unwillingness, and, according to legal decisions, the inability of the grammar schools to open their doors to modern subjects on a level with the ancient languages led to a marked decay in them during the eighteenth century. (See EIGHTEENTH CENTURY IN ENGLISH EDUCATION.) In 1805 in the Leeds Grammar School case (*Attorney-General vs. Whiteley*, 11 Ves. 241) Lord Chancellor Eldon (*q.v.*) stopped the efforts of the governors of the school to provide for the admission of modern subjects, holding that the Court had no authority to fill a school intended to "teach the learned languages grammatically" with "scholars learning the grammar and French languages, mathematics, and anything except Greek and Latin." A separate branch of the school to teach these subjects "might be very useful to the youth of Leeds, but could not possibly be represented as useful to the charity," and it was to the utility of the charity the court had to look. This decision stopped all reform of the grammar schools, except when, as in the case of Leeds itself, the endowment was large enough to go to the cost of a private act of Parliament. A generation later the Grammar Schools Act of 1840 overruled the decision and enabled the court to widen the curriculum, but only by the expensive process of a lawsuit. It took another generation before by the Endowed Schools Act, 1869 (*q.v.*), a body of Endowed Schools Commissioners was instituted to create more or less popularly elective governing bodies and to introduce natural science and modern languages. This had to be done by separate schemes in each case, frequently opposed in Parliament on political grounds. But now there are many grammar schools, in which grammar forms a very small part of the whole curriculum, which do not teach Greek at all, and in which it is even possible to escape Latin altogether. On the other hand, those which have been most successfully reformed in their government and have in view the preparing of boys for the universities retained a greater but more efficient instruction in classics, such as Sherborne in Dorsetshire, Sedburgh in Yorkshire, two of the earliest of the so-called Free Grammar Schools of King Edward VI, Derby and Ipswich, have dropped the word "grammar" and in imitation of Rugby, which was one of

the earliest to do so, call themselves simply Sherborne or Sedburgh School, after the name of their place, and would describe themselves as Public Schools (*q.v.*), almost in contradistinction to grammar schools. The latter term, however, has been retained, and is still used in schools in some of the great manufacturing towns like Leeds and Manchester. A F L

See articles on individual schools, *e.g.* ETON, HARROW, ST. PAUL'S, PUBLIC SCHOOLS, ENGLAND, EDUCATION IN, under Secondary Education.

**Present Position** -- A classification of English secondary schools is a matter of some difficulty. Many factors which are extraneous to education enter in to complicate the question. But the following three broad divisions may be made: (1) Those schools which are known as the Public Schools *par excellence*, most of these will receive separate treatment (*e.g.* Winchester, Eton, Harrow, Rugby, etc.). And since the Public Schools have established a tradition, an account of their general organization and spirit will be given under PUBLIC SCHOOLS. (2) A wide middle division including day and boarding schools, some accepting a government grant, some not, all charging fees, and the majority developed out of old foundations. (See ENDOWMENTS; ENDOWED SCHOOLS ACT.) (3) The third class of schools consist of those recently founded and maintained by local authorities and supported by government grants, taking pupils as a rule direct from elementary schools and keeping them for about four years. For these see ENGLAND, EDUCATION IN.

Here only those schools which fall into the second division are treated. Generally these schools are attended by the children of the middle classes, and with the exception of those who hold scholarships or free places all pupils pay fees which vary in amount from £12 to £24 in day schools and £75 to £120 in boarding schools. While it has been found convenient to group these schools under the caption of Grammar Schools, the titles vary widely. With many the term "College" has found great popularity in imitation of true collegiate schools like Eton (see, however, COLLEGE, ENGLISH), others merely bear the place name, and others again retain the title of Grammar School. The organization of all the schools is approximately the same. While some may receive pupils at the age of nine or ten, secondary work generally begins at the age of twelve, the pupils receiving their preliminary education in elementary or in special preparatory schools, and continues up to nineteen, although there is usually a great leakage at sixteen. The schools are usually divided into modern and classical sides, the former prepares boys for practical and commercial life as soon as they leave school, or in some cases for the universities, the latter for the universities and the professions. In some schools all pupils receive a common basis in a "junior school," and bifurcation takes place

## GRAMMAR SCHOOL

in the senior school at the age of thirteen or fourteen. In a few cases provision is made for special science and mathematical sides, for special preparation for army examinations, etc. The schools are organized in forms (*q v*), generally on a basis of six, and each form is under a form master who has general charge of pupils in his class, while for certain subjects, such as science and mathematics, there are specialists. For the influence of examinations on the work of English schools, see under that topic. For the social organization see ATHLETICS, EDUCATIONAL, BOARDING SCHOOLS; DORMITORIES; PUBLIC SCHOOLS; FAGGING, PREFECTS, STUDENT LIFE; etc.

The following schools taken from the *Public Schools Yearbook* (1911) may be regarded as representative. The basis of selection is the same as for membership of the Headmasters' Conference — namely, number of pupils in the school (one hundred boys at least), number of former pupils resident as undergraduates at Oxford and Cambridge (ten at least), and number of boys sent up to the universities annually (five or six at least). The nine great Public Schools are left for separate treatment. The dates of foundation in the following list are based on Leach

## GRAMMAR SCHOOL

	DATE OF FOUNDATION	NUMBER OF PUPILS	NUMBER OF MASTERS
Abingdon School	1563 (re-founded)	120	10
Aldenham School	1597	210	17
Beaumont College, Old Windsor	1861	180	35
Bedford Grammar School	1552 (re-founded)	800	17
Berkhamsted School	1545	165	22
Birkenhead School	1860	200	10
King Edward's VI's High School, Birmingham	1552	470	27
Bishop's Stortford College	1868	133	14
Blundell's School, Tiverton	1604 before	250	20
Boston School	1327	105	7
Bradfield College	1850	287	27
Bradford Grammar School	before	550	25
Christ College, Brecon	1541	100	7
Brighton College	1815	212	19
Bristol Grammar School	before	380	21
Bromsgrove School	1548	140	12
Leys School, Cambridge	1875	155	18
Perse Grammar School, Cambridge	1615	210	23
King's School, Canterbury	598	237	18
St Edmund's School, Canterbury	1749 before	125	13
Carlisle Grammar School	1290	140	9
Cheltenham College, Cheltenham	1841	600	49
Dean Close Memorial School, Cheltenham	1886	220	13
King's School, Chester	1541	140	9
Chigwell School	1629	100	9
Christ's Hospital, West Horsham	1552	820	47
City of London School	1834	715	36
Clifton College, Bristol	1862	650	51

	DATE OF FOUNDATION	NUMBER OF PUPILS	NUMBER OF MASTERS
Whitgift Grammar School, Croydon	1596	335	25
Denstone College	1873	270	17
Dover College	1871	200	18
Dulwich College, London	1619	701	43
Durham School	before 1180 (re-founded 1540)	102	13
Eastbourne College	1867	200	17
Epsom College	1855	284	20
Exeter School	1332	130	11
Felsted School	1564	250	21
Fettes College	1886	230	20
Giggleswick School	1507	140	13
Trinity College, Glenalmond	1841	140	14
Elizabeth College, Guernsey	1563	120	11
Haileybury College	1862	490	35
Hereford Cathedral School	1381	120	12
Highgate School	1562	380	25
Gresham's School, Holt	1555	196	17
Hymers College, Hull	1889	260	17
Ipswich School	before 1477	126	10
King William's College, Isle of Man	1833	185	13
Owen's School, Islington	1613	420	26
Victoria College, Jersey	1852	155	13
King's College School, Wimbledon	1829	230	18
Royal Grammar School, Lancaster	before 1472	109	9
St. Mary and Nicolas College, Lancing	1843	222	21
St. John's School, Leath-erhead	1851	255	16
Leeds Grammar School	1752	275	22
Wyggeston Grammar School, Leicester	1515	585	27
Liverpool College	1812	250	17
Llandoverly College	1848	161	14
Loretto School	1829	146	18
Malvern College	1864	500	36
Manchester Grammar School	1506 1515	880	45
Marlborough College	1843	600	40
Merchant Taylor's School, Crosby	1618	300	15
Merchiston Castle School, Edinburgh	1833	270	23
Mil Hill School	1807	260	22
Monkton Combe School, near Bath	1868	157	17
Monmouth Grammar School	1611	177	12
Newcastle-under-Lyme High School	1602 before	150	12
Norwich School	1256 before	90	9
Nottingham High School	1289	370	20
Oakham School	1584	105	11
Oundle School	1464	310	25
Oxford High School	1875	150	11
Magdalen College School, Oxford	1180	100	10
St. Edward's School, Oxford	1863	120	10
Plymouth College	1854	172	12
Portsmouth Grammar School	1732	230	12
St. Peter's College, Radley	1847	240	20
St. Lawrence College, Ramsgate	1879 before	206	21
Reading School	1125	135	13
Repton School, Repton-on-Trent	1557	360	30
Rossall School, Fleetwood	1844	300	28
St. Alban's School	948	218	14
St. Bees School	1587	280	16
St. Olave's and St. Saviour's Grammar School, London	1571	450	24
Sedburgh School	1525	220	18

	DATE OF FOUNDATION	NUMBER OF PUPILS	NUMBER OF MASTERS
Sherborne School	1550		
Stonyhurst College	(re-founded) 1592	280	21
Tonbridge School	1592	300	26
Trent College	1553	450	39
University College School, London	1866	150	15
Uppingham School	1830	390	25
Wakefield Grammar School	1554	140	37
Warwick School	1591	250	18
Wellington College	before 1066	200	15
Weymouth College	1853	190	36
Wolverhampton School	1863	115	12
Woodbridge School	1515	260	16
Worcester Cathedral	1662	144	12
Worcester Royal Grammar School	1540	150	14
St Peter's School, York	before 1292	275	17
	5th century	146	19

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**GRAMMAR, STUDY OF** — See GRAMMAR, ENGLISH, ENGLISH USAGE, GREEK LANGUAGE AND LITERATURE, LATIN LANGUAGE AND LITERATURE

**GRAMMATEUS** (Heinrich Schreiber, or Henricus Scriptor, whence the Latinized Greek form of Grammateus) — Mathematician, was born at Erfurt, at least as early as 1496, and describes himself in one of his works as *Heinrich Grammateus von Erfurt der sieben freien kunsten Meyster*. He was a student at Cracow and at the University of Vienna (1507), and was well known as a teacher, and also as a lecturer in the university where he was educated. His publications include an arithmetic, *Rechenbuchlin*, that appeared in 1518, with subsequent editions in 1535, 1544, 1554, and 1572. He also published the following *Algorithmus proportionum*, in which was included some work in the theory of music (Cracow, 1514), *Libellus de compositione regularum pro vasorum mensuratione* (Vienna, 1518), *Behend und khunstlich Rechnung nach der Regel und weltsch practick* (Nurnberg, 1521), *Algorismus de integris Regula de tri cum exemplis* (Erfurt, 1523), *Eyn kurtz neue Rechen unnd Visynbuechleyyn* (Erfurt, 1523). Rudolff (*qv*) learned algebra from Grammateus, for he records his thanks to him in these words: *Ich hab von meister Heinrichen so Grammateus genennt der Coss anfangklichen bericht empfangen. Sag im darumb danck*. D E S

**GRANADA UNIVERSITY** — See SPAIN, EDUCATION IN

**GRAND ISLAND COLLEGE, GRAND ISLAND, NEB** — A coeducational institution maintaining academic, collegiate, commercial, and music departments. The entrance requirements to the college are equivalent to the work of a high school. The college confers the degree of A B on completion of the requisite courses. There is a faculty of twenty-five instructors.

**GRANGER, THOMAS** — Writer of a Latin grammar, 1616, and a logic, 1620. The grammar is entitled *Syntagma Grammaticum, or an easie and methodicall explanation of Lillie's Grammar, whereby the misterie of this Art is more plainly set forth, both for the better helpe of all schoole-masters, in the true order of teaching, and the schollers far more easie attainment of the Latine tongue*, 1616. Granger was an M A of Peterhouse College, Cambridge, apparently minister at Butterwick, near Boston, in Lincolnshire. His grammar is of importance on account of the Epistle to the Reader, containing "the generall Theorike, or true grounds of teaching." In this treatise Granger points out that commonly doubtfulness and confusion exist in teacher and scholar, unless he is full master of his subject and understands child nature. Granger has a clear insight into the causes of confusion and doubtfulness in the child. He understands that the psychology of the child is different from that of the man, and goes on to point out the differences in a very modern spirit. Granger anticipates something of the doctrine of self-activity. "The scholar must attain to learning by his own study, industry, diligence and exercise, *using his master as a help, as a nurse, or matrice*."

In 1620 Granger published *Syntagma Logicum -- or the Divine Logike*. This was a logic for divines in "the practice of preaching" and for the help of "judicious hearers" and "generally for all." It is dedicated to Bacon. The work is founded on Ramus (*qv*), the great reformer of logic, with modern applications. Granger supplies scriptural and theological illustrations of logic, as Fraunce (*qv*) had supplied English poetical and legal illustrations. F W

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**GRANT, CHARLES** (1746-1827) — Statesman and philanthropist, born in Invernesshire. He was early taken by an uncle to India, where he entered the service of the East India Company, with whom he attained a position of great importance and influence. He interested himself greatly in the need for the social betterment of the natives, and never tired of sending to England suggestions for the increased estab-

lishment of missions in India. On his return to England he was instrumental in founding the Church Missionary Society (1799) and the British and Foreign Bible Society (1804). His treatise, *Observations on the State of Society among the Asiatic Subjects of Great Britain particularly with Respect to Morals, and on the Means of Improving it* (1813), led to the appointment by Parliament of a Bishop of Calcutta with jurisdiction over India and Ceylon, and to the grant of a lac of rupees (\$50,000) for promoting education. He drew attention, also, to the need of industrial training in India. Grant was also the originator of a plan for the education of young civil servants of the East India Company, which resulted in the establishment in 1805 of the East India College at Haileyburg. (See PUBLIC SERVICE, TRAINING FOR.) He sat in Parliament from 1802 to 1818 as member for his native county.

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**GRANT, ZILPAH** — See BANISTER, ZILPAH GRANT.

**GRANTHAM, THOMAS** (d. 1664) — A clergyman who on sequestration of his parsonage became a private schoolmaster, an advocate of a speedy way of teaching the Hebrew, Greek, and Latin tongues, and the determined opponent of corporal punishment. He appears to have belonged to a Lincolnshire family and to have studied at Oxford from 1628 to 1630 and at Cambridge (Peterhouse, M.A. 1634). Before 1644 he was teaching in Bow Lane, and wrote his *Brainbreakers Breaker* (*Μημοφθοροπαίκτης*) in which he protests vigorously against the severity of schoolmasters. Grantham gives a picture of the school teaching of the times, in which he attacks the weakness of teaching grammar by rote in an unintelligible language. Grantham sought to teach grammar rules understandingly "and by often applying them, the rules come without book whether they will or no." Still more remarkable was Grantham in his *Brainbreakers Breaker newly broke out again* in 1649-1650. In it he says: "A boy may easily learn a thousand words in ten days, that is, a hundred words in a day." Grantham proposes as remedy that all the revenues of the free grammar schools should be taken from them and placed in the hands of a treasurer, and only those schoolmasters who proved their ability to teach well should receive the public money. On one occasion, one of Grantham's challenges against a London public school was accepted and judgment given in favor of Grantham.

Grantham also wrote *Animadversions on Camden's Greek Grammar*, dealing with his favorite topic of the folly of learning grammar by rote, and in 1644 he wrote *A Discourse in Derision of the Teaching in Free Schools and*

*other common Schools*, in which he introduces three ordinary masters of Free Schools, a citizen, a country gentleman, a traveler, and himself, "Professor of the Greek and Latin Tongues in London." In 1660 he translated three books of Homer's *Iliad* into English. F. W.

**Reference:—**

*Dictionary of National Biography*

**GRANTS.** — See APPORTIONMENT OF SCHOOL FUNDS, BUDGET, SCHOOL, NATIONAL GOVERNMENT AND EDUCATION, SCHOOL FUNDS.

**GRAPH** — A term used in algebra to refer to the representation of an equation by the methods of analytic geometry ( $q.v.$ ), and occasionally to refer to other line and surface representations of functions. The introduction of this topic into elementary algebra is recent. As in all such cases, there have been three periods in this introduction: (1) the period of adoption for the purpose of filling the gap left by the omission of some obsolete topic, (2) the period of extravagant and ill-considered use of a novelty, (3) the period of reaction and of investigation of the real merits of the theory. From the educational standpoint the greatest value of the graph lies in its power of showing visually the number and nature of the roots of an equation. For elementary purposes, as a means of finding the actual roots of an equation, its value is slight, although in the computation of the roots of a numerically higher equation it has of late been shown to be very useful. Its value in showing the functional relation of algebraic expressions is also great, and is coming to be recognized.

In elementary algebra it is desirable to introduce curve tracing as an aid in the study of the negative number. This work also offers an opportunity of showing the change in a function of a variable as the variable changes. It may next be introduced in connection with the study of simultaneous equations of the first degree in two variables. Here there are four types that may advantageously be considered: (1) Two simultaneous equations such as  $x + 7y = 15$ ,  $9x - 3y = 3$ . In this case the lines will intersect, and the result is a visual illustration of the fact that two such equations have, in general, a root, and that only one root is possible. (2) Two inconsistent equations such as  $6x - 9y = 7$ , and  $4x - 6y = 5$ . In this case the lines will be parallel, and the student sees that there is no point in common, and hence that two such equations in two unknowns are not necessarily simultaneous. (3) Two identical equations, such as  $6x + 9y = 12$ , and  $4x + 6y = 8$ . Here the two lines are identical, and the student sees that there is an infinite number of points on the two lines, and hence that there is an infinite number of values of  $x$  and  $y$  that will satisfy the two equations. (4) Three or more simultaneous equations in two unknowns, such as  $x + y = 5$ ,  $2x - y = 1$ ,  $7x + 4y = 26$ . Here

## GRAPHIC CURVE

the three lines pass through the common point (2, 3), and the student sees that in general three such equations have one common root, but that in a special case the lines may be concurrent and the equations indeterminate. The next use of the graph is found in the study of quadratics. Here the use is twofold: (1) In the study of a single quadratic equation in one unknown, the graph shows clearly the number of roots to be expected, the fact that imaginary roots enter in pairs, and the meaning of equal roots. (2) In the study of two quadratics involving two unknowns, or of one quadratic and one linear equation, the graph shows the number of roots to be expected, and the possibilities as to the nature of the roots. For example, a straight line cuts a conic in two points, and hence we expect two roots in solving a system consisting of a quadratic and a linear equation. Two conics, however, intersect in four points, and hence we expect four roots. The graph shows how two of these roots may be identical (the conics being tangent), or how two imaginaries may enter at the same instant, and all this makes an impression on the student's mind that the mere analytic proof does not make.

Used in this spirit, a reasonable study of graphs is desirable. Carried beyond these limits, the work usually degenerates into a formalism without object and without real interest.

D E S

**GRAPHIC CURVE** — A term applied to a line the characteristics of which indicate to the eye the relationship which two variable quantities sustain to each other as either the one or the other is increased or diminished. In order to determine this curve, two lines of reference, called axes, are drawn perpendicular to each other. A number of corresponding values of the two variables are obtained, and for each pair of values a point is plotted, the perpendicular distances of which from the two axes are representative of each of the two variables in that calculation. After a number of such points are plotted, it is usually possible to draw through them a line which will indicate the general character of the relationship between the variables involved. One of the best known of the graphic curves is that illustrating Weber's law, or the psychophysical law of the relationship between the intensity of stimuli and the intensity of corresponding sensations. It is found that in order to get any sensation at all the stimulus must be considerable. After this, as the stimulus is increased, the intensity of the sensation increases at first very rapidly, then more slowly, until at last further increase in the stimulus produces no result on the intensity of the sensation. In general, in order to produce an appreciable increase in the intensity of the sensation the intensity of the stimulus must be increased by a certain proportion of itself. The law may be pictured by the

## GRAPHIC CURVE

following graphic curve (Fig. 1). Distance measured on  $OX$  indicates intensity of stimulus. Distance measured on  $OY$  indicates

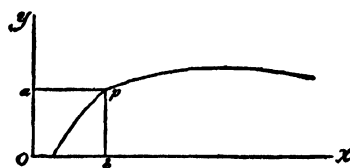


FIG. 1

intensity of sensation. Intensity  $Ob$  of stimulus corresponds to intensity  $Oa$  of sensation. Both are represented by point  $p$  on the curve. The curve in general resembles a parabola.

Graphic curves may vary from straight lines to curves of great irregularity. One of the simplest types is the *curve of distribution*, brought into prominence in psychological statistics by Sir Francis Galton ( $qv$ ). It represents the number of individuals of a group who represent each of the various existing differences in reference to any characteristic. For example, in a given fairly homogeneous population, there will be very few very short men, very few very tall men, and, as we approach the average height from either extreme, the number of individuals who correspond to the successive measurements will at first increase slowly, then more rapidly. The general form of the normal curve of distribution is as follows (Fig. 2). Distance measured on  $OX$



FIG. 2

indicates the amount of the characteristics in question. Distance measured on  $OY$  indicates number of individuals.

In reference to such distributions three values are of importance. These are the *average*, which is obtained by adding all the measurements together and dividing by the number of individuals concerned, the *median*, which represents the measurement above or below which 50 per cent of all the individual measurements lie, and the *mode*, or the measurement represented by the greatest number of individuals. It is interesting to note that average, median, and mode may in the same case represent different values, a fact which the form of the curve will readily display.

If a population, instead of being homogeneous, is divided, for example, into two groups which vary considerably from each other in reference



to the trait in question, this fact will be shown by a deviation from the normal curve of distribution. A population made up of two races, one considerably taller than the other, would be apt to be represented by a curve sagging at the center, as in Fig 3. Here the modes  $m$

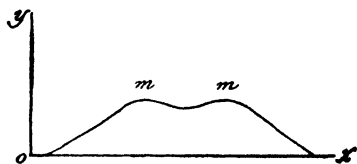


FIG 3

and  $m'$  of the two racial groups would vary considerably from each other, producing the effect indicated.

Again, if some selective agency tends to destroy those who vary either above or below the normal, the curve will exhibit this influence by falling off abruptly on the side affected, and

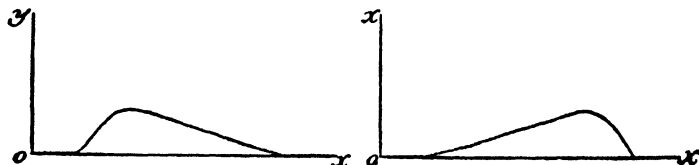


FIG 4

representing what is known as a skew distribution, as in Fig 4.

Another simple type of graphic curve may be called the *curve of fluctuation*. In this the measurements on one axis represent intervals of time, while those made on the other represent the fluctuating values. The rate of growth in height or weight or of advance in any mental trait may thus be represented to the eye. Here the curves tend in one direction, but where health or school attendance or amount of improvement is represented, they are likely to rise and fall.

**Correlation** — Both the curve of distribution and that of growth or fluctuation indicate correlation. In the one case, a measurement is correlated with the number of individuals who represent it; in the other, with the time of occurrence of the fact that it indicates. The special character of the two curves differentiates them from the curve which represents the relation of two characteristics without reference to number of individuals or time of occurrence. This curve may, therefore, not inappropriately be given the title *curve of correlation*. The curve illustrating Weber's Law is an example of this type.

To plot a curve of correlation one trait must be taken as a basis, and the individuals representing successive measurements in this trait must be grouped together. Then the average measurement of each group in respect to the

other trait must be found. These successive averages must then be plotted and the curve drawn through them. It is evident that the curve will progress regularly in the direction of increase in the basal trait. Ordinarily such regular progress will not be discovered in refer-

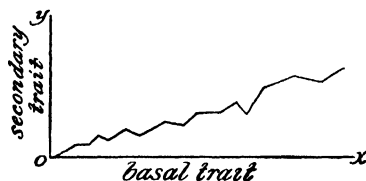


FIG 5

ence to the averages representing the second trait. Thus the curve will fluctuate as in Fig 5. While in general there is progress in reference to the averages of the second trait, this progress is not uniform. Careful reflection, however, will make it evident that if enough cases are obtained the irregularities will be likely to disappear and that we shall have left a curve or straight line which will indicate the amount and character of the correlation or the lack of correlation between the two traits in question. Suppose, for example, the correlation between ability in mathematics and ability in classics were being

calculated. Let degree of mathematical ability be measured on  $OX$ , where  $O$  represents the minimum and  $X$  the maximum ability. Let degree of ability in classics be measured similarly on  $OY$ . Perfect correlation between the two powers would be represented by Fig 6. Every indi-

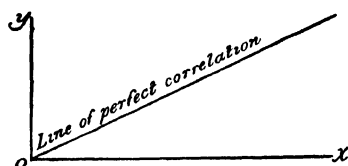


FIG 6.

vidual will occupy the same relative position in reference both to mathematical and to classical ability. On the other hand, if there

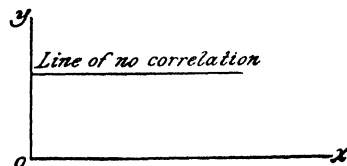


FIG 7

be no correlation, every group in reference to mathematical ability would in classical ability tend to show about the same mediocre average. The curve would then be parallel to  $OX$ , as

indicated in Fig 7. A curve of partial correlation would be represented in Fig 8, of per-

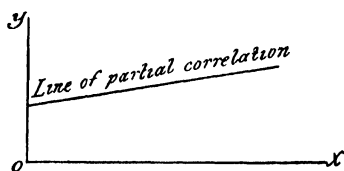


Fig 8

fect reverse correlation in Fig 9. Here as one ability increases, the other diminishes.

**Average Deviation** — It is evident that except where there is perfect correlation the curve does not enable us to place any individual in regard to one trait when his position in regard to another is known. When, however, the average deviation of the individual

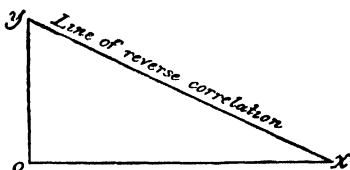


Fig 9.

measurements from the averages that are represented by the curve are calculated, approximate prediction becomes possible. We can say that the chances are even that the position of any individual in one trait will not vary more than the amount of the average deviation from the place in the curve which is assigned to it by virtue of its rating in reference to the other trait.

The accurate determination of degrees of correlation is a matter of somewhat complicated mathematical analysis. For an adequate treatment of this subject the reader is referred to Thorndike's *Mental and Social Measurements*. The graphic curve is not intended as a basis for predictive calculation, but rather to exhibit a relationship in a form readily to be apprehended. It is evident that for this purpose it has great value in educational theory and practice. In this field the calculation of distribution and variation, of growth and fluctuation, or of correlation, whether in reference to mental or physical abilities, the effects of this or that educational method or condition, of school practices, or of a multitude of other factors concerned in education, is being recognized as of the greatest importance. In order to display the results of these calculations in a form easily grasped, the graphic curve is of very great value.

It is interesting to note that the use of axes of reference by relation to which the corresponding values of two variables can be determined was invented by Des Cartes ( $qv$ ) as a means of applying algebra to geometry. The

coordinate geometry reduces a visible geometric form to an abstract quantitative relationship. The graphic curve reverses this process, and puts the abstract quantitative relationship in a concrete visible geometrical form.

E. N. H.

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**GRAPHIC REPRESENTATION** — See GRAPH; GRAPHIC CURVE, VISUAL AIDS TO TEACHING

**GRAPHOLOGY** — The science of handwriting. This science has never been developed in any systematic form, and it is doubtful whether it can be so developed. The effort of many to judge character through writing has never been successful. Certain characteristics of writing can, however, be recognized as related to well-defined conditions under which the writing is done.

C. H. J.

See PENMANSHIP, WRITING

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**GRASER, JOHANN BAPTIST (1766–1841)**

— A distinguished German educational writer, born in Eltman, Bavaria. He studied in Bamberg and Wurzburg, where at the age of twenty he became doctor of philosophy. He entered the priesthood, and was appointed prefect of the theological seminary at Wurzburg. After some experience as teacher and university professor he went in 1804 to Bamberg as school councillor (*Schulrat*). In 1810 he was transferred to a similar position in Bayreuth, which he filled up to the time of retirement in 1821. A monument was erected to him in Bayreuth by the teachers of Upper Franconia.

Graser's pedagogical theory was based on the philosophy of Schelling. He considers as the chief aim of education the development of the "divinity" in man. Education should make man conscious of his divine origin, and should cause him so to think and act as to make himself worthy of this origin. Graser also deserved credit for the introduction of a new method of elementary instruction by which reading and writing were taught together (*Schreiblese-methode*). The observations which he made in the teaching of reading directed his attention to the education of deaf-mutes. Through his efforts courses for the instruction of deaf-mutes were introduced in many German teachers' seminaries. Graser's chief works are:

*Divinität oder das Prinzip der einzig wahren Menschenerziehung* (Divinity, or the principle of the only true human education, 1830), *Elementarschule fürs Leben* (Elementary School, a preparation for life, 1831), *Der durch Gesicht und Tonsprache der Menschheit wiedergegebene Taubstumme* (The deaf mute restored to humanity through visual observations and oral language, 1829) F M

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**GRAY, ASA** (1810–1888) — Scientist and textbook author, was graduated at the Fairfield College of Physicians and was professor in Harvard College from 1842 to 1873. Author of textbooks in botany and physiology.

W S M

**GRAY, THOMAS** (1716–1770) — Poet and scholar; he showed remarkable versatility, although in his student days he chafed so strongly against academic regulations and prescriptions as to leave Cambridge without a degree. Botany, zoology, history, language, archaeology formed the chief subjects of his studies. His most interesting contribution on education was the poem, *The Alliance of Education and Government*, which was unfortunately never finished. In it the poet pleads for “the necessary alliance between a good form of government and a good mode of education” (Mason). Apparently Gray abandoned the poem because he found a much better treatment of the subject in Montesquieu’s *L’Esprit des Loix*. The introduction of this poem, like several stanzas of the *Elegy Written in a Country Churchyard*, is a plea for educational opportunity for the “village Hampden” or the “mute, inglorious Milton.”

But Knowledge to their eyes her ample page,  
Rich with the spoils of time, did ne’er unroll

Gray’s first printed poem was the *Ode on a distant Prospect of Eton College*, which, while giving a picture of the Eton of his day, takes at the same time a somewhat pessimistic view of the joy and carelessness of youth, ignorant of the world before them.

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**GRAZ, THE IMPERIAL ROYAL CHARLES-FRANCIS UNIVERSITY OF** — Like several other Austrian universities, the University of Graz, located in the capital of Styria, owes its origin to a Jesuit College, the college at Graz having been founded in 1573 by Archduke Charles. Soon afterwards a Latin school was

added to the college, this step being followed in 1585 by the organization of a university, which was formally opened in the following year, and remained under the control of the Society of Jesus until the dissolution of the Jesuit order under Empress Maria Theresa in 1773. The institution consisted at first of only two faculties, those of theology and philosophy, although the Jesuit College was looked upon as a separate *Facultas humanistica sive linguarum*. The original university building was completed in 1609, and remained in use until 1895, when a new building was dedicated. The first professorship in medicine dates back to 1774, and five years later a faculty of law was established. Emperor Joseph II lowered the tone of the institution, which by 1713 boasted of an enrollment of 1350 students, by degrading it into a lyceum, as a result of which the student body diminished rapidly in numbers until the university privileges were restored in 1826. The faculty of philosophy was reorganized in 1849, the medical faculty fourteen years later, the university at the present day possessing the traditional four faculties, the theological faculty being of course Catholic. There were 2074 students in attendance in the winter semester of 1909–1910, of whom almost half were enrolled in the faculty of law. The University Library, founded in 1586, contains about 250,000 volumes and almost 2000 manuscripts. Graz is also the seat of an Imperial Royal Technical School, which attracted 725 students in the winter semester of 1909–1910. R T, J1

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**GRÉARD, CLEMENT VALLERY OCTAVE** (1828–1904) — French educator, born at Vire, and a friend of Prévost-Paradol. He was appointed an academy inspector by Duruy (*q v*), director of education in the department of the Seine, by Baron Haussmann, and vice-rector of the Academy of Paris by Jules Ferry to succeed Ad Mourier. He devoted himself to realizing in administration the greater part of the reforms elaborated and the progress begun by the great ministers of public instruction. Retiring in 1902, he died in 1904. Gréard was an administrator ready to put into practice the instructions of all the ministers, anxious for his reputation and standing, a man of energy, he could at times exercise, as a teacher expressed it, the suppleness of an Italian cardinal. In elementary education he demanded orderliness in buildings and equipment, proper care of the pupils’ exercise books, methodical instruction, etc. In the secondary

field he strove to apply to the *lycées* for girls some of the ideas of Fénelon and Madame de Maintenon, and in the *lycées* for boys he took as his guide the reforms suggested by H. Marion (*q.v.*) Opposed on principle to the boarding school, which he accepted as an administrator, he tried to establish some *lycées* in the country round Paris; the attempt failed within the University, but succeeded outside.

The chief works of Gréard are *Le Morale de Plutarque* (1866); *Lettres d'Abélard et d'Héloïse* (1868); *L'Organisation pédagogique des Ecoles de la Seine* (1868); *L'Instruction primaire à Paris* (1871), *La Législation de l'Enseignement primaire en France depuis 1789* (1900); *L'Enseignement secondaire des Filles* (1887), *Éloge de M. de Falloux* (1888), *Éducation et Instruction* (1888 and 1900), etc. J. P.

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**GREAT BRITAIN** — See ENGLAND, EDUCATION IN, IRELAND, EDUCATION IN, SCOTLAND, EDUCATION IN, WALES, EDUCATION IN

**GREAT DIDACTIC** — See COMENIUS

**GREATEST COMMON DIVISOR** — The greatest number that will divide two or more given numbers, producing an integral quotient, is called their greatest common divisor. Formerly the greatest common divisor had a prominent place in the teaching of arithmetic, but now this position has been lost, the subject having value only in the theory of numbers (*q.v.*) The reason for its former prominence is easily seen when we consider the nature of the common fraction of the Middle Ages and early Renaissance. (See FRACTIONS.) For example, in reducing a fraction like  $\frac{2257}{3599}$  to lowest terms, for the purpose of operating with it or of expressing some result in simpler form, the factors to be suppressed are not at once evident. It therefore becomes necessary to find the greatest common divisor by a form that is given in Euclid's *Elements*, and therefore known as the Euclidean method. This is illustrated in the following operation:—

$$\begin{array}{r}
 2257 \overline{) 3599} (1 \\
 \underline{2257} \phantom{00} \\
 1342 \phantom{00} \\
 \underline{1342} \phantom{00} \\
 915 \phantom{00} \\
 \underline{915} \phantom{00} \\
 427 \phantom{00} \\
 \underline{427} \phantom{00} \\
 61 \phantom{00} \\
 \underline{61} \phantom{00} \\
 427 \phantom{00} \\
 \underline{427} \phantom{00} \\
 0
 \end{array}$$

The proof that 61 is the greatest common divisor of 2257 and 3599 depends upon two principles: (1) A divisor of any number is a divisor of any multiple of the number; (2) A common divisor of each of two numbers is a divisor of the sum or the difference of any multiples of the numbers.

Educationally the subject has lost its significance, since the general acceptance of the decimal fraction. The common fraction now being limited to simple forms, we no longer need to reduce difficult fractions to lowest terms, at least in ordinary business and science. The mere suppression of factors by inspection suffices for such cases of reduction as practically occur. This being the case, it is somewhat absurd that greatest common divisor should be taught by factoring, as is commonly the case at present. Since the only time when we practically need to use the greatest common divisor is when we cannot readily factor two numbers, to find the greatest common divisor by factoring is to find it under conditions that are never met. If we can easily factor, we can cancel factors from the terms of a fraction without taking the trouble to find the greatest common divisor. For this reason the subject will probably disappear from arithmetic in the next generation.

The corresponding expression in algebra is highest common factor. We cannot tell whether a given algebraic expression is greater than another unless we know the numerical value of the letters. For example,  $x^2$  is greater than  $x$  if the absolute value of  $x$  is greater than 1, even though its algebraic value may be less than 1, as in the case of  $x = -2$ . But  $x^2$  is less than  $x$ , if the absolute value of  $x$  is less than 1, as in the case of  $x = \frac{1}{2}$ . Hence the word "highest" is used instead of *greatest*, referring to the degree rather than the absolute value of the expression. The remarks already made concerning the greatest common divisor in arithmetic apply to quite an extent to the highest common factor in algebra. Although there is no algebraic decimal fraction to replace the common fraction, as there is in arithmetic, nevertheless the practical uses of the highest common factor were formerly much exaggerated. Hence the subject is at present given less attention than was formerly the case.

D. E. S.

**GREAVES, JAMES PIERREPONT** (1777–1842) — English Pestalozzian, acquired a competence as a merchant, but lost his property by French spoliation during the Napoleonic wars. Through his interest in philanthropic movements, he joined Pestalozzi (*q.v.*) at Yverdon in 1817 in order that he might familiarize himself with the best means of educational reform. A year later he took charge of the coeducational orphan school which the Swiss reformer had organized at Clendy, near Yverdon. Greaves returned to England in 1825.

and became secretary of the Infant School Society (*q v*) of London. At his request Pestalozzi wrote him a series of letters on the education of the child, which he translated and published in English (*Letters on the Early Education of the Child*, London, 1827). In 1832 he settled at Randwick, Gloucestershire, and engaged in a scheme for the improvement of agricultural laborers, similar to that which Pestalozzi had originated at Neuhof in 1769, and five years later he founded at Ham, near London, a Pestalozzian school, which he named Alcott House, in honor of A. Bronson Alcott (*q v*), the American Pestalozzian. He shared the transcendental views of the American philosopher and invited him to England. He founded the *Æsthetic Society* of England, and in various ways engaged in reform movements in education. W. S. M.

See PESTALOZZIAN MOVEMENT

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#### GREECE, EDUCATION IN ANCIENT —

The education of the Greeks was to a peculiar degree the embodiment of an attitude of life, the practical application of a theory of value which was taking shape from the age of Homer to that of Aristotle. It is proposed, first, to trace the growth of this theory of values to a theory of education, secondly, to sketch the views of education laid down by Plato and Aristotle, and then, with the Greek point of view thus determined in a measure, to describe Greek education in its actual working.

Stated briefly and generally, Greek education was based on certain essentially Hellenic characteristics that are at least as old as Homer and Hesiod, — a keen delight in physical strength, skill, and beauty, a belief in reverence, moderation, and social obligation or justice, and a feeling for form, not as form, but as expression. The delight in bodily beauty and effectiveness is sufficiently illustrated by the games at the funeral of Patroclus (*Iliad* XXIII), by the festivals — to name only the greatest — at Olympia, Delphi, Nemea, and the Isthmus (see the *Odes* of Pindar). The ideals of reverence, moderation, and justice, presented more or less dimly in Homer and set forth clearly in the *Works and Days* of Hesiod, are at the very basis of the Spartan system of education. The Greek emphasis on form as selective expression was not explicitly stated as a conscious attitude until the fourth century, yet it is inherent in every line of poetry chanted or sung from Homer to Sophocles, and in every vase painting from the geometric period to the fifth century.

Even in Homer there are signs of the coming

end of the extreme individualism — good in its fearless spontaneity, bad in its half savage indifference to law — which forbade any conscious effort to attain a real social ideal through education. Individualism is definitely limited by Hesiod to emulation. The *Works and Days* sets forth a clear social ideal based on justice and its corollary, moderation, or self-restraint. And the educational system traditionally ascribed to the Spartan Lysurgus (c. 800 B.C.), while unique in that it aimed at the perpetuation of the military supremacy of a conquering race, was in its most fundamental features a definite application of the principles set forth in Hesiod, — self-restraint, subordination of individual aims and desires to those of the social group, and an essentially moral training through precept, practice, example, and emulation. The wild freedom of Homer had given place to law. Individualism had given place to socialism. And to a greater or less degree this was increasingly characteristic of the whole movement of the Greek world from the ninth century to the fifth. But intense as the social feeling, the city patriotism, became in all of the Hellenic cities, it was usually less extreme than in Sparta, and was balanced both by a stronger individualism in political life and by a keen delight in such individual expression as was afforded by music, literature, which was hardly differentiated from music, and art. Gymnastics, while doubtless the object of special emphasis in the soldier state of Sparta, continued to be regarded with enthusiasm by Dorians and Ionians alike. Gymnastics and music were indeed the objects of a devotion never accorded to what we often regard as the typical Greek art of sculpture. Yet underlying all of these was the feeling expressed in the Delphic motto "Nothing in excess," the practical expression of that idealism which was the fundamental characteristic of the Greek attitude to life, the search for the essential in all things, the ruling out of everything irrelevant and inharmonious.

**Educational Theory** — Education in Sparta aimed simply at the development of soldier citizens, trained to the utmost physical effectiveness and to such moral and intellectual virtues as would make for the perpetuation of Sparta as a military power. This was attained by a varied and effective gymnastic training, games, and contests that tested endurance, judgment, self-control and resource, music that inspired to valor and constancy, grave discussions of moral issues, above all by a barrack life of strict discipline and division into companies captained by the older boys. Important as was the training of the body in the system of Lysurgus, it is a mistake to regard it as fundamental. The essential aim of Spartan education was moral. And so absolutely could the Spartans rely on the result of this training that they could even include the art of successful stealing in their curriculum, believing that

while the training in resourcefulness and judgment was a positive gain, any resultant disregard for the rights of others would be overwhelmingly outbalanced by the intensely moral and social character of the system as a whole.

So absolute a system of prescription, though admired by individual Athenians, like Plato and Xenophon, was quite alien to the free spirit of Athens. Their education was from the first a private affair, though custom prescribed a fairly uniform curriculum consisting of letters, music, and gymnastics, with a minimum of arithmetic, astronomy, and geometry. Athenian educational theory was formulated tentatively in the fifth century, definitely in the fourth; and as an interpretation of practice, an effort to give a rational account of existing facts in order to see the goal more clearly, it needs to be understood before the details of educational practice are approached. Not that we can separate theory and practice in any hard and fast way. The first definite statement of the aims and methods of Athenian education is indeed a description of practice, and is only theory in so far as it is an attempt to view the situation as a whole in relation to an ultimate aim. This is the description which Plato puts in the mouth of Protagoras as part of his argument for the possibility of moral education. "Education commences in the first years of childhood, and lasts to the very end of life. Mother and nurse and father and slave-tutor (pedagogue) are quarreling over the improvement of the child as soon as he can understand them, at every turn they expound to him that this is just and that is unjust, this honourable and that the reverse, this holy and that impious, and generally, do this and avoid that. And if he obeys, well and good, if not, he is straightened out with threats and blows, like a piece of warped wood. At a later stage, they send him to teachers and enjoin them to see that his manners are good, even more than his reading and music, and the teachers do their best. And then, when he can read, they give him the works of great poets which he reads at school, where he finds many tales and admonitions, and praises of ancient famous men, which he learns by heart in order that he may desire and emulate them. Then again the teachers of the lyre take care that he does not fall into mischief, and introduce him to the poems of other excellent poets, who are the lyric poets, these are set to music, and their tunes and rhythms made familiar to children, in order that they may be more gentle, and harmonious and rhythmical, and so better fitted for speech and action, for the life of man in every part has need of music and rhythm. Then they send him to the master of gymnastics, to fit him for war. This is what is done by the richer or higher classes whose education lasts far longer than that of the rest. Lastly, when they are grown up, the

State compels them to learn the laws, and live according to them" (*Prot* 325-326).

The supreme interpretation of Athenian education was that of Plato himself. The system of education described in the *Republic* is devised only for rulers, and for rulers of an ideal, not an actual, state. But the curriculum is not essentially different from that which regularly prevailed in Athens, and the whole system, theoretical in that it endeavors to determine a rational ideal and a rational method, is practical in that it is soundly based on existing practice. Plato's conception of the aim of education is stated in the seventh book of the *Republic*. In the famous parable of the Cave he shows men living in darkness, seeing only shadows on the wall before them, and taking these shadows for realities. Let one of these cavemen be brought suddenly to the light of day and he is dazzled, blinded, thankful if he can escape to the Cave once more from the light which to him is darkness. But let him be taken more gradually to the outer world, and his eye will gain power to see, and the real world will at last dawn upon him in its infinite grandeur. Here, then, is the function of education, — to turn the eye of the soul to the light in order that it may see and love truth (*Republic*, 518). The sun in the physical world is the type of that fundamental reality which makes everything else intelligible, and knowledge of this fundamental reality — called by Plato the Idea or Form of Good — is of all things the most precious, the goal of every true student. For Plato's Idea is simply the essential, — what is meant when we use the words law, principle, essence, that is, everything which makes it intelligible. He applies to education that which is the keynote of Greek thought and Greek art, — insistence on the fundamental, the universal, and indifference to the accidental, the narrowly individual.

Plato's system of education represents an effort to attain this ideal — the understanding and adoption in life of those things that are fundamentally true and therefore of fundamental value. His general treatment rests on two fundamental presuppositions. (1) that education is of fundamental importance to the State (*Republic*, 425. "The bent given by education will determine all that follows") and should therefore be required and controlled by the State, (2) that man is an organism, i.e. that he is endowed by nature with certain powers which will develop, if the proper conditions are given, and that the teacher's profession is not unlike that of the gardener. These two premises being assumed, Plato outlines a system of training for the young that will stimulate love for what is good and beautiful, dislike of what is bad and ugly, and right action that will become so natural, habitual, and pleasant as harmonious sound is to a musician. This is done through careful

choice of literature, both as regards subject matter and form, careful instruction in music, peculiarly important because of the subtly powerful influence of rhythm and harmony on the human soul, and the equally careful effort to have every detail in the child's environment healthy, elevating, and harmonious. To create the right standard of truth and beauty at the outset, before the child is in any way conscious of what is being done, is to make wrong action as repulsive to him as a discordant crash of sounds, and to turn his mind away from the false, the petty, the fleeting, and insignificant as certainly as his eye would turn from the canker worm to the perfect blossom, from the frame to the picture. That a perfect result will follow in every case from even the most wisely devised system of education Plato by no means takes for granted. The imperfect seed will not grow into a perfect flower, and besides, different natures will respond differently and perhaps unexpectedly to similar treatment. There must, therefore, be tests, "labors, vexations, and contests," accompanied by vigilant observation of conduct. Education will thus have its selective side, and only those fitted for it will go on to what we might call the secondary and advanced stages of the course.

For it is necessary that as the child's mind expands and grows in power he should learn to examine his standards and methods of thought for himself. "When reason comes, he will welcome her most cordially who can recognize her by the instinct of relationship, and because he has been (wisely) nurtured", but it is none the less true that reason must come, and that the growing mind must learn to examine standards, to search consciously for principles, to abstract, question, and generalize. With this in view Plato would introduce his pupils to arithmetic, where they will grow accustomed to the easiest of all abstractions, that of number, to geometry and its problems of space, to astronomy and the laws of rhythm and harmony that control the heavenly bodies. This course of science will lead to philosophy, the study of fundamental truth. And when the student has at last learned to look on beauty and truth in their essential reality, he must turn back to the weary and troublesome problems of actual life in society to serve his fellows as a leader and teacher. His education leads, not to the barren and empty speculation associated with the word "philosophy" by superficial men of the world. Rather are his philosophers wise leaders of men who have learned to see things as they are, to understand and unerringly seize upon the true and the beautiful.

The value of all this is not simply the value of a poetic philosopher's dream. It is rather the interpretation of the essential spirit of Greek education by the greatest of all Greek thinkers. It was practically adopted in its

main features by Aristotle (*q v*), fragmentary as is the treatment of education by Aristotle that remains to us in the *Ethics* and the *Politics*. Aristotle, like Plato, urges that education should be compulsory and controlled by the State. He does indeed insist on defining the Form of Good as the highest good for man. Happiness, and happiness as the perfect exercise of the rational activity which is man's unique characteristic, so that education becomes in its highest aspect a training for leisure, for the contemplative life. And he gives a new clearness to two points that seemed to him to need special emphasis, — the significance of habit and the doctrine of the Mean. But Aristotle's value here as elsewhere is rather in a certain formulation and clarifying of the issues, a practical insistence on accurate definitions, than in any real modification of his master's teaching. In his statement of the aim and method of education, of the curriculum, of the ethical purpose of education and its relation to the state, Aristotle leaves Plato's doctrine untouched. So that we may safely say that the system outlined in the *Republic* remains for us the final statement of the theory of Greek education, the one perfect interpretation of its letter and its spirit. C F L

**Educational Practice** — The first thing to be noticed about the Greek infant was that its father had powers over it wholly denied to modern parents. The first question after its birth was this, Would the father rear it or expose it? Greek literature has so many allusions to the exposing of infants, that it must actually have occurred in Greek experience. But the frequency of this *motif* in the New Comedy is hardly good evidence that such barbarity was of everyday occurrence. The fact that there is no evidence of a distinguished person in all Greek history, who had been picked up and reared as an exposed or deserted child, may be taken as proof that in the case of male infants exposure was very rare, unless the child showed congenital deformity. Regarding females, the case is different. Indeed, the great majority of the instances met in the comedies of exposed children, afterwards recognized, are those of girls. Plato sanctions infanticide under certain circumstances, and this is even worse than the exposing in some place where the child would probably be picked up as a slave. It is not unlikely that one of the causes of the dwindling away of the Greek population by a strange atrophy in the third century B.C. is partly due to the exposure of female children by selfish and barbarous parents. In the many suits of the Attic orators about family affairs there does not seem to be a case in which a large family of children is concerned.

When the child was once accepted by the father, there is every reason to believe that it was treated with every kindness, nay even with luxury and indulgence. The well-known pas-

sages in Homer about Hector's child Astyanax, both during his prosperity and when left to a widowed mother, and other casual references, not only in Homer, but in Herodotus and in the lyric poetry, show clearly enough that babies were as much prized and as much attended to as in modern life.

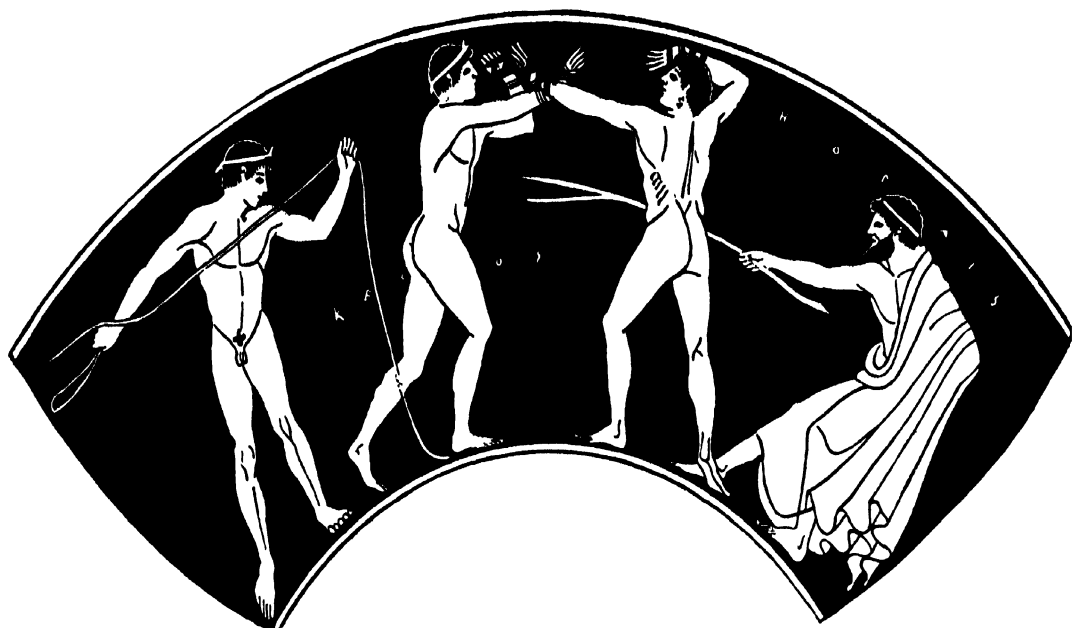
The string of infantile diseases, which are the bane of modern life, are not heard of. Not even in Hippocrates' admirable clinical observations do we have croup or teething or measles or whooping cough. Malaria there probably was, and there is even evidence that it contributed not a little to the further decay of the population, where marshy lands ceased to be continuously cultivated. Fashionable people kept nurses, and it was a matter of high fashion among Athenian and other aristocrats to have a Spartan woman for the purpose, as she was supposed to know better than others how to make the child healthy and strong in limb. But only some misfortune, such as a successful raid, could reduce a genuine Spartan to such a condition. Probably women from the Lacedæmonian coast, although Helot women, were so called when they were fortunately obtained. What the usual diet of infants was we are not told except in Homer, who says Astyanax was fed upon marrow and mutton suet. This seems part of the general meat diet in which the heroes indulged, and which was certainly widely different from historic Greek diet. In the latter very little meat was eaten by anybody, and only on special occasions, such as feasts to the Gods. Contrary to the modern practice of hiring foreign nurses or governesses to teach the child some European tongue other than his own, when he can acquire it without the trouble of grammar, — this side of education did not exist among the Greeks, who despised all tongues but their own. For any child to be brought up speaking even Egyptian or Macedonian would have been thought a blemish rather than an accomplishment. But beyond this negative certainty, the women's apartments, in which the children, both boys and girls, were kept for the first few years, are closed so completely to us that but few things about the life of Greek babies can even be conjectured. A few late epigrams tell of the grief of parents bereaved of their infants. The backwardness in culture of Greek women leads us to suspect that babies were more often badly brought up and overindulged than at present, even though the "Spartan mother" is still proverbial and shows that a lofty ideal was not unknown to them. But in the rest of Greece it may be assumed that the young child arrived at his schoolboy age more willful and headstrong than most of our watched and worried infants. Archytas, the philosopher, earned special credit for inventing the rattle, and so saving much damage to household furniture by occupying children with this toy.

It must be remembered that the external cir-

cumstances of a Greek boy's life were somewhat different from the present. Except in some few places, such as Elis, and partially at Sparta, which consisted of five villages, all old Greek life of the better classes was town life, so naturally Greek schools were day schools from which the children returned after lessons to the care of their parents. To hand over boys, far less girls, for pay to the charge of a boarding school was unknown, and any such proposal would doubtless have been severely censured. Orphans were placed under the care of their nearest male relative, even when their education was provided by the State. Again, as regards the age of beginning school, it will naturally be earlier than is usual among us, for day schools can receive very young children, and in but few households were either father or mother able or inclined to undertake the training of their children in school work. Even the knowledge of letters and reading were obtained from the schoolmaster. But the small number of subjects taught prevented any hurry such as that in modern times, when there is no adequate time for languages, sciences, histories, and all the rest which is crammed into our unfortunate children. Above all, there were no competitive examinations save in athletics and music. The Greeks never thought of promoting a man for dead knowledge, but for his living grasp of science or life. Owing to these causes, the theorists discussed the expediency of waiting till the age of seven before beginning serious education. Some there were who recommended easy and sportive lessons from even an earlier age. On this point, therefore, they agreed fairly well with modern views. But Greek parents were, like those of the present, often over-anxious or nervous or dilatory, and it is clear that there were intervals between infancy and school life which were spent in playing in the street and doing mischief. Even so aristocratic a boy as Alcibiades is reported by Plutarch to have shown his pluck and obstinacy by lying down in the highway, when a coming cart threatened to disturb his game, and daring the carter to drive over him. There is, also, extant a long list of names for the games of boys preserved in glossaries. It belongs to the question of education to know something of the nature of these games, wholly different from the exercises and competitions afterwards carried out in the palæstra. Among young boys, as among the lower animals, most games in concert are imitations either of war or the chase; the rest are the practice of some bodily dexterity, such as hopping, or throwing, or whipping a top or shooting with marbles. All these were common in Greece. They had the hobby horse, also the hopping on a skin bottle filled and greased, and blindman's buff, etc. There was a game like our peg-top spinning and contests of two sides or teams of boys. There is no need to enumerate all these particularly. More peculiar were the game of throw-







The Pankration, and a Paidotribe.



Wrestlers, Paidotribe, and boy preparing the Ground for Jumping.

# A GREEK GYMNASTIC SCHOOL.

From a Kalyx

ing up five pebbles or knucklebones, and receiving them on the back of the hand so as to lie there. Another game consisted of flying a beetle with a long thread, and fastening to him a lighted wax splinter (or match). This barbarous amusement is said to have been still in use recently in modern Greece. Spinning tops, rolling hoops, and playing with balls were all common. This latter was done even by grown girls, according to Homer's *Odyssey*. Some of them approach both to our football, handball, and even lacrosse. The use of knucklebones or *astragal*, smoothed and squared so as to serve for dice, afforded scope for the children's gambling propensities, and throwing with them for luck is often represented in Greek art. We also have in the extant specimens some which were clearly loaded. Another common game was the Italian *morra*, the prompt guessing of the number of fingers thrown up by the adversary which can be seen every day in southern Europe. Very likely the game of *boechi*, which corresponds to our bowls, and is so universal in Italy, has an old Greek origin. Walking on stilts, leap-frog, swinging, and tossing in a blanket will suffice for any further enumeration, which serves only to show how remarkably modern were Greek, or perhaps how remarkably primitive is our catalogue of little boys' games.

Nothing is known about the condition of little girls, except that they certainly engaged in ball playing. As among us, so of course in Greece, girls joined in the games of their brothers, so far as they could be carried on indoors, or in the closed court of the house. There are graceful representations of them practicing swinging and seesaw. Dolls they had in plenty, and dollmaking (of clay) was quite an extended trade at Athens. In more than one instance there have been found in children's graves their favorite dolls laid beside them as eternal keepsakes. Most unfortunately there is hardly a word left of the nursery rhymes, and but little of the folklore, which are of considerable influence in the education of our children. The fables attributed to Æsop show how popular such literature was from an early epoch.

When we come to school life the most striking difference between the Greek education and ours is this, that even with little boys, physical development was attended to by a special master in a special place, except in those rare cases where they practiced out-of-door sports, and these cannot be commenced at the age of seven, or even near it. The Greeks indeed afforded their boys two contrasted sides of exercises — hunting, which was practiced by the Spartans, and also no doubt by the Eleans and Arcadians, as we may infer from Xenophon's *Tract on Hunting*, and gymnastics, which in the case of boys was carried on in the so-called *palaestra*, a sort of open-air gymnasium (in our sense) kept by a private individual as a speculation, to which the boys were sent, as to a schoolmas-

ter. The Spartans had ample scope for hunting in the glens and coverts of Mt. Taygetus, and hence they despised mere exercises of dexterity in the palaestra, just as modern sportsmen think very little of spending days in a gymnasium. As to open air games, like hockey, football, etc., they seem not at all so well provided, and though they could have practiced rowing to their hearts' content, free men seem only to have done it as a duty in naval war, at other times slaves and hirelings worked their ships. Herodotus speaks of the generality of sailors (and that included a large section of the citizens in war) as able to swim, but Greek literature is silent regarding any competitions in this accomplishment. But in another point the Greeks agreed with the modern English, they regarded sport as a really serious thing, and unless it is so regarded, it will never be brought to any rational perfection. But then the Greek did not, like all people imbued with Semitic religious ideas, regard religion with such great solemnity. Their religion was not more serious than their sports, nay they were often combined, "for the gods too love sport," says Plato in his *Cratylus*, a very significant and thoroughly Greek sentence. The greatest feasts of the gods, and the funerals of the greatest men, were glorified by intensifying human pleasures, by games, and theatrical and dancing exhibitions.

There is no evidence whether the boys went to their palaestra at the same age as to school, and at a different hour of the day, or at a different age, taking their physical and mental education separately. Nor is it known which came first. The Germans think the palaestra came first, but it seems far more natural that letters should be taught from the age of seven, and exercises of the body later on. Even the theoretical schemes of Plato and of Aristotle do not help us here, it is one of the many points which every one omits to mention because it was familiar to all. We shall here take the physical side first, for the mental side is prolonged into higher education. And here, too, dividing the exercises of the palaestra into wrestling and dancing, more properly exercises of strength and exercises of grace, athletics will be treated first.

In order to go safely from home and return again, Greek boys going to the palaestra were put under the charge of a pedagogue (boy-leader), not to be mistaken for a schoolmaster, though the authorized version of the Bible has done it, when it makes St. Paul say "The Law was our Schoolmaster to bring us unto Christ." The Greek pedagogue was merely an old and trusty slave, who was often fit for no manual labor. He was always ignorant, and never respected. He was in one sense, too, a chaperon, guarding his charges from making acquaintances or cultivating intimacies with other youths. The keeper of the school and trainer of the boys, though no state official,

was under very strict regulations at least if the quotations from such laws in Æschines' speech *Against Timarchus* are to be believed. But if there were such penal laws, there is reason to believe that except in the case of some grave scandal they remained a dead letter. Still at Sparta, even in the gymnasia for grown youths, the regulation *Strip or go* was enforced to prevent a crowd of idle loungers from collecting. There are many pictures on vases of the interior of a palæstra. A rude bust of the bearded Hermes, the patron god, indicates it with certainty. A middle-aged man with a wand in his hand is directing the exercises, often wrestling, of the boys. We know from the *pentathlon* at Olympia for men, and even for a while for boys, that its five exercises—running, leaping, throwing the dart, throwing the discus, and wrestling—were the usual program. For older youths, boxing and the *pancratium* were added, save in Sparta, where such violent contests were thought to lead to disfigurements, and at all events to private feuds. The higher exercises were undertaken after rubbing the skin with olive oil, which became quite a heavy expense to some Greek cities, and was sometimes provided by private benefactions. When the exercise was over, the oil and dirt were scraped off with a *strigil*, as may be seen in the splendid statue in the Vatican of an athlete so cleaning his arm. The luxury of a bath is not mentioned, for in most Greek towns water was very scarce, and the nation was not given to much washing. The few details which remain about training, in the stricter sense, show that the Greeks were not scientific in their notions. Either cheese or in later days quantities of meat were specially recommended and the athletes were in consequence heavy and stupid people.

We have already quoted the passage from Plato's *Protagoras* in which the ordinary education of the Athenian is described. There is another passage in Aristophanes' *Clouds* (961 *et seq.*) which describes the older strict discipline of Attic boys, who were not allowed to whisper before their elders, who went in troops to school even in the winter mornings in deep snow, clad in a single tunic, and were kept at work by the master learning old traditional hymns—all this in contrast to the inroads of luxury and laziness, of vulgar and florid music, which that strict conservative reviles just as our old-fashioned people are shocked with modern education for girls. Both passages speak the voice of a cultivated society, and of high moral principle, which makes them worthy of the best modern and even Christian education. But the far wider connotation of the word "musical" is at once noted, which included a knowledge of good poetry, and also of the elegant and rhythmical dancing which was part of the solemn service of the gods. It included, in fact, every graceful, æsthetical, and intellectual accomplishment.

From these and many other passages it appears that the Greeks administered their early moral education just as the Protestants of England and America, through a book regarded as inspired; just as the stories of the Old Testament, as well as the teachings of the New, were taken as the highest moral teaching (not without wonderful liberties of interpretation, though the text was sacrosanct), so the Greeks treated Homer as their Bible, containing all the morals a child should know. Regarding the punishments which they inflicted, the notions then and now, or at least fifty years ago, are about the same. All the Greeks acknowledge the justice and expediency of corporal punishment, and only caution parents against applying servile punishments to free boys. A fresco from Pompeii shows a boy hoisted on the shoulders of another, being flogged by the master. At no time was the teacher of young boys for pay ever highly esteemed. There was, as already mentioned, no qualification demanded by the State. It must often have been the recourse of penniless or broken down men, just as in modern times penniless girls of the better class used to turn governesses. Hence the sneer of a comic poet: "The man is either dead, or teaching the alphabet."

The school was generally called *didascalæon* (teaching place) to distinguish it from the palæstra. Every Greek town had one or more, some of them large, for Herodotus tells of one at Chios, where the roof fell in, and killed 119 out of the 120 children attending it. In villages there were poor appointments, and such a school in Greece corresponded to the Irish hedge school or the cloister school of old monasteries. Statues of tutelary gods and some simple ornaments were found in the better ones. The master occupied a high seat, above his classes, the main difference from our arrangement was the absence of tables or desks, it being the universal custom when reading or writing to hold the book or roll on the knee. On the walls hang various things, all of which are not now understood, but among them were implements for reading and writing, boxes for book rolls, reckoning boards with pebbles strung in them, flute cases, and lyres. Lucian, a very late authority, says there were even notice boards, which were white, covered with chalk. Hence writing with the finger would be quite legible, especially if the original ground was black. There are also traces of pictorial illustrations of scenes from the *Iliad*, preserved at the Capitoline Museum in Rome, which seem to have been hung up in schools, like the zoological and other sheets in modern schools. Though later theorists speak of the necessity of pauses and variations in study, periods of holidays for all, such as the dog days were at Rome, are not referred to. As every child was taught to read and to recite from the great poets, a double object was attained. The school-





Lessons on the Lyre and in Homer.



Lessons in Writing and Flute Playing.

A GREEK MUSIC SCHOOL.  
From a Kulix by Douris (c 450 B C.).

boy was taught to speak accurately and read rhythmically, he was also made acquainted with the choicest passages in older literature. Written books not being as common as they are now, much more was done by dictation and conversation.

When children came to writing, they used tablets covered with wax, on which the pointed stylus drew a sharp line, which could be smoothed out again with the flat reverse end. In writing on papyrus a reed and ink were used, and there are extant many boys' exercises on papyrus from Greek tombs in Egypt. The knowledge and study of grammar only came in with the Stoics and was the task of grown men, rather than of boys. There are many specimens of this sort of analysis in the Platonic literature, and indeed some very primitive ones in Aristophanes' *Clouds*. Geometry and arithmetic (the science of number) were also advanced studies, but the art of reckoning was learned like our practical use of figures. It is known that the system of notation learned was not the cumbrous one found in inscriptions but the very compendious and practical one used in countless Greek papyri found in Egypt. The alphabet enlarged by three signs for 6, 90, and 900 supplied the whole system. With  $\epsilon$  began the tens, with  $\kappa$  the twenties, with  $\rho$  the hundreds, with  $\chi$  the thousands.  $\text{M}$  was 10,000. Thus 10049 was  $\text{M}\mu\theta$ . There was no symbol for 0, but the place in the alphabet told at once what is now expressed by cipher following a number. Fractions were expressed by the same letters with an accent over them. Only the denominators were written, the only numerator being 1,  $\frac{2}{3}$  had a special sign, in other cases a fraction was broken up,  $\frac{1}{2}$  was expressed as  $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{1}{4}$ . Further details would be out of place here, but in these symbols are found very elaborate computations rising to very large figures.

Turning to what are now called accomplishments, but which the Greeks called music, there are a good many late and not very trustworthy authorities stating that drawing (not of landscape but of figures and of household objects) was generally taught. This seems very doubtful, but no one can deny that music (in our sense) was never omitted. The Greeks put the greatest stress on the directly moral and immoral effects of music, according to the scale or mode used. There were strict and sober kinds, there were effeminating and even lewd sorts, the proper educator should not allow the latter to be heard by boys. Our difficulty in appreciating this side of Greek education is that, though we know and can appreciate their simpler scales or modes and their notations, the fragments preserved of their tunes are so unlike anything now known and understood as music, that no modern composer, however learned, could supply a missing bar in the Hymn found at Delphi with even the smallest proof that his restoration was correct. In

society there were great gentlemen, like Cimon, who sang and accompanied themselves on the lyre. But in general, playing and singing in society was left to the not very reputable professional. Choral singing and dancing with accompaniment of lyre or flute was a splendid feature in Greek feasts and in the theater. These solemn dances and the singing were performed by lads whose voices must have been formed again after breaking, — a thing not noticed in the usual accounts which make them boys of fourteen to eighteen, when modern boys lose their voices. Of the instruments in use, the *symyx* or Pandean pipes were only used by shepherds, and not in schools. The *trigónon* or triangular harp, and the double flutes were only used by professionals. The lyre was made by stretching gut strings across the concave side of a tortoise shell, which is often found clean and dry in Greek watercourses. There were much more elaborate kinds which added a neck and made an instrument something like the modern guitar. The former had seven or ten strings. Their flutes (though they knew what we use) were rather clarionets held straight, and with a wide mouth.

The last stage of a boy's education was the so-called ephebic training, which was intended to prepare boys directly for the service of the state as soldiers, and in that respect is like the compulsory soldiering in nations that have a conscription for their defense. No boy was allowed to pass from his school days into citizen life without some training in the use of arms beyond that of the *palæstra*, and in military discipline. These ephebi had two duties to perform, the most important was patrol duty on the frontier of their state, where they did the work of military police, and probably also of preventing any considerable smuggling across the frontier so as to defraud the duty raised in the recognized markets where citizens from both states exposed their wares. They also stopped the depredations of footpads or highwaymen, so that brigandage was quite rare in the more civilized parts of Greece, till the days of its depopulation and decay. These youths were dressed in the short dark gray cloak and the soft hat seen in the Parthenon frieze, which also depicts the second great duty of the ephebi, that of adorning the feasts of the gods in solemn procession. All the varieties of their duty appear in this famous composition. They are carrying sacred vessels, leading victims, managing prancing steeds, with exquisite grace and in wonderful variety. It is remarkable that in spite of this clear exhibition of the class, it had not yet attained any state recognition, so far as can be inferred from Herodotus and Thucydides (fifth century B.C.). In later days, numerous inscriptions show that the ephebi, with clubs and meetings, with their resolutions and decrees, were at least as important as the societies of students in our modern universities. Stobæus has preserved a text of the oath by

which these youths were bound. It has been criticised and questioned by the skeptics, but even if somewhat modernized, perhaps in Roman days, it represents quite truly the spirit of the whole institution. "I will never disgrace these hallowed weapons, or abandon my comrade, beside whomsoever I am placed (in battle) but will fight for both sacred and secular things with my fellows. I will not leave my country less, but greater and better by sea and land. I will obey the rulers appointed and the established laws, and whatsoever new laws the state may lawfully establish, and if any one attempt to abolish the existing ordinances or disobey them, I will resist him, and defend them individually and with the rest. Be my witnesses Aglauros, Enyalios, Ares, Zeus, Thallo, Auxo, Hegemone." This list of gods can hardly be a late invention. It is not within the scope of this article to describe the exaggerated importance of this ephebic institution in Greece under the Roman Empire, when fashionable strangers crowded to Athens as their place of intellectual amusement as rich Americans now go to Oxford. It was then a genuine part of Greek education, much as it has been described by Aristophanes and Xenophon.

In higher education it is impossible to ignore the famous teaching of the sophists, who were not recognized or even approved by Greek politics, but who set up as adventurers, or itinerant teachers to train the richer and idle young men how to think and speak upon the subjects of the day. They desired to give by discussions and lectures not only a training in rhetoric, logic, and political sciences, but the gamut of information now offered by the leading articles of our daily press which profess to tell their readers what to think about the current topics of interest. Cultivated people can hardly appreciate how these superficial articles affect the thought of the lower middle and the lower classes in modern life. The sophists may have had this great influence on a small society, which had no books on daily topics and was more easily led by a persuasive teacher. Just as our newspapers contribute a great deal to general culture, so did the sophists. Just as they have grave faults, so had the sophists. But grave and perhaps just as are the charges of superficiality, irreverence, and destructive criticism made against them there must have been among them wise men and good teachers. Among the innumerable passages in Plato relating to the sophists we may note one in the *Protagoras* that is instructive and free from hostility. When Socrates asks Protagoras what he undertakes to teach he answers: "If Hippocrates comes to me he will not experience the sort of drudgery with which other sophists are in the habit of insulting their pupils, who, when they have just escaped from the arts, are taken and driven back into them by their teachers, and made to learn calculations and astronomy and geometry and music (he gave a

look at Hippias as he said this), no, if he comes to me, he will learn that which he comes to learn. And this is prudence in affairs private as well as public, he will learn to order his house in the best manner, and he will be able to speak and act for the best in the affairs of the State." "Do I understand you," I said; "and is your meaning that you teach the art of politics, and that you promise to make good citizens?" "That, Socrates, is exactly the profession which I make." But perhaps it was rhetoric, the art of persuasion and debate, that drew the youth of Athens to the sophists, rather than anything deserving the name of political science. Indeed, we may date from the age of the sophists the rise of rhetoric to the place that it was to hold in education through the entire period of Roman domination. (See ISOCRATES.)

If nothing has been said about the education of girls, it is only because nothing is known about it. Xenophon represents a bride coming into her husband's house, having lived her youth in darkness and in fear, knowing nothing but how to adorn her person and that artificially, with powder and rouge, and with enhancements of dress. The Spartan women brought up in great liberty, and freed from the strict discipline of the men, are spoken of now as specimens of bravery and patriotism, now as turbulent and mischievous to the peace and order of the state. But except that they trained openly like boys, we know nothing of their education.

The age of the Sophists, Socrates, Plato, and Aristotle, *i.e.* the later fifth century and the fourth, was the age of the breaking up of the older traditions and institutions, the collapse of the city state before the power of Macedon, and the scattering of the Hellenic culture through the eastern world by the conquests of Alexander. As was inevitable the old forms and standards of education, as of moral, intellectual, and political life gave place to a new cosmopolitanism and individualism. The dissolving and reconstructive effect of the new spirit was seen perhaps not so much in primary as in advanced education. Philosophy and rhetoric became immensely popular, and schools arose in Athens and Alexandria to which the previous century offers no parallel, such as the rhetorical school of Isocrates (393-338 B.C.) and the philosophical schools of Plato (the Academy), Aristotle (the Lyceum), and Zeno (the Stoa or Porch). In Athens the old custom of Ephebic education supervised by the State was joined to the three philosophical schools, teachers of rhetoric and logic were added, and thus was formed the University of Athens (*qv*). Athens had however one rival, especially during the earlier centuries of the Christian era, *viz.* Alexandria (*qv*), where another university grew up about the great library. But long before the suppression of the University of Athens by Justinian in 520 A.D. and the close of the intellectual greatness of Alexandria with the Saracen conquest (640 A.D.) Greek educa-



tion had begun to lose its distinctive characteristics under the influence of Roman rule and the rise of Christianity J P M.

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#### GREECE, EDUCATION IN MODERN —

**Historical** — The history of education in Greece may be conveniently divided into four periods. The first of these extends from the sixth century B C to the third century of the Christian era, when Constantinople became the center of the Roman world. Although during this time the independence and unity of Greek national life was destroyed by the Macedonian conquest (338 B C) and finally by absorption in the Roman empire, Greek culture retained its distinctive character and was imparted to the conquering peoples. The second period coincides with that of Byzantine supremacy and ends with the fall of Constantinople in 1453. The third period is that of Turkish domination from 1453 to the War of Independence (1821), which ushered in the fourth or modern era. Of the earlier periods it is sufficient here to note that the first was that of classic Hellenism of which Athens was the proud center. The second period was marked by the fusion of Hellenic philosophy with Christian doctrine, and although during this time the ancient schools of Athens and of other Grecian cities declined, or were abolished by imperial decree, the Greek language and traditions survived in the brilliant capital of the East, for, while Latin was the official language of the Byzantine court, Greek was the language of the people, and Christian Hellenism the culture which drew scholars from the West to the University of Constantinople (See ALEXANDRIA, SCHOOL AND UNIVERSITY OF, ATHENS, UNIVERSITY OF).

The Turks, though not always openly hostile to Byzantine education and culture, looked upon it with indifference and contempt. They did not, however, interfere directly with the education of such Christian inhabitants of the Empire as could pay liberally for the privilege. Yet the Christians were not free men, no career, under ordinary circumstances, was open to Greek scholars save that which the Church

afforded, the common people were plunged in abject poverty, and the more fortunate hesitated to educate their children for fear of increasing their attractiveness. Girls were in danger of being appropriated for some harem, and every four years a certain number of small Christian boys were taken from their parents to be trained as janizaries. The very existence of this child tribute, and the tax of one tenth of the male children for employment in various offices, threw such gloom over family life that education could not well flourish, even if there were no other causes to prevent it.

Under these conditions the Greek church became the bond of union between all the Greeks in the Turkish empire, whether they lived in the Grecian peninsula, in the adjacent islands, or in Asia Minor, and the symbol of their lost national life. Such schools as they had were under the supervision of the clergy and often under their direct control. The schools for the common people were similar in many respects to the Church schools of Western Europe, but they resembled also in some particulars the ancient schools of Arabia and India. Pupils were taught to read the church service and the elements of arithmetic and writing. There were no special school buildings, but the pupils assembled in the narthex of some church, when their teacher was an ecclesiastic, or in the shop of some handicraftsman when he happened to be the school-teacher. They had no chairs, but sat crosslegged on mats or rugs laid on the floor. Their books were in manuscript, since the art of printing was not yet at their service. Each pupil usually had but one book at a time, and his promotion to another book was joyfully celebrated by his family and relatives. The schools were generally held in the daytime, but in the communities, where the pupils were engaged in labor during the day, night schools were sometimes held. A reference to these occasional night schools is contained in an old song which is still widely known throughout Greek lands.

In addition to the elementary schools, the ecclesiastical authorities established a higher order of schools termed Hellenic, their main purpose being to preserve the knowledge of rhetoric and the ancient language. The pupils of the Hellenic schools were generally intended for the service of the Church, although a small proportion looked forward to the secular callings. These two classes of schools, the elementary or demotic and the Hellenic, formed the basis of the national system established after the war of independence.

Even during the seven years' war (1821-1828) plans for an organized system of education were discussed, and in 1823, the Assembly of Atros voted that a system should be established. Foreigners devoted to the cause of the Greeks, in particular Lord Byron and

Leicester Stanhope, encouraged the effort. When temporary peace was secured and a provisional government established under Kapodistrias, the movement for a national system of education became general, and in 1828, within the short space of three months, twenty-two primary schools were opened in towns on the Aegean islands. In these the Lancasterian method of mutual instruction was used. The expense of the schools was borne by the communities. In January, 1829, Kapodistrias appointed a committee on elementary education, entrusted with the duty of organizing and establishing a system of elementary schools. This committee gave the elementary (demotic) schools the character which they still retain. Thus the foundations of the present system were laid before 1830 in which year the kingdom was organized under the protection of the three powers, Great Britain, France, and Russia. From time to time laws have been passed which taken together provide in detail for a system of public education.

**Present System — Administration** — The Minister of Education (and of Ecclesiastical Affairs) is one of the seven members of the cabinet. His appointment is largely a matter of politics and his tenure of office is usually brief. He has authority to determine what subjects are to be taught in all the schools, both public and private, and he fixes the time that must be devoted to each of these subjects in the course of study. In regard to the elementary and Hellenic schools he determines the minimum equipment for schools of each class and he appoints the committee that approves the textbooks submitted in the annual competition. The Minister appoints all teachers and has authority to move or remove teachers in the Hellenic schools and in the gymnasia. This power in the hands of a frequently changing ministry leads to insecure tenure, and it sometimes happens that teachers are changed from desirable to undesirable places for purely political reasons. He also appoints one chief inspector of elementary schools, four inspectors of intermediate schools, and one inspector of elementary schools for each of the twenty-six provinces.

At the head of each province is a Nomarch who is appointed by the King. As one of his duties consists in supervising the funds of the demes comprised in his province, it is not surprising that he is required to look after education. In practice, this official as well as the Demarch, confines his attention to the financial affairs of the schools and leaves the supervision of them and the examination of the pupils to a supervisory council which is composed of the bishop, the school inspector, the director of the gymnasium, or, if there be no gymnasium in the province, the director of the chief Hellenic school, and two other members, one of whom must be a professional man, and the other a business man. The inspector

visits the schools and reports to the supervising council, of which he is the chairman and executive officer. He is also a member of the General Council of Public Instruction. The Supervisory Council holds monthly meetings, transacts all business of the province connected with the administration of the schools, including the nomination of teachers, the discipline of pupils, the inspection of the equipment and instruction in the elementary schools of the province, and the examination of pupils.

The various demes (local districts) are required to establish elementary (demotic) schools, but a provision in the constitution makes it possible for the government to contribute to elementary education "in proportion to the necessities of the demes." Thus it happens that some of the schools in the poorer demes are entirely supported by the government, while other demes support their own schools. The total expense of conducting the elementary (demotic) schools for the school year 1907-1908 was 6,692,098 drachmas [\$1,231,574 91] (A drachma is equivalent to \$0 193.) The national budget for this year contained an item of 1,000,000 drachmas [\$193,000] for the purpose of assisting needy demes. More than 60 per cent of the elementary schools are supported wholly or in part by contributions from individuals or societies. Tuition in the elementary schools is gratuitous and the attendance for both boys and girls is compulsory from six to twelve.

**Elementary Education** — The elementary schools have either four or six-year courses. If the school provides a four-year course it is called a common (*κοινόν*) elementary school. If, however, it provides a six-year course, it is a complete elementary school. Of the 3418 elementary schools reported in 1908, 1571 were common schools, and 1847 were complete schools. In theory coeducation of the sexes does not exist in Greece, but in the smaller towns and in the rural sections, where the school attendance is not over seventy-five, both sexes attend the same school and are taught by one teacher. This arrangement is not permitted after the children are ten years of age.

In principle, Greek education is clerical, compulsory, and gratuitous. Thus three hours a week are devoted to the study of religion, which consists of instruction in sacred history, catechism, and reading from the Holy Scriptures. Jews and Roman Catholics have special instruction from the clergy of their own churches.

The teachers of the elementary schools are of three grades, depending upon their experience and preparation. The grade of the teacher determines not alone the type of school in which he may teach, but also the salary he is entitled to receive. Teachers of the third or lowest grade are usually found in schools where the enrollment is from fifteen to forty. If the enrollment is more than fifty-five a

first grade teacher is required. The minimum qualification for elementary teachers is a license from one of the teachers' training schools. The normal schools admit only men. Four of these schools have three-year courses, and one sub-normal school a one-year course. A school for training teachers of gymnastics was established in Athens in 1899.

TABLE I — THE SUBJECTS TAUGHT IN EACH GRADE OF THE SCHOOLS AND THE HOURS PER WEEK DEVOTED TO INSTRUCTION IN EACH SUBJECT

SUBJECT	ELEMENTARY				INTERMEDIATE							
	Common <sup>1</sup>				Hellenic				Gymnasium			
	1st yr	2d yr	3d yr	4th yr	1st yr	2d yr	3d yr	4th yr	1st yr	2d yr	3d yr	4th yr
Religion	3	3	3	3	2	2	2	2	2	2	2	—
Greek, ancient	13	11	10	10	6	8	8	10	10	10	10	10
Greek, modern					2	2	2					
Latin							1		3	3	3	3
French						2	2		3	3	3	3
History			2	2	2	2	2		3	3	3	3
Geography		2	2	2	2	2	2					
Mathematics	3	3	3	5	3	3	3		4	3	4	5
Natural history			2	2	2	2	2		2	2		
Physics				2			2				3	3
Philosophy										1	1	1
Drawing			2	2	2	1	1					
Penmanship		2	2	2	1	1	1					
Vocal music	3	3	3	3								
Gymnastics	4	4	3	3	3	3	3		3	3	3	3

<sup>1</sup> The course of study for the complete elementary school includes the four years of the common school course and two years of the Hellenic school course.

The work of these schools is divided between theory and practice. Each of the normal schools has a practice school connected with it.

Men teachers of the first grade in the complete schools receive 1800 dr. per year, the second grade teachers receive 1440 dr., and the third grade 1200 dr. per year. Women of the same grades receive 1440 dr., 1320 dr., and 1200 dr., respectively. The local communities may increase these amounts. The teachers in the common schools receive 660 dr., 780 dr., or 900 dr. per year, depending upon the grade which they teach. Each teacher contributes to a pension fund. Tenure of office for these teachers is permanent during good behavior.

*Intermediate Education* — From the elementary schools boys may pass to the Hellenic schools. Those who come from the common schools enter the first year of the three-year course, but those who have taken the six-year course of the complete elementary school enter either the second or third year of the Hellenic school. A recent Minister of Education urged that the last year of the course in these schools should be added to the course of the gymnasium. This would abolish the Hellenic schools, for the first two years of their course is now given in the complete elementary schools. Of the 314 schools that were reported for 1907-1908, 267 had three classes, 15 had two second classes, while 32 had only a one-year course, 20,517 pu-

pils were enrolled in these schools, and the total expense was 2,477,022 dr. There usually are at least as many teachers as there are classes in the Hellenic school. Teachers in the Hellenic schools must have a diploma from the University, and to obtain the higher positions they must have passed the examination for the master's degree or even the doctorate. The head teacher, or director, of a Hellenic school is called the scholar, and receives from 2400 dr. to 3000 dr. per year. The salaries of subordinate teachers vary from 1200 dr. to 3000 dr. per year. These teachers are appointed by the Minister of Education and they have no fixed tenure.

*Secondary Education* — After independence was achieved, secondary education showed plainly the influence of German models. The first gymnasium in Greece was the Central School, founded in Ægina on the 13th of November, 1829. The number gradually increased, and at present there is a gymnasium in every town of sufficient size to justify the expense. In the larger cities, Athens, Patras, etc., there are more than one, according to the population. Each gymnasium is managed by its own faculty. At the head of the faculty is the gymnasiarch, who is both a teacher and general director. He also serves as one of the members of the Supervising Council for the province. The program of studies is regulated by an official scheme which is modified to suit the individual schools (see Table I).

The gymnasia are generally supported by the State, but in places where the population is not large enough to justify this expenditure by the State, the people of the community sometimes support one for themselves, paying the expense in some ingenious way. For instance, the town of Nesson, in Messenia, not being favored by the government with a gymnasium, its inhabitants were in the year 1896 supporting one by a voluntary tax, levied and collected by themselves, of one centime on each oke of grapes or figs produced in their fields. Pupils are required to pay small entrance and certificate fees. The gymnasia are classical schools, but the physical sciences are included in their course of study. Until recently, however, the latter subjects have been little regarded, since the great importance of classic education in Greece overshadows the high claim that the physical sciences have on modern education. The schools lack apparatus, yet, improvement in this respect is taking place and professors are being secured who have won their diplomas in the physical sciences, and are, therefore, both capable teachers and interested in the progress of their specialty.

The younger Greeks are eager for education, and efforts are made to encourage this ambition. There is, however, a growing conviction that the education afforded by the schools is not sufficiently practical. Plans for modify-

ing the system have been considered by two recent national assemblies, but as yet no agreement has been reached. The experiment of a "practical gymnasium" is being tried now in Athens. No new gymnasium of the regular type has been founded since 1900, but between 1901 and 1908 six commercial schools, with four-year courses were established. In 1908 these schools were employing 33 teachers, and had 315 students enrolled. The total annual expense of conducting them was 113,640 dr.

TABLE II — STATISTICS OF THE PUBLIC SCHOOL SYSTEM FOR 1907-1908

	ELEMENT- ARY (deme)	HELLENIC	GYMNASIA	
			Public	Private
Schools	3,418 <sup>1</sup>	314	26	11
Teachers	4,336	931	183	97
Gymnastic teachers		9	26	6
Students				
Boys	170,374	20,517	3,941	1,352
Girls	71,059			
Total expense				
Drachmas	6,690,098	2,477,022	767,376	259,090
Dollars	\$1,291,575	\$478,065	\$178,065	\$50,161
Expense per pupil	\$5.35	\$23.30	\$37.58	\$37.92

<sup>1</sup> The 3418 elementary schools include 1571 common schools, 1224 complete schools for boys, and 623 complete schools for girls. The total also includes 2123 schools that are not supported by the State or demes.

*Girls, Education of* — The education of girls in Greece, beyond the six years of the complete elementary course, is a matter of private enterprise, the oldest school for girls having been founded in 1831 by an American missionary, Dr. Hill, and his wife. Lately, however, the faculties of the national university have been opened to women. Among the schools for girls the most important is the Arsakion. This school was founded in July, 1836, by the Society of the Promoters of Education, and named after its chief benefactor, Apostolos Arsakes. There are now several branches located in different cities. The course of study begins with the kindergarten and ends with a three-year teacher's training course. Certificates from this school qualify their holders to teach in the elementary schools. More than 1800 girls are enrolled in the school, and more than 800 were taking the teacher's training course in 1908.

There are numerous societies which maintain private schools, noteworthy among these being the Parnassos Society, which conducts a night school for poor boys, of whom more than 2000 attend.

*Higher Education* — The Greek educational system culminates in the National University at Athens. In April, 1837, Otto, who, after the death of Kapodistrias, had been appointed by the powers to be the first king of regenerated Greece, issued a decree for the establishment of a university. Following the custom of the Germans, he named the new institution after

himself, and not until 1862 was the name changed to National University. According to the decree of 1837 there were to be four faculties: theology, law, medicine, and philosophy. The latter consisted of two distinct sections, philosophy and science. In 1904 each of these sections was made a separate faculty. The faculty of theology is composed of six professors and four assistants. In the law faculty there are nine professors and nineteen assistants. The medical faculty which is the largest, has eighteen professors and forty-eight assistants. The philosophical faculty has twelve professors and five assistants, and the physical and mathematical faculty has twelve professors and eight assistants. In 1842 a seminar in Greek philology was founded in the faculty of philosophy. The peculiar function of this seminar has been the training of teachers for secondary schools. Other seminars and various laboratories, museums, and clinics are supported by the university. Among the other more important subsidiary institutions may be mentioned the national observatory built in 1846, the botanical gardens and museum, the university library with more than 300,000 volumes, and the national museum.

Three months before the close of the school year the combined faculties choose one of their number whom the Minister of Education appoints as rector for the next school year. The rector is the executive head of the university and its representative at all functions. In like manner each faculty chooses one of its members who is made dean of that faculty for the following year by the Minister of Education. The dean presides at meetings of the faculty, he arranges the program of studies, and represents his faculty in the university senate.

The financial administration of the university rests with the university senate, a body composed of the rector of the university, the dean, and one other representative from each of the faculties, except the faculties of philosophy and physical and mathematical sciences. Each faculty proposes the candidates for the professorships, and the Minister of Education appoints. Prior to 1882 the professors were named by the king. The government pays the larger portion of the salaries of the university officers. For the school year 1907-1908 the receipts of the university were 546,185 dr. and the expenditures were 507,349 dr. In addition to this the government paid salaries of professors and various other expenses amounting to 584,960 dr. This amount included 85,920 dr. to aid needy students and those studying abroad.

Students pay 2 dr. a year for a certificate of attendance in each course they take. Tuition amounts to 160 dr. per year, and there is an examination fee of 250 dr. in the legal and medical faculties, but only 150 dr. in the other

faculties. The diploma costs 50 dr. Students who have been graduated from the gymnasium, or institutions of like grade, are admitted without examination. The enrollment in the winter semester of 1909-1910 was about 2800 and in the summer session about 2500.

Other educational agencies which are not controlled by the government, but are sufficiently important to merit a mention in any description of the Greek educational system are the various archæological schools (see *ARCHAEOLOGY*). The oldest of these schools was established in 1846 and is called *École Française d'Athènes*. The American School of Classical Studies was founded in 1882 and is maintained by 26 American universities and colleges. The British School at Athens was founded in 1886. Other institutions are *Kaiserliches Deutsches Archæologisches Institut*, and *Italiensches Archæologisches Institut*. Greece maintains no archæological school, but two societies are active in archæological investigations. They are the Archæological Society, founded in 1837, and the Historical and Ethnological Society, founded in 1882.

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**GREEK LETTER SOCIETIES** — See *FRA-TERNITIES*

**GREEK, STUDY OF.** — In *Universities and Schools of Europe* — Each successive migration of the Greeks may be said to have resulted in a twofold conquest, — a conquest by the invaders of the land and its inhabitants, and a more gradual conquest by the language which they spoke over the native tongue of the people whom they subdued. This widespread diffusion of the Greek tongue gradually, though slowly, resulted in a corresponding diffusion of Greek thought. And so there arose centers for Greek study in different parts of the Mediterranean countries, with Athens for a long time as the chief seat. The career of Athens, Alexandria, and Antioch as later centers of Greek learning is treated in outline in the articles on the universities and schools of those places. The condition of the study of Greek and the attitude of the Christian leaders toward Greek culture are also considered

under the topics *CHRISTIAN EDUCATION IN THE EARLY CHURCH*, and *CHURCH SCHOOLS*, and the various articles on the Church Fathers (see *AMBROSE*, *AUGUSTINE*, *BASIL*, *CHRYSOSTOM*, etc.) treat of the attitude of the early Church to Greek culture and the Greek language. The fusion of Greek culture with Roman is treated in the discussion of *ROMAN EDUCATION* (*qv*), and the conditions during the Middle Ages are presented in outline in the articles on education in that period. A brief sketch of the condition of the knowledge of Greek from the late Roman period to the Renaissance is desirable as an introduction to the consideration of the place of Greek in modern education (see also *RENAISSANCE, EDUCATION IN*).

Under Constantine the Great Greek became the language, first of his court, and then of the official world. When, in 340, his eldest son and successor in the Western prefecture, Constantine II, fell in a campaign in Provence, a Greek monody, recited at Arles, was deemed the most appropriate tribute to his memory. At this time, indeed, the churches of Western Christendom were virtually Greek colonies, and both the Scriptures and the liturgies which they used were in the Greek language, so that, as late as the sixth century, we find Casarius, the eminent Bishop of Arles, granting permission for the use of such versions, as an alternative to Latin, throughout the churches of his diocese. A like permission was accorded to the churches in Marseilles, and the numerous Greek words which found their way into the French or Romance language of this period afford like evidence. The imperial designs, however, were far from commanding general assent, and in Africa Tertullian (*qv*) had long before declared that there could be nothing in common between the "Academy" and the Church, while he openly denounced philosophy as "the source of all the heresies" (*De Præscript*, c. 7). Lactantius (*qv*), summoned by Diocletian to fill the chair of Latin at Nicomedia (then a famous center of Greek culture), found his position untenable, and at the court of Constantine at Gaul became conspicuous by the vehemence with which he inveighed against all Greek philosophy. His *Institutions*, which long held its ground in the Latin Church as the best authoritative exposition both of elementary Christian doctrine and the principles of Christian education, and the *De Nuptis* of Martianus Capella (*qv*), embodying the classification of the liberal arts sanctioned by the authority of Augustine (*qv*), and reproduced long after in the universities of Europe, alike mark the trend of education in the West in comparative isolation from Greek and from Hellenic influences.

Throughout the fourth century, however, Alexandria maintained its reputation as "the last great nursery of Greek culture," and in conjunction with a new school of theology could point to a succession of eminent divines

whose influence outshone, for a time, even that of Jerome and Augustine. Of this the mere citation of the name of Athanasius, Eusebius, Basil the Great, and Gregory Nazianzen (*qqv*) affords sufficient evidence; while John Chrysostom (*qv*), who was of Antioch, and subsequently Patriarch of Constantinople, has been designated "the model of a preacher for a great capital" (Milman, Vol III, p 118). He bequeathed to posterity a vast collection of sermons, letters, and treatises, of which the first-named have probably attracted in modern times a larger number of readers than the declamations of any other Greek orator, excepting only Demosthenes. In Byzantium itself the work of education went steadily on, and we have sufficient evidence that in the latter part of the eighth century there was ample provision for instruction in grammar, language, science, and philosophy (Bury, *Later Roman Empire*, Vol II, p 435); and the statement of Theophanes that Leo the Isaurian (680-741) put an end to "pious education" by shutting up the schools, refers probably only to a kind of theological seminary in the capital, which, under the management of its twelve teachers, became a nursery of superstition and was finally swept away in the commotion occasioned by the iconoclastic movement. It is certain that Europe was indebted to John of Damascus (nearly the last of the Fathers of the Eastern Church) for the introduction of the study of Aristotle into Christian education. Of the vast literature bequeathed by these Byzantine writers, although their pages contain many facts useful to the modern historian, comparatively few have been much studied in the universities. But the early years of the seventeenth century found Sir Henry Savile busied with his fine edition of John Chrysostom, just as those of the sixteenth century saw Bentley engaged on the restoration of the text of Origen.

In the Western Empire, down to the time of the Renaissance, Greek learning appears only in occasional gleams, and no continuous tradition is discernible. It was undoubtedly the design of Charles the Great (see CHARLEMAGNE AND EDUCATION) and his adviser Alcuin (*qv*) that the language should be taught in the schools created by their joint efforts, but there is no evidence that their instructions were carried into effect, although when John Scotus Eriugena (*qv*), a fugitive from Ireland, succeeded to the mastership of the Palace School in the time of Charles the Bald, something must have been heard at Aachen about both Martianus Capella and Origen. Otto III, himself the son of a Greek mother, was able to raise his preceptor Gerbert (*qv*) to the papal chair, and the latter understood Greek, while his pupil emulated the ceremonial and usages of the Byzantine court. But the prevailing tendencies in Rome, both then and long afterwards, were unfavorable to learning in any

shape, and in the thirteenth century a knowledge of Greek was even studiously disclaimed as likely to bring the possessor under the suspicion of heresy (Sandys, Vol. I, p 583). Greek thought and Greek science, however, often found their way where the language itself was unknown, and authors who had written on philosophy, mathematics, astronomy, and medicine were widely read in Latin translations, the professors at the newly founded universities, Salerno, Bologna, Reggio, Modena, Vicenza, Padua, and Paris being wont to dictate and comment on these versions, long prior to the fourteenth century. The Saracens, again, during the reign of the Abbasside dynasty at Bagdad (750-1258), and that of the Ommiades at Cordova (756-1031), became acquainted, through translations made by Syrian Christians, with Aristotle, Hippocrates, Galen, Dioscorides, Euclid, Archimedes, and Ptolemy, and conceived an ardent admiration for most of these writers, at the time when the greatest part of Latin Christendom, absorbed in an exclusive devotion to the *Organum* of Aristotle and an unquestioning acceptance of the doctrine of predestination as proclaimed by Augustine, looked distrustfully alike on the theology and the science of the East. In the year 1311, however, the Council of Vienne having decreed that chairs of Greek, Hebrew, Chaldean, and Arabic should be founded in the universities of Paris, Oxford, Bologna, and Salamanca, Clement V did not deem it prudent to withhold his assent. But here again the scheme proved abortive and the papal signature was expunged, while in the fifteenth century the commentators on the Clementines even venture to deny that it had ever been attached (Mullinger, *Univ. of Camb.*, Vol I, pp 482-483).

Such were the conditions under which Petrarch (*qv*), when he first visited Rome in 1336, could find no one to teach him Greek, and even in 1360 could name only ten scholars in all Italy who possessed a competent knowledge of the language, — "three or four in Florence, one in Bologna, two in Verona, one in Sulmona, one in Mantua, but not one in Rome" (Voigt, Vol II, p 107). The humanist, however, could not long rest content with that Latin literature which itself continually revealed its own indebtedness to the inspiration derived from ancient Hellas, and as the aid of competent instructors in Greek literature became more and more indispensable, Manuel Chrysoloras (*qv*), the representative of the imperial court at Constantinople in Venice, was invited to Florence, where his school, probably the earliest for Greek after that of Lorenzo Pilatus (1360-1363), was open to all comers. He himself received a salary of 100 gulden, and lectured in Latin (1396-1400), taking Plato's *Republic* for his first subject. Chrysoloras subsequently lectured at Florence, Pavia, Venice, Bologna, and Rome, he died in 1415, when on a visit to the imperial court at Con-

stance, whither he had repaired in order to take part in the proceedings of the great council. Under such auspices Greek now became fashionable in Italy, and it was rendered still more so by the genius of Guarino (*qv*), one of the disciples of Chrysoloras, who was able both to disarm the jealousy of Rome and to command the admiration of every scholar. In his classroom at Ferrara Englishmen were to be seen, some of them of distinguished rank, and when, in 1438-1439, the œcumenical council was convened in that city, his linguistic attainments were displayed in the skill with which he acted as interpreter between the deputies of the Greek and the Latin churches. (See also GUARINO, BATTISTA.)

The first great school for youth, however, was that of Vittorino da Feltre at Mantua, — the "Pleasant House," as it was termed. Although, after the fall of Constantinople (1453), the number of teachers in Italy was materially increased, they themselves brought but few manuscripts with them, and the paucity of the latter continued to be a serious hindrance to the study of Greek until the arrival of two Germans, Sweynheym and Pannartz, who had worked under Faust at Mainz, introduced the art of printing, while it at the same time ruined many of the copyists. A small Greek grammar compiled by Constantine Lascaris (*qv*), which appeared at Milan in 1476, was probably the first book printed in Greek.

Antiquarianism and the interest collaterally excited in the history of noble houses, especially that of the Medici, did much to attract the sympathy of their representatives to the study of the humanists, but in the earlier years of the sixteenth century a great reaction set in in Italy, and the interest of the progressive movement, as identified with Greek, next centers in Germany. At the time of Reuchlin's death (1522) Greek was taught in nearly all the German universities. But that eminent scholar had already been denounced by the seniors of the University of Basel for his temerity in there venturing to introduce the study of Aristotle in the original text, and in 1523 we find Budæus (*qv*) writing a Greek letter to Rabelais (who was, like himself, a member of the Franciscan order) to express his sympathy with his friend under the annoyance to which the latter had been subjected, in being debarred "by the Heads of your Brotherhood from the reading of Greek treatises." "We are aware," he goes on to say, "that those Greek-detesting theologians have been most zealous to abolish the Greek language, looking upon it as the test of their own ignorance, and it is on this account that we see the most worthless of them in their sermons in the churches, railing at it, and by every means bringing it into suspicion with the people, as a most execrable study and pernicious to true theology." (Smith, W. F., Vol. II, p. 489.) Erasmus (*qv*) in like manner

found himself confronted by the charge of favoring rebellion against the authority of St. Augustine. His knowledge of Greek had been acquired in Paris after his renunciation of the monastic life, it had been improved during his residence at Cambridge (1510-1514), and it was there that he made a translation of the first book of the grammar by Theodore Gaza (*qv*), which he printed at Louvain in 1516. In the same year he published at Basel the first printed text of the Greek New Testament, along with a Latin version by himself, instead of the Vulgate. His position, however, to the end of his career was that of an eclectic, for while denouncing Lutheranism as mimical to sound learning, he may be said to have educated Zwingli, whom he had taught Greek at Basel, and who, throughout his career as the head of the Reform party in Switzerland, always evinced a marked preference for the Greek patristic literature over the Latin. How well Erasmus educated himself may be seen in the critical comment which enabled him to recognize the superiority of the diction of St. Luke to that of the other Evangelists. Melancthon's (*qv*) inaugural lecture in 1518, as professor of Greek at the newly founded university at Wittenberg, marks a further advance in relation to the study of the language, by the advice which he gave that it should be pursued *pari passu* with that of Latin, by all students "who sought to grasp the substance of the involved thought rather than its shadow." In the same year he published his *Greek Grammar*. The movement at Oxford, contemporary with the visit of Erasmus (1498-1499) resulted in no traditions. Grocyn (*qv*) is said to have lectured on Greek, and he possessed a fine library of classical authors, but his lack of critical judgment is evinced in his admiration of the current Aristotle, his disparagement of Plato, and his belief in the genuineness of the *Hierarchy* of Dionysius the Areopagite. At Cambridge, on the other hand, the foundation of the Regius professorship by Henry VIII in 1540 brought the study at once into favor, and the appointment of Sir John Cheke (*qv*) to the chair still further added to its popularity. Roger Ascham (*qv*), writing only two years later, describes the principal Greek authors as being already studied with an ardor altogether surpassing what had ever been elicited by the favorite Latin classics (Mullinger, Vol. II, pp. 52-57).

Philology, as a study, was as yet unrecognized, while all speculation on the subject was vitiated by the prevalent theory with respect to Hebrew, as the original tongue from which all the others were directly, or immediately, derived. In assigning the priority to a language in a scheme of instruction, the choice was accordingly supposed to lie between Hebrew and Greek. Rabelais inclined to put the latter first, as "that without which it is a disgrace for a man to style himself scholar."

(Smith, W. F., Vol. I, p. 246), — a view which appears to have been the current one in France long after his time. Ratke, in Germany, in propounding his scheme (1612), placed Hebrew first, then the Greek Testament, and thirdly Latin. His views, however, — put forth as they were in subservience to the prejudices of Lutheranism, which regarded the Greek and the Latin classics as alike demoralizing, — gained a temporary popularity greatly in excess of their real merits, and encouraged thereby, Ratke next proposed to substitute for the laborious imitation of the classical writers, which has been the practice of the humanists, a method similar to that whereby a colloquial knowledge of German or French is gained in the present day. The consequence was that both in northern Germany and in the Low Countries the critical faculty fell into disuse, and, in the language of Mark Pattison, "the Dutch editors shunned Greek, to which they were unequal, or only attempted it to give evidence that it was a lost science" (*Isaac Casaubon*, p. 458). Comenius, notwithstanding his enlightened views with respect to practical education, inclined to a like theory with regard to Latin, and connived at a laxity in Latin prose that threatened to result in the complete disappearance of a pure and correct style (Eckstein, p. 175).

The commencement of a radical reform dates from the time of F. A. Wolf (1759–1828), who, when a student at Gottingen, devoted himself to the study of philology with a success that led to his receiving an invitation from Zedlitz at Halle, to transfer himself to that rising university, "in order," wrote the professor, "to free it from the reproach of being without a single student of the subject." Wolf's compliance resulted in a further extension of his researches to ancient history, and especially to everything that related to Greece, and the Greek language and literature, — his keen insight into the specific merits of the classic writers, both as regards style and matter, constituting an epoch in the annals of scholarship. With regard to the question of the order in which the two languages should be taken, he concluded that in all cases where the student gave evidence of an aptitude for linguistic studies, Greek should be taken before Latin, a view in which Gedike of Berlin and Herbart expressed their concurrence, urging (1801) that the Romans having been, as it were, the disciples of the Greek, it would be an inversion of the true order, alike of linguistic and of philosophic studies, to give the precedence to Latin. On the other hand, there were those who pointed out that, if Greek were taken before Latin, the requirements of the classroom would necessitate a considerable curtailment of the time allotted to the latter, and in connection with Greek, and largely under the influence of more independent research in other countries, two rival schools

began, at this time, to divide the allegiance of the learned world. On Gottfried Hermann of Leipzig (1772–1848), it devolved to retrieve the disadvantages resulting from the influence of Ratke by pointing out that the study of Greek could be profitably pursued only by the adoption of a strictly logical and rational method, while August Boeckh (1785–1867), who, after studying theology and philosophy at Halle, had been professor at Heidelberg and in Berlin, concentrated his research upon the past history of institutions, art, and archaeology. That Hermann was to some extent inspired by the example of Bentley (1662–1742) at Cambridge, is undemable, but his editions of the tragic Greek poets and of Pindar bore the impress of an originality and critical insight unprecedented in Germany, while Boeckh's *Public Economy of Athens* and *Corpus Inscriptionum Græcarum* "laid the foundation for all later research in the departments with which they were concerned" (Sandys, Vol. III, ch. 29). In the freer atmosphere of the newly founded university of Berlin, the masterly investigations of Franz Bopp (*q.v.*) created, in like manner, the study of comparative philology, and his method, as set forth in his *Comparative Grammar*, afforded new guidance in connection both with Greek and with Latin.

In the meantime the question of priority had received a practical solution in France and in England by the requirement in Paris, as at Oxford and at Cambridge, that students on entering the university should already possess a colloquial command of Latin. In these important centers, accordingly, the language itself was not taught (it being presumed that the requisite knowledge had been already obtained at the grammar school), and Éton, Winchester, Westminster, Charterhouse, St. Paul's, and Christ's Hospital vied with each other in sending up youths who already spoke correct Latin and wrote Latin verse, and were thus able forthwith to devote their time to Greek and to Hebrew.

*University Courses in Greek at Present* — It is impossible to give any statistical statement of the number of courses in Greek in the chief universities which would serve to indicate the strength of the subject in the different countries. It might be mentioned, for example, that in the German universities 142 courses were given in the summer semester of 1911, and that these were distributed among the following branches: philosophy (7), literature (66), composition (7), history (11), beginners (11), archaeology and antiquities (23); philology and epigraphy (17). But the number of students who attended the courses is not available, nor can figures indicate the quality of the work done, for the productions in any field may be more valuable when confined to a small and selected number than when largely cultivated. In France, too, there are in the sixteen faculties



of letters twenty-seven professors and two adjunct professors, assisted by twelve lecturers, but the scope of their work is as a rule not defined. Of the English universities Oxford and Cambridge are still the strongest centers for the study of the classics. Greek is studied intensively by all students who graduate in the school of *Literæ Humaniores* at Oxford and in the classical Tripos at Cambridge, and is also taken in certain groups for the pass degrees. Here, too, it is difficult to differentiate between those who give courses in Latin and those in Greek, nor would a statement of their work be significant, for much of the work is done privately with the college tutors. In the newer universities there are separate chairs for Latin and for Greek, while in some the lecturers or assistants may instruct in both subjects.

**In American Universities** -- Before the founding of the Johns Hopkins University (1876), there was nothing in the United States fully corresponding to the German philosophical faculty in the modern sense. But some advanced work was offered to graduates at Yale College from 1847, and soon after at Harvard, in classics, as in other subjects. The degree of Ph.D. for work primarily in Greek was first given at Yale, in 1863. At Johns Hopkins, Professor Gildersleeve began at once to draw able and ambitious students who previously would have gone to Germany. Gradually the strongest of the older colleges and state universities developed and strengthened their advanced courses in Greek; the University of Chicago from its first session (1892) made this one of its important departments. At present, besides the institutions already named, one might mention Columbia, Princeton, and the Universities of California and Michigan, with a few others, as furnishing good opportunities in their graduate schools for the advanced study of the Greek language and literature, as well as of Greek archaeology. At none of these is the number of students in Greek large. It should be remembered also that the American School of Classical Studies at Athens is in effect a part of the graduate school of all American universities and colleges that unite in its support, and constitutes an important part of the provision made for Greek as a university study. To that school, as to the graduate school of several of the universities, women are admitted, as well as men.

**In American Colleges** -- In America as elsewhere the line between secondary school and college, as between college (or what corresponded to it) and university, has been an unstable one. To no subject does this apply more fully than to Greek. Still it may be said that from the foundation of Harvard (1636) Greek has always been regarded as a subject to be taught in college -- required of all, in accordance with tradition, so long as any large part of the curriculum was required,

but everywhere the first of the triad, Latin, Greek, Mathematics, to be made optional. In the state universities, as these were gradually established from 1837 on, Greek was one of the subjects to be taught in the department, however named, that corresponded to the older colleges. In most of these Greek was never required; in some, as at the University of California still, it was required for the degree of A.B. only, while another degree, usually intended to be of equal value, though lacking the prestige of tradition attached to the older degree, was always provided as the crown of a parallel course for which Greek was not required. Similar parallel courses, without Greek, have in one form or another been established at all important older colleges, except where Greek has ceased to be required for the A.B. degree. But it should be remembered that in the United States no profession or public office has ever been wholly closed, even by custom, still less by law, to those who knew no Greek. The restrictions long maintained in France and Germany in this regard never had a place here. This fact is usually ignored by people who would draw parallels between America and continental Europe. Further, each college being a law unto itself, there has been endless experimenting on this, as on most, educational questions; general statements must, therefore, be very broad, and detailed statements for the entire country would require too much space. But one may say that up to about the last quarter of the last century the degree of A.B. from all but the weakest colleges generally implied more or less of Greek study in college. Since then the ratio of bachelors of arts who never studied Greek has been steadily increasing, of late rapidly. No other academic degree ever necessarily implied an acquaintance with Greek, though bachelors of divinity nearly always had studied it a little, at least in the New Testament; of course many lawyers and physicians had taken a college course, with Greek, before beginning professional study. Exact figures are not obtainable, but probably not over one tenth of American young men or young women now studying for the A.B. degree take any Greek in college, and the ratio is diminishing. Where Greek is not required for entering the department leading to the baccalaureate in arts, elementary courses in Greek, wholly optional, are regularly offered. On the other hand, the opportunities for Greek study in college, for those who wish and are prepared to take them, have been greatly increased. Early in the eighteenth century Homer and the New Testament were still the most important, in many cases the only, Greek books read. Not until the nineteenth century was the range much enlarged; American colleges then, like the corresponding institutions of Germany and Great Britain, accorded to Greek a higher esteem and a larger place than it had ever received before. At present, since colleges are

of all grades of strength, advancement, and inclination toward classical study, all grades of opportunity are offered in them, from the minimum recognized two hundred years ago, to the maximum in the ten or a dozen best. In the latter are regularly offered courses in Homer, the drama, orators, the historians, Theocritus, and Pindar. In general the college canon includes in each branch of literature portions, at least, of all the greatest books, those which have had most subsequent influence and which contain most of intrinsic literary interest. The situation in Canadian colleges is much the same, though these naturally show closer relations with English usage, and more distinctly favor, for students inclined to take Greek, earlier specialization and a wider range of reading than any in the United States, with the possible exception of Harvard.

**In Schools** — The schools of different countries have developed on such different lines that comparisons in regard to any branch of study are difficult to make and are peculiarly open to misunderstanding. And as was said above, school and the faculty of arts in the university are not always clearly distinguishable. In the following sketch of the place of Greek in the schools, only Germany, France, and England will generally be considered, as most nearly concerning America. It is impossible here even to summarize the complicated and interesting history of Greek study. For three centuries textbooks and methods of teaching, judged by present standards, were extremely defective, and results appear to have been small for the mass of the pupils. The fruitful labor of a few great scholars, the profound effect of Greek study on a few receptive and strong minds, who became, largely in consequence of their saturation with Hellenism, a powerful influence on their contemporaries and immediate successors, stand in sharp contrast with the slight tincture imparted to the majority. The intense interest in Greek during the earlier Renaissance soon declined in Italy. Political conditions never favored a high development of education there, even among the upper classes, until the establishment of the present kingdom. Ecclesiastical education, though it continued to include Greek, did not aim at the fullest mastery of the subject. It was in Protestant Germany and England that Greek literature was most highly esteemed, permeated most thoroughly the highest intellectual life, most strongly influenced the men who created the modern classics, and has held the largest place in the school training of the educated class. (See earlier section of this article.)

For *German schools* a new era began with the reorganization of the Prussian educational system after the humiliation of Prussia by Napoleon; the founding of the University of Berlin in 1810 was part of the same movement. The school which led to the university and was

intended for the early training of all members of the learned professions and all higher state officials, which was, however, open to all boys whose parents could send them, was the gymnasium. This was meant to be the stronghold and propagator of the New Humanism, the heart of which was the appreciation of Hellenism, as exemplified in all the makers of classical German literature, notably in Lessing, Goethe, and Schiller. Latin was given the largest place in the new gymnasium, but Greek stood beside Latin for the last six years of the course. And without passing through this course there was no entrance to the university, therefore none to a profession nor to high civic office. The Prussian schools, controlled by the State, were on the whole so superior that they became the general model for all other German states. Further, the privileges granted only to state schools made it impossible for good private schools for boys to grow up beside the state schools. The system as a whole amounted to a degree of propulsion toward the study of Greek such as England and America never approached, that of France was similar, but less rigid. Two large results followed. First, Greek was taught and learned with a thoroughness nowhere else equaled by so large a fraction of the youth of a country. Second, as mathematics, natural science, the native and other modern languages and literatures became more and more important for a liberal education, and yet could not be adequately recognized in schools that gave so much time to classics, the revolt against this educational monopoly was more justified and was strongest in Germany. The centralized state control made it harder than in America for public opinion to effect changes, but changes had to come. Under the present Emperor they have been coming rapidly, and are likely to go much farther, and Greek is the subject most affected by them. In two ways Greek is crowded out. First, students are now admitted to university privileges from other schools, without Greek; second, more room for modern subjects must be found in the gymnasium by restricting the time allotted to Latin and Greek. As one manifestation of the latter tendency, the plan of the so-called Frankfort system seems to promise most for the retention of Greek. By this plan Latin is not begun till the fourth year of the nine-year course, being preceded by three years of French. Greek is not begun till two years later, and is then studied intensively for four years. If this shortening of the time leads to the adoption of improved methods of teaching, along the line of the vastly improved teaching of modern languages that is now enforced in all Prussian secondary schools as in all French lycées, probably more Greek can be taught than was taught under the old plan.

In *France* the first Jesuit school was the

Collège de Clermont in Paris, later named Louis-le-Grand, now the Lycée Louis-le-Grand, founded in 1563. The schools of this order regularly gave much attention to Greek, and were the strongest educational force, alongside of the government schools, till the Jesuits were expelled from France in 1764. The statutes of the university, published in 1600 by the commission of Henry IV, show the influence of the Jesuit schools and of Sturm's system in Strasburg. While laying most emphasis on Latin, the statutes demanded considerable knowledge of Greek for admission to the upper division in philosophy. And the master's degree, including Greek, was the minimum qualification for the secondary teacher. In essence these requirements continued in force till 1793. The Revolution established the principle of universal public instruction, free in the lower stages, but the institutions intended to embody the principle attained no stability till 1808. Greek long continued to be required during four or five years in the course leading to the baccalaureate in letters, which again was prerequisite to the higher professional careers, though exemptions gradually increased. But by the regulations of 1902 a knowledge of Greek ceases to confer any formal advantage in regard to admission to any career—except, of course, that of a classical teacher. The distinguishing features of the new curriculum are these. After a preliminary course of primary study follow two successive cycles, one of four years and one of three years. In the first cycle there are two sections, one has no Greek or Latin, in the other Latin is required and Greek is optional during the two upper years. In the second cycle four groups are open, one alone includes Greek with Latin, two others include Latin with more extensive study of modern languages and of science respectively, one includes modern languages and science, without Latin. This arrangement, with accompanying privileges, goes beyond the present German system in leaving Greek to stand purely upon the popular estimate of its intrinsic worth. And unfortunately one does not gain from current reports any high opinion of the actual teaching of Greek in the French lycée. (See FRANCE, EDUCATION IN, under Secondary Education.)

In *England* the establishing of classical schools in the sixteenth and seventeenth centuries was a widespread movement, as truly popular as any such activity could be in those times. It was always recognized that many who desired higher education, and who would by it be fitted to render public service in church and state, were sons of poor parents. Hence every educational foundation provided in some form for gratuitous teaching, or partially gratuitous, of a certain number of poor boys. In all such schools Greek was a firmly established subject of study by 1660, and has continued to be so. In the latter half of the last century a

"modern side," without Greek, also became usual, and a demand for exemption from Greek for university entrance made itself felt. The newer universities do not require it, and the question is under discussion at both the older institutions. At Cambridge German or French is allowed as a substitute for Greek in the Regulations for the "Examination in Modern Languages for the Ordinary Degree," an innovation which probably foreshadows a like concession with regard to the requirements for the "Previous Examination." At Oxford, however, the proposal to make Greek non-compulsory in the cases of candidates presenting themselves for honors in mathematics and natural science was rejected in Congregation (November, 1911) by a majority of 236. As regards the preparatory schools the Report of the Curriculum Committee (1910) suggesting that Greek should not be commenced "until a boy had reached a certain standard in other subjects, such as English, Latin, and French," was laid before the Headmasters' Conference at Sherborne, but is still awaiting their formal consideration. But nowhere else is Greek more firmly entrenched in the estimation of the educated classes than in England and Scotland, thus must have for a time a conservative effect in the schools. The amount of time traditionally given to the subject, however, must certainly be diminished, and also the number of those who drop out by reason of failure to attain, before the age limit, the standard set for the successive forms. It should be added, on the other hand, that youths to whom the subject is adapted, and who take the full training of a fine English school, including verse-composition, and then honors in classics at Oxford or Cambridge, obtain a fuller mastery of the Greek language and a deeper understanding of Hellenism than is imparted by the corresponding course of any other country.

In *America*, the English colonists, following the example of the mother country, began early to found grammar schools, in which Latin should be taught, and a beginning of Greek, in the New Testament. (See GRAMMAR SCHOOLS.) Before the Revolution also the endowment of "academies" as another class of secondary schools (see ACADEMIES) had been well begun, and continued into the last century, to be succeeded by the still more popular movement for establishing free public high schools. One of the chief functions of the academy, as of the grammar school, was to fit boys for college, and hence to start boys in Latin and in the elements of Greek, the high schools were intended rather to furnish a better education for those who could not go to college. Preparation for colleges of the old type was for them always a secondary aim, and has been more and more subordinated as the other aim has broadened and turned more toward vocational training, or at least toward such teaching as would more directly facilitate bread winning. In the newer

states, of course, where the state universities have always given more attention to applied science and purely modern subjects, the high schools of each state have stood in close connection with its university, but that brings them no nearer to Greek. The great increase in the number of pupils whose home speech is not English has been a large factor in this development of the high schools. Accordingly, while many of the earlier high schools included Greek in the curriculum, few, except large high schools, now do so, and many of the largest, as in New York and Chicago, do not. In many states, as Iowa and Minnesota, no high schools teach any Greek. The surviving grammar schools and larger academies generally teach it to those who desire it. Meantime, with the increase in wealth and advance in ideals of education, the demand has latterly been growing for proprietary and endowed schools of the highest class. (See PRIVATE SCHOOLS.) This has filled to overflowing the existing schools of this sort, and has brought into existence many new ones. These are largely, if not primarily, preparatory for college and technical schools, and hence include Greek for those who wish it. They may prove to be one of the strongholds of Greek instruction, since they are in a better position for adopting improved methods of teaching than are the teachers in public schools, and their advice carries more weight with parents and pupils. Finally, it should be mentioned that the Roman Catholic Church maintains not a few colleges and schools, including some for girls, in which Greek is taught. Also, some groups of immigrants from Germany have been active in providing classical teaching for their sons. Notably the Lutherans have a series of flourishing schools more closely modeled on the German gymnasium than any others in America.

Amid the conflicting currents of life in America it is difficult to sum up the present situation with reference to Greek study, and impossible to foretell the future. The materialistic trend of the whole modern world toward money-getting is hostile to studies that seem to have no direct bearing on that. On the other hand, the deep idealistic strain and the passion for the best that are so characteristic of the race that in America is slowly forming out of many heterogeneous elements, offer ground for hope. Whatever the teachers of Greek can lead their pupils to feel, in adult life, has been good in their own mental experience, will be kept and made available for their children.

T D G

**GREEK, TEACHING OF** — It is well to begin with a clear idea of the end in view in learning Greek, as the first regulator of method in teaching it. Complete agreement as to that end there has probably never been, and in four centuries views have undergone many changes. The carefully limited statement of the Prussian *Lehrplan* of 1901 is. "An ac-

quaintance, based on adequate knowledge of the language, with a certain number of literary works of special importance for content and form, and by this means an introduction to the thought and civilization of ancient Greece." Here is not a word that suggests any other purpose in studying Greek than in studying Chinese; the official directions to teachers hardly touch upon what is really the heart of the teacher's task, they tacitly assume, in the traditional way, that learning a foreign language is a radically different process if the language is ancient. Current formulas in England and America, however various in form, fall into two classes, according as they put in the foreground the content of the study or the effect on the student. But these two conceptions, instead of being opposed to each other, are simply two aspects of one mental activity; they may be reconciled in a single statement, comprehensive and brief. The starting point for this is a great historical fact, which may be put in the words of one of the best-known scientists of England and America, Sir William Osler: "The tap-root of modern science sinks deep in Greek soil, the astounding fertility of which is one of the outstanding facts of history."

Though not always recognized, the controlling principles of our art, literature, and philosophy, as well as those of science, are Hellenic" (*American Magazine*, December, 1910, p. 247). Corresponding to this undisputed fact of history, and somehow closely related to it, though we cannot here discuss the relation, is the following psychological fact, verified in centuries of experience. For minds not unadapted to it, the process of acquiring, under good instruction, a first-hand acquaintance with the Hellenic mind, as embodied in the existing works of ancient Greeks, is peculiarly formative, enlarging, disciplinary. No educational instrument yet known can fully take the place of this, as none can take the place of mathematics. This brings us to the simple and comprehensive formula. The prime object of Greek study is to gain a first-hand acquaintance with Hellenism, as a great force in civilization, the first aim in teaching Greek is to lead pupils to a personal acquaintance with that force. The disciplinary effect, the formal training, and all desirable ends, are included in that central aim, as auxiliary or incidental to it. That Hellenic force has been profound, lasting, pervasive. Along one line it even reached the extreme Orient, long before the Renaissance in Europe. It has recently been demonstrated that through Alexander's conquests, carrying Greek art to northern India, where Buddhism arose and matured, even China and Japan received from Hellas a potent influence on their sculpture and painting. And now this influence, carried eastward to the edge of Asia, has there met the broader stream that flowed westward through Europe to America and across the Pacific. Such far-

reaching facts in the development of mankind must continue to urge all who would understand the intellectual world of to-day and the movements of history to know Hellas for themselves. And really to know Hellas is to take into one's self directly something of that original force, still unexhausted, still fertilizing the individual mind that is brought into real contact with the art, literature, and thought of ancient Greece. Such are the facts and experiences that must draw many of the stronger and more aspiring minds to this study.

When we would approach the Hellenic spirit most directly, it is embodied, first, in countless examples of Greek art still existing, more or less injured, in European and Asiatic Hellas, and in the museums of Europe and America, and secondly, in a copious literature. Where the former are accessible, as in our larger cities, no opportunity to become acquainted with them should be neglected. But for general educational purposes literature has this advantage over all other arts, that its originals can by printing be reproduced perfectly, cheaply, and in any number of examples. If we will, we can know these books nearly as well as any Greek could. Only we must first learn the language, for translations are but poor copies. In school and college the Greek language is to be taught and studied primarily as offering the only direct access to the great books. For while Euclid and perhaps a few other authors can be adequately read in translation, neither Homer and the dramatists nor Thucydides and the orators nor Plato and Aristotle can be so read. For these the content is inseparable from the original form. And unfortunately Greek is a difficult language. Its difficulties may be considered in four groups, which present themselves to students in the following order. First, an alphabet differing in part from our own. This is the least difficulty, but is serious during the first weeks. Second, a large vocabulary, far less represented in everyday English than is the Latin or French. Third, a rich inflectional system, especially for the verb. Fourth, a wide divergence from English in syntactical idiom, a divergence due chiefly to the third group of differences, the copious inflections. It is really the verb that is at the bottom of all serious troubles after the alphabet is learned, and too often the verb is neglected, with disastrous results. Taken altogether, it is not too much to say that as large a bulk of grammatical acquisition is required to prepare for the best colleges in Xenophon and Homer as that required for preparation in Latin and in elementary French and German combined. Nothing is gained by blinking these difficulties. It is better to face them, and attack them in order.

The first step in learning the alphabet is to copy out both capitals and small letters, the teacher indicating the best way of writing each where a question can arise. Some would fol-

low the cursive manuscript forms now used in Greece. This has advantages, but unless one lives in a Greek-speaking community, keeping nearer to the usual printed forms leads more directly to the main goal. Next the names of the letters should be copied out, in Greek characters, the pupil pronouncing each one aloud repeatedly. The written accents are so troublesome that one is inclined to relax the requirement of strict accuracy at first, hoping to take them up more carefully later. That is a mistake, to correct a habit of inaccuracy once acquired takes more time and effort than does accuracy from the beginning. The fundamental rules are few, and the whole subject less difficult than English accent is for foreigners. And careful pronunciation should accompany every step. This raises the question, what pronunciation? As with writing, unless one lives in a Greek community, it leads most directly to our main goal, acquaintance with the *ancient* literature, to adopt the compromise in pronunciation which is recommended in recent grammars and by the Classical Association of England and Wales. The principle of this compromise is simple: to pronounce as the Athenians did about 400 B.C., as nearly as is practicable for our classes. The latter consideration leads us to adopt substantially the modern Athenian sounds for  $\epsilon$ ,  $\alpha$ ,  $\phi$ ,  $\theta$ ,  $\chi$ , and to give  $\omega$  a closer sound than the ancient, like that of German  $\bar{o}$ , the ancient sounds in these cases would, for our classes, be so difficult as to demand for mastering them a disproportionate amount of time. For the same reason it is not thought worth while to attempt the ancient pitch accents, we pronounce them all, in the present Greek fashion, as we do the English stress accent. Long and short vowels, however, it saves time in the end to discriminate carefully, "hidden quantities" are few in Greek. To Plato no doubt our best reading would have sounded very barbarous, perhaps unintelligible. But so would our reading of Shakespeare's lines have sounded to Shakespeare; that does not make them less living to us. Some would see in this example an argument for the modern Greek pronunciation for ancient Greek. That, however, is to overlook the decisive differences in the two cases. The change in English since 1600 has not gone so deep that our pronunciation destroys all Shakespeare's rhythm, confounds the commonest words, and turns a phonetic spelling into an irrational chaos. The modern Greek pronunciation does all that for Sophocles. Considering the centuries that have elapsed, the Greek language has been conservative; some of the present characteristics began to appear before 300 B.C.; the popular speech of Greece is euphonious and expressive and has an interesting literature. But the wealth of the old literature was a constant force toward the retention of old spelling, while pronunciation inevitably changed. When, therefore, the

modern sounds of the letters are applied to the poetry of twenty-three centuries or more ago, rhythm disappears, spelling becomes chaotic, and the language far harder to acquire. For an approximate illustration in English we should take, not Shakespeare, but Chaucer. To read his lines as verse we must return as well as we can to his pronunciation; in good teaching of Chaucer that is now done.

But precision in pronunciation on the system adopted is essential. This is one item in the application of the general principle that Greek, like any foreign language, should be taught as a living speech. As for "dead languages," of course Elizabethan English is really as dead as the language of Xenophon, the latter can be made to live for us in the same way as the former, and not otherwise. That is, ear, hand, and tongue must from the first be as accustomed to Greek words as the eye, precisely as in the best teaching of modern languages. The advance of recent years in teaching these, especially in France, Germany, and England, is even more needed, and is just as possible, in teaching Greek. "Read, write, speak" was the rule of the Jesuit schools three centuries ago; the notion that Greek and Latin are to be learned merely by reading, without accompanying oral use, belongs to the nineteenth century, and is a fundamental error. How much use can be made of conversation will depend on the knowledge and skill of the teacher; more use can be made than seems possible to one who has not persistently tried for it. But the principle is not bound up in any "method", what it requires is that by every available means the ear be trained to understand Greek words when spoken, and that the student be accustomed to reproduce Greek accurately, both orally and in writing. The better the teacher's own command of the language, the more he can vary these means, and the better results he will obtain. Also the more Greek can be used for saying what must be said in the classroom, the more rapid the progress. But any teacher can insist on good reading aloud, writing from dictation, translation from another's reading, and on reciting and writing from memory both paradigms and connected passages. By such exercises, too, one gains the power to go farther in that direction. There seems to be a physiological reason for the plain fact of experience, that a foreign tongue ceases to be alien and becomes a natural and living mode of expressing thought, only when, like the mother tongue, it is firmly held by all four kinds of language memory, those of the ear, hand, and voice, as well as that of the eye. To exercise all alike from the beginning makes the learner's progress more rapid, because at each step more secure.

For mastering regular Attic inflections, and of course for obtaining any considerable vocabulary, or a fair knowledge of ordinary syntax, two things are indispensable. These are a large

amount of reading in easy Attic prose, and along with this, not after it as a special exercise, much reproductive use of the language. To both too little attention is given in American schools. Those who condemn Greek composition from the notion that this is taught as an end in itself, are attacking a man of straw; nowhere has it ever been so taught. But for learning to read any language accurately no other means can take the place of writing. And if to prepare pupils rightly for the examination in elementary French or German some two hundred pages of reading are requisite, how much Attic Greek must be read to obtain equal proficiency in the far more difficult language? Can one hundred and fifty pages of Xenophon suffice? Probably five hundred would be nearer the mark. The disproportion and the error of method in the usual practice are plain. Rereading and learning by heart, good as they are, do not meet the need. Too much rereading dulls the interest, and that is a capital mistake. What an eager young mind craves is variety, new combinations; the repetition that comes with these is more effective than twice that repetition through reviewing. For the vast apparatus of Attic conjugations, for the two or three thousand fundamental words, and for the common syntax, no single one hundred and fifty pages can offer enough combinations. Still more is this true of what we group together as idioms, the un-English ways of saying things, ways that grow naturally from the wealth of inflections, but are impossible in a language so little inflected as English. Just because they are unnatural to us, but are the warp and woof of Greek expression, the pupil must become familiar with a mass of them by meeting them in scores of variations; to repeat a few of the combinations a score of times is not enough. How to meet this difficulty is a serious problem, which we have scarcely faced, much less solved. The solution is to be sought in two places. First, a large amount of simple Attic prose, as varied as possible, should be read before the *Anabasis*. Disconnected sentences will not serve, for several reasons, first, because they are intolerably dull. And nothing read before the *Anabasis* should destroy the freshness of that interesting story by anticipating its distinctive vocabulary or its narrative, detached sentences that spoil both by anticipation are a pedagogical sin. In part the place must be filled by modern compositions. *A Greek Boy at Home*, by Dr W. H. D. Rouse (London, 1909), whose experimental work in the Perse School at Cambridge (England) has for a decade been doing much for classical teaching, can be commended from personal experience as interesting and practical, and it can be taken up in the first week. It has the merit, too, of introducing early the commonest particles and idioms of sentence connection, which play so much larger a part than in Latin or any modern language. Later some parts of

Lucian can be used; when the need is more widely realized, a wider choice of suitable texts will soon be provided in convenient editions. Secondly, we must not be afraid to postpone a little the reading of Homer, that the immortal epics may be the better enjoyed. Colleges that have classes for beginners in Greek are as directly concerned as the schools in attacking such questions as these, though it should not be forgotten that details of the solution may be much affected by the age of the class and by their previous studies. We must here confine ourselves to general principles, observing that youths of fourteen or fifteen can learn paradigms, and perhaps can learn passages by heart, more easily than those of eighteen or older, while the arguments of the orators and the thoughts of Plato's *Apology*, *Euthyphro*, or *Crito* are harder for young people to comprehend.

Three topics, under the general subject of method, still demand a few words. First, six hours a week in the class are far more than twice as effective as three hours, less than five hours a week means a sad loss of efficiency in the first year of any foreign language. The secret of the rapid strides which children make in learning German when living in Germany is not in the increased number of hours given to study, but in the increase in the number of hours of exposure to German, with the constant gentle urging, which daily life brings upon them, to listen and talk as well as write and read. The classroom is a poor substitute for all that, but is the best we have, we should make as much of it as we can. Secondly, in the writer's experience, Greek syntax makes little trouble for pupils who have really learned the inflections. It is hazy notions about these that make syntax and syntactical idioms appear hard. The thing to emphasize constantly during the first five hundred pages of reading in Attic prose is the inflections, particularly of verbs, without a firm grip on these a student can have no real knowledge of Greek, but only invertebrate and feeble notions, which were better replaced by a real knowledge of French. And a teacher must not expect this mass of forms to be fully digested until several hundred pages have been read, with much reading aloud and writing and much reviewing of set paradigms. Thirdly, what is commonly known as "sight reading," if treated as a separate exercise and as somehow distinct from right reading, is a snare and a delusion. Reading is merely taking the writer's meaning from his words, written or printed. Reading Greek or French is not different in that respect from reading English. The pages a pupil is set to read should be properly graded to his previous attainment. That being assumed, every sentence should be first read as well as possible at sight. That is, the pupil should be trained always to take the sentence as it comes, gathering the meaning as he proceeds, from all the indications before him. Precisely as, in learn-

ing the mother tongue, children enlarge their knowledge mostly by inferring from the context and the situation, so a great deal that is new can be inferred on every page. For some months all this new reading should be done in class, the teacher giving the meaning of new words when this cannot be inferred, but guiding the class to make all needed inferences that can be made on the basis of what they already know. This practice both increases speed and habituates to the right method, while it still leaves plenty for the pupil to do in revising the same passage for the next session. But any kind of reading which cultivates a habit of stopping short of a close approximation to the writer's exact meaning is vicious. The purpose of those who first gave vogue to "sight reading" was to increase the pitifully small amount of reading then usually done, the purpose at least was good.

The above outline deals only with the teaching of the language in the early stages. For a few suggestions on the teaching of Xenophon and Homer, see under those headings. This is not the place for the discussion of method in the more advanced work of the college, after a fair reading command of the language is acquired.

T D G

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- The Year's Work in Classical Studies*, edited annually by W. H. D. Rouse for the Classical Association (London, John Murray), contains each year a report on recent pedagogical discussions.
- See the files of the *Journal of Education* (London) and *School World* (London), especially since 1910, on the status of Greek at Oxford.

**GREEN, ASHPHEL** (1762-1848) — Eighth president of Princeton University, was graduated from the College of New Jersey (now Princeton) in 1783, and was for three years instructor (1783-1787) and twelve years president (1812-1822) of the college. He was subsequently president of Jefferson Medical College in Philadelphia. Author of numerous sermons on education, one on *The History of the College of New Jersey*. W. S. M.

See PRINCETON UNIVERSITY.

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**GREEN, THOMAS HILL** (1836-1882) — English philosopher, was born Apr. 7, 1836, at Birkin in the West Riding of Yorkshire, the son of Valentine Green, the rector of the parish. After his schooldays at Rugby (1850-1855), he went up to Oxford, where he spent the rest of his life as a student, fellow, tutor, and professor of Balliol College, gaining first-class honors in the school of *literæ humaniores*, and winning the chancellor's prize for an essay on works of fiction. Until his election to the Whyte professorship of moral philosophy in 1878, which he held to the day of his death, Mar. 26, 1882, he served his college as lecturer and tutor in various historical and philosophical subjects. After the election of Benjamin Jowett (*qv*) as master of the college in 1870, the subordinate management of the same devolved almost entirely upon him. As an assistant commissioner of a royal commission appointed in 1864 to inquire into the education of the middle classes, Green inspected endowed, proprietary, and private schools for boys and girls, and the views expressed in his report were largely those adopted by the commissioners. Throughout his life he showed a strong interest in the reform of middle and higher education, setting forth his ideas in the report already mentioned (*Schools Inquiry Commission*, 1868,

Vol. VIII), in *Lecture on the Grading of Secondary Schools*, *The Elementary School System of England*, and *The Oxford High School for Boys*. He was also keenly interested in all practical, political and social reforms, and showed a warm sympathy for the humbler classes. His chief works are his *Introductions* to Hume's *Treatise on Human Nature* (first published 1874 in Hume's *Works*, edited by Green and Grose), *Prolegomena to Ethics*, published after his death by A. C. Bradley (1883), and *Principles of Political Obligation*, all of which, except the *Prolegomena*, are to be found in Nettleship's edition of his works, three volumes, 1885. Green's philosophical standpoint is that of objective idealism, which he developed under the influence of the German school, becoming the leader of a strong reaction against the traditional English empiricism (*qv*) as represented by Hume, Mill, and Spencer. His theory of ethics is based on a spiritualistic metaphysics: morality, like knowledge, can be explained only on the assumption that an eternal mind reproduces itself in human personality. Against utilitarianism Green teaches a doctrine of self-realization, in which, however, the social side of man's nature is emphasized: man cannot think of himself as satisfied in any other than a social life in which the exercise of self-denying will is exhibited, and in which all men shall participate. F. T.

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**GREENE, GEORGE WASHINGTON** (1811-1883) — Educator and textbook writer, educated in the common schools of Rhode Island and at Brown University. He was professor at Brown for four years, and was the author of textbooks in history, geography, and French. W. S. M.

**GREENE, SAMUEL STILLMAN** (1810-1883) — School superintendent, born at Belchertown, Mass., on May 3, 1810, and graduated at Brown University in 1837. He was instructor in the Worcester Academy and the English High Schools at Boston, superintendent at Springfield and at Providence, and professor of education in Brown University (1855-1875). Author of *Schools and Libraries*, five textbooks on grammar, and many articles in educational journals. One of the presidents of and for many years active in the American Institute of Instruction (*qv*).

W. S. M.

**GREENLAND, EDUCATION IN** — Greenland is a colony of Denmark, only the western coast up to 73° 30' N. and the tract around 66° N. on the eastern coast are colonized. It was first settled and named by Eric the Red (985 A. D.), who thought that an attractive name would draw colonists. His farm Brat-



tahld at Enesford (Tunugdharfik), ruins of which may still be seen, soon became the center of a settlement on the southern part of the western coast. Later on another settlement was founded farther north on the same side of the country. During the reign of King Olaf Tryggvason, Christianity was introduced, and the churches of Greenland were, with the other Scandinavian churches, joined to the diocese of Bremen. In 1124 Greenland received its own bishop at Gardar (Igahko). The government was similar to that of Iceland, an aristocratic republic, but in 1261 the Greenlanders voluntarily became subjects to the king of Norway. During its most prosperous epoch it is estimated to have had about 300 farms, 190 of which, with twelve churches and two monasteries, were located in the southern settlement. After the ravages of the Black Death in Norway (1349-1350) the Colony was neglected, and after various misfortunes the country became lost to the world and remained a blank for c 200 years until the period of explorations under Davis, Hudson, and Baffin. But communication with Greenland was extremely meager until the Norwegian missionary Hans Poulsen Egede, the Apostle of Greenland, established the settlement Godthaab on the west coast in 1721, he sought in vain for descendants of the Norsemen and began to introduce Christianity among the Eskimos. Moravian missionaries began their activity in 1733 and continued till 1900. The population of Greenland in 1908 numbered about 13,300, including 300 Europeans, almost exclusively Danes, in the Danish colonies on the western coast the natives have a strong admixture of European blood. The state of the church and public instruction is established by law of April 1, 1905, it comes directly under the Minister of Public Instruction in Copenhagen. The bishop of Sjælland is also the bishop of Greenland, which forms a separate ecclesiastical district. In 1909 there were fifteen ministers in Greenland (in 1890 only three). For the education of ministers there is a Greenland seminary in Copenhagen, where all Danish theological students who desire to become ministers in Greenland must pass an examination. The native ministers are educated first at a seminary in Godthaab and continue at the Copenhagen seminary. The school-teachers are in part educated at Godthaab, in part at special schools conducted by the higher clergy. The common branches taught in the elementary schools are religion, reading and writing of the Eskimo language, arithmetic, elementary history, and geography. All instruction in the seminaries and in the primary schools is gratis. Christianity is professed by all the population in southwest Greenland, an Eskimo who cannot read or write is rarely met with; the Eskimos have a printing office, and a newspaper in their own tongue.

T J

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**GREENLEAF, BENJAMIN** (1786-1864) — Educator and author of mathematical textbooks, was born at Haverhill, Mass., on the 25th of September, 1786, and was educated at the Atkinson (N H.) Academy and at Dartmouth College. He was first principal of the academy at Haverhill, and for twenty-four years (1814-1836) he had charge of the Bradford Academy. He was interested in the training of teachers, and in 1839 he organized a teachers' seminary which he conducted for nine years. He was the author of a dozen widely used mathematical textbooks, and of numerous articles in educational journals. He died at Bradford, Mass., on October 29, 1864.

W S M

**GREENSBORO FEMALE COLLEGE, GREENSBORO, N C**

An institution for the education of women chartered in 1838 under the control of the Methodist Episcopal Church, South. Collegiate, business, music, art, and expression departments are maintained. Fourteen units are required for admission to the college courses which lead to the degree of A B. There is a faculty of eighteen members.

**GREENVILLE COLLEGE, GREENVILLE, ILL**

— A coeducational institution established in 1855, originally for the education of women only. It has been under the auspices of the Free Methodist Church since 1892. Preparatory, collegiate, theological, education, commercial, music, art, and oratory departments are maintained. The requirements for admission are fifteen units of high school work. The degrees of A B, Ph B, and B S, are granted after the completion of the necessary courses. The faculty consists of nineteen members.

**GREENVILLE FEMALE COLLEGE, GREENVILLE, S C**

— Founded in 1854 under the auspices of the Baptist State Convention of South Carolina, maintaining kindergarten, primary, normal, academic, and collegiate departments. There are no stated entrance requirements. There is a faculty of nineteen instructors.

**GREENWOOD, ISAAC** (1702-1745) — Author of the first American textbook on arithmetic, was graduated at Harvard College in 1721, and was professor of natural philosophy in the college from 1728 to 1738. In 1729 he published his *Arithmetic, Vulgar and Decimal*. This was twelve years after the publication of the English book by Hodder in this country, and

fifty-nine years before the appearance of the popular American textbook by Pike

W S M

### GREER COLLEGE, HOOPESTON, ILL

— A coeducational institution established in 1891. Preparatory, normal, collegiate, business, music, and elocution courses are offered. There are no stated entrance requirements. The college courses which are based on about ten points of high school work lead to degrees. There is a faculty of twelve members.

### GREGORY, JOHN MILTON (1822-1898)

— State superintendent, educated at the Poughkeepsie Academy and at Union College, graduating at the latter institution in 1846. He was principal of academies in New Jersey and Michigan, state superintendent of public instruction in Michigan (1859-1864), president of Kalamazoo College, and of the University of Illinois. Author of *Seven Lauds of Teaching, Duty of Christianity to Educate*, and of articles in educational journals. He was editor of the *Michigan Journal of Education* from 1854 to 1859.

W S M

### GREGORY OF NAZIANZUS or GREGORY THE THEOLOGIAN (c. 325-390)

— Son of Gregory, Bishop of Nazianzus. His education was at first under the direction of his admirable mother, Nonna, later he attended the schools at Caesarea in Cappadocia, Caesarea in Palestine, Alexandria, and Athens. At the last school he studied for several years, devoting himself to oratory under the most eminent sophists of the time, Himerius and Proeresius. Like his friend Basil (*q v*), he planned to become a teacher, like him he followed the calling for a short time, and again like him he gave up the career of teacher for the ascetic religious life. He was a man little suited to the ecclesiastical career afterwards thrust upon him. Basil, who had become Bishop of Caesarea in Cappadocia, one of the most important sees in the Church, overpersuaded Gregory to permit him to consecrate him Bishop of Sasima in 361, a see which he soon forsook to act as coadjutor to his father. He afterwards went to Constantinople where he worked successfully in maintaining the Nicene faith against the predominant Arianism of that city. When Theodosius became coemperor of the East and came to Constantinople, Gregory was at once taken into high favor, was made Archbishop of Constantinople, and presided at some of the sessions of the Second General Council, A D 381. Party intrigue, taking advantage of technical irregularities in his appointment to Constantinople, forced him to resign. He left the city and spent his last years in Nazianzus. Gregory was equally great as a theologian and as an orator. As a theologian, his treatises determined some of the lines followed by Greek Christianity, as an orator, his compositions are among the

best of all time and have been taken as models by some of the greatest modern pulpit orators, notably Bossuet. His connection with education was not that of a leader. He took part in the preparation of poems to serve as Christian reading books when Julian forbade Christians to use the heathen classics, he assisted Basil in the preparation of his Monastic Rule, and his apology for his flight from Sasima has been of no small influence upon treatises on the duties and education of the priesthood, especially on Chrysostom's work, *On the Priesthood*, and the *Pastoral Rule* of Gregory the Great (*q v*). J C A, JR

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**GREGORY OF NYSSA (331-395?)** — The younger brother of Basil of Caesarea (*q v*) and one of the leading theologians of the Greek Church. He does not seem to have enjoyed the same advantages of a liberal education which fell to the lot of Basil, yet in intellectual ability he was superior to his brother and left an even deeper impression upon the theology of the Greek Church than did the better trained man. In his early life he was a teacher of rhetoric but made no great success of his work, probably on account of his inability to deal with the unruly youth with whom he had to come into contact. The edict of Julian in 361 forbidding Christian teachers to use classic authors in their instruction was for a short time a severe blow to all engaged in the work of education. Gregory certainly seems to have been quickly discouraged, for in the next year we find him, though he had previously married, in a monastery founded by Basil. His ordination as Bishop occurred in 372 when Basil put him into the insignificant village of Nyssa as Bishop in order to serve as a bulwark of Nicene orthodoxy in that part of the province of Caesarea. He was exiled under Valens, the Arian emperor, in 374 but was able to return to his see four years later. He was present at the council of Constantinople in 381 and again in 383 and 394. To what extent he remained at Nyssa is not clear, as bishops had a custom of absenting themselves from their sees for long periods and with little apparent justification. After 394 he disappears from history, and probably died soon after that date, though when, where,

## GREGORY OF TOURS

or how is unknown Gregory's great fame is that of a theologian He was strongly influenced in his views by Origen (*qv*), more so even than were Gregory of Nazianzus (*qv*) or Basil (*qv*) In spite of this characteristic, which as time went on came to be regarded more as a defect and mark of heterodoxy in a theologian, Gregory retained his place as one of the leading theologians of the Church on account of his masterly treatises on the Nicene definitions of the faith In the realm of pedagogy he takes a place on account of his work entitled *The Great Catechism*, which was a summary of the Christian faith intended to serve as a textbook to be used for religious instruction In many respects it recalls Origen's dogmatic treatise, *De principis*, but is much briefer and better rounded out in its form

J C A, JR

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 VINABLES, E *Dictionary of Christian Biography*, s.v. *Gregory of Nyssa*

**GREGORY OF TOURS** (538–294) — Bishop of Tours and historian of the Franks Gregory was born at Aversa in 538 and was educated by his uncle Gallus, Bishop of Clermont In 573, although but twenty-five years of age, Gregory was made Bishop of Tours, one of the most important sees of Gaul In this post he took an active part in the work of the Church, which in the troublous Merovingian times was the one institution of culture and education remaining in Gaul His chief work and that by which he is generally known is his famous *History of the Franks* Its style is marked by crudities of taste and grammar, which have been constantly pointed out as indicative of the intellectual degeneration of the times and the poor estate into which education had fallen It should be noted, however, that Gregory is quite aware of the fact that he does not observe the niceties of classical grammar, admits his rudeness of style, and in the first book of his history asks pardon for these faults It would appear, therefore, that Gregory enjoyed more educational advantages than might be concluded from a comparison of his style not merely with the classical authors but with writers later than Gregory himself, and that he used a current form of Latin which came more easily to his hand than the older Latin which had not yet become sufficiently distinct from the vernacular to be regarded as the object of special study In fact Gregory's language, though often rude and obscure, merely displays the characteristic features of the process whereby the classical Latin became the Romance and eventually the French language His work

## GREGORY THE GREAT

is, therefore, of interest not merely to the historian but also to the philologist and student of the history of education

J C A., JR.

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### GREGORY THAUMATURGUS (c 217–270)

Pupil and panegyrist of Origen (*qv*) and Bishop of Neo-Cæsarea Gregory was a native of Pontus, having been born in Neo-Cæsarea His family was of high social rank and in early youth he was destined for a public career and was set to study jurisprudence with that purpose in view He started, while still young, for Berytus (*qv*) in Syria, famous for its school of Roman Law, but passing on his way through Cæsarea in Palestine, he chanced to meet Origen who at that time was teaching there He was so attracted by the great Alexandrine that he remained with him for five years, entirely abandoning his visit to Berytus In the end he became a Christian On leaving Cæsarea in 238, he delivered in the presence of Origen a panegyric on his master in which he gives an elaborate account of the methods employed by him in his teaching This panegyric is, therefore, a document of the first importance in the history of education and especially for the history of the early Christian schools, since it gives an elaborate description of methods employed and the curriculum followed by one who was eminent as an educator An English translation by S D F Salmond may be found in the translation of the works of Gregory Thaumaturgus in the *Ante-Nicene Library of the Fathers*, Vol VI, Am ed The subsequent career of Gregory was different from the plans of his parents He returned to Cæsarea to practice law, but in 240 was chosen Bishop of the small Christian community in the place He remained at the head of the Church for thirty years giving himself with most exemplary zeal to his work and winning large numbers to Christianity There is no evidence that apart from his work as a Christian pastor and bishop he ever taught or that he formulated any independent pedagogical theories He derives his title of Thaumaturgus, or Wonderworker, from the reputation which he seems to have acquired even during his lifetime as a worker of miracles, many of which verge upon the grossly fabulous.

J C A., JR

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### GREGORY THE GREAT (540–604) —

Bishop of Rome (590–604) No single figure is more prominent in the sixth and seventh century

than Gregory I, Pope and Doctor of the Church. No one has left behind him a more abiding mark upon the life of Western Europe. Under his lead the papacy became for the first time an important political power throughout the West. He organized its finances and consolidated its possessions. Through him the theology of St. Augustine (*q v*), the greatest of the Latin Fathers, became dominant in the West, but only so far as Gregory had appropriated it and in the form in which he had interpreted it. By his work the organization of the Church was rapidly advanced and the foundations were laid for still larger developments. It is, therefore, not surprising that he also profoundly affected the development of schools and influenced the intellectual life of the centuries that followed his pontificate. His education was thorough in grammar, rhetoric, and logic, or that general training which a young man received who was preparing for a public career. Later he studied law and at thirty was appointed *Prætor urbis* by the Emperor Justin II. He soon gave up his promising career, disposed of his patrimony in charity and the endowment of monasteries in Sicily and elsewhere, and became a monk. But the Church was not willing to see him buried in a monastery and he was ordained by Pope Benedict I before 578 and soon after was sent to Constantinople as *apocrisarius*, or papal legate, at the imperial court. From 585 he was at Rome, abbot of the Monastery of St. Andrew, which he had himself founded. In 590 he became Pope and for fourteen years administered the see of Rome as none before and few after him. His political responsibilities were no less than his ecclesiastical. His relations with the Lombards, his mission to England, under Augustine of Canterbury, his dealings with the Franks and the Eastern Empire are only some of the larger relations in which he stood with the world of his times.

As connected with education Gregory is in some respects the most important of the Church Fathers of the West, on account of his relation to the *schola cantorum* at Rome, his treatise on *Pastoral Rule*, and his influence upon the study of classical literature. These three points will, accordingly, be discussed in this order. (1) Gregory is the reputed founder of the *schola cantorum*, or Roman singing school, as well as reformer of ecclesiastical singing. Neither statement is strictly true. The fact appears to be that the *schola cantorum* was in reality the *Orphanotrophium* that had been in existence in Rome for two centuries. The principal authority for the connection of Gregory with the founding of the school is John the Deacon, a writer of the latter part of the ninth century, who says that Gregory "founded a school of singers, endowed it with some estates and built for it two habitations, one under the steps of the Basilica of St. Peter, the Apostle, the other under the houses of the Lateran Palace," and

that Gregory gave instruction in the school so founded. Indeed, the chair in which he sat while teaching, and his whip used to maintain discipline, together with the *antiphonarium* from which he taught were preserved in the ninth century. What he did, amounted no doubt, to the refounding of the school by the increase of its endowments and the impetus he gave to the study of singing as well as of other branches in the school. The reason for this increased attention to the training of the young for singers was due to the reform which Gregory carried through in the matter of singing in the divine service, by which singers were specially trained in the school for the service of the altar. Following the example of Rome, singing schools were established in many places as part of the reform in the services of the Church inaugurated by Gregory. They were, however, more than institutes of vocal culture and in them were imparted the rudiments of Latin and reading, necessary for the intelligent performance of the duties of singers. In this way, in cathedrals at least, such schools arose everywhere and were especially ordered by the council of Aix-la-Chapelle 802. (Cf. Hefele, *Concilien Geschichte*, see 409.) These schools are to be distinguished from the schools for the clergy in which higher branches were taught. (See CATHEDRAL SCHOOLS.) As to Gregory's connection with the so-called Gregorian music there is little authentic information. The first mention of a *Cantus Sancti Gregorii* is by Leo IV (847-855). It is probable that the style of music, which was developed at Rome long after Gregory the Great's day, was known as the Gregorian style of music after the great patron of the school, in the same way that the style of music cultivated in the singing school of Milan was known as Ambrosian from St. Ambrose the great bishop of Milan. In later times the interest which Charlemagne took in music made the style of the Roman school everywhere common and the whole system was generally known as Gregorian.

(2) The *Book of Pastoral Rule* may be regarded as Gregory's principal contribution to the theory of education. It is in purpose and form a study of the duties of the bishop as pastor of his flock. When it is recalled to what an extent the moral instruction and training of the times lay in the hands of the clergy and especially the bishops, the significance of a book on such a subject, written by one especially competent for the task, becomes apparent. The treatise is especially concerned with the method of meeting various moral problems that might arise. Its worth was recognized immediately and it at once became very popular. A translation of it was made into Greek by Anastasius, patriarch of Antioch, at the command of the Emperor Maurice. King Alfred (*q v*) translated it into Anglo-Saxon. By Frankish councils under Charlemagne and Louis the Pious, bishops were required to study it with

special care. In the ninth century it even became the custom to give it to bishops at the time of their consecration as a part of the ceremony. In this way it became of universal importance as determining the spirit in which moral training should be undertaken.

(3) Gregory's influence upon the study of classical literature was not helpful and he did much to create the monastic sentiment that the study of heathen writers was incompatible with Christian living. It should be said that while Gregory was well educated technically, he nowhere shows that he had any appreciation for literary beauty, such as Jerome had, and that he had not the slightest conception of literature as an art form. He knew no Greek, for though he had lived for several years at Constantinople, he saw no need of studying it. In his practical spirit there was no place for love of literary excellence. The demands of the times were so urgent, the problems before the Church so tremendous, and the Church so unsupported in withstanding the collapse of all social and moral institutions that for a Christian and especially for a leader in the Church to spend any time on the study of literature as such seemed fiddling while Rome was burning. From this point of view is to be judged the letter of sharp rebuke he wrote to Desiderius, Bishop of Vienne, an enthusiastic student of the classics and a successful teacher of rhetoric and literature. (The letter will be found in the *Epistles of Gregory*, Lib. XI, ep. 54.) It is quite possible that the rebuke was merited, a bishop had something else to do in that period than teach literature, valuable as that teaching might be. But Gregory repeats the old saying that the praises of Jove should not be in the same mouth which praises Christ. For this Gregory merely repeated what had been said before by others. (See CHRISTIAN EDUCATION IN THE EARLY CHURCH.) In his own practice, Gregory did not hesitate to write carelessly and even boasted of his contempt for rules in his dedicatory epistle (*ad Leandrum*) prefixed to his *Moralia* on the book of Job. This contempt for the simple rules of correct style and the condemnation of heathen literature as unworthy of a Christian are undoubtedly to be interpreted from the situation in which Gregory was placed, an exaggerated asceticism and a false conception of the nature of the biblical narrative. But however they are to be understood, their effect was mischievous and lasting. They gave rise to even stronger condemnation by monastic writers who attributed their exaggerations to Gregory and sheltered themselves under his example. (Cf. Gieseler, *Ecclesiastical History*, Am. ed., Vol. I, p. 490.) But it should not be concluded that because Gregory did so condemn literature and literary style that all monks had the same low opinion of literature or the same contempt for grammar. Their condemnation even was in many cases a rhetorical flourish

of ascetic writing, but such cannot excuse Gregory, who was a most downright and straightforward writer.

J. C. A., JR.

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*Realencyklopädie für Protestantische Theologie*, contains a very extensive bibliography  
 See also histories of the Christian Church such as those of Neander, Gieseler, Hergenrother, etc., and histories of Roman and Western Christianity, such as those of Langer (*Geschichte der Römischen Kirche*), Hodgkin (*Italy and her Invaders*), Milman (*Latin Christianity*)

**GRIEFSWALD, THE ROYAL PRUSSIAN UNIVERSITY OF** — The oldest Prussian university, having been established in 1456. It is situated in the province of Pomerania and owes its origin primarily to the Burgomaster, Heinrich Rubenow, an impetus to its establishment having been given by the fact that the University of Rostock (founded 1419) was transferred temporarily to Greifswald (1436-1443). In the earliest days of the institution, the chief emphasis was placed upon the faculty of law, not more than a single chair in medicine being provided for an entire century. After a period of decline it was reestablished on a Protestant basis by Duke Philip I of Pomerania in 1539, and provision was made by him for a stated income. Again during the Thirty Years' War the institution was in constant danger of extinction. In accordance with the terms of the Peace of Westphalia (1648), Greifswald passed into the hands of Sweden, but the arrangements for a satisfactory financial basis made by the last of the Pomeranian dukes were respected by the new Swedish masters. The university struggled on until, in 1809, the property owned by the university was seized by France. The property was restored in 1813, and two years later, when the university was taken over with the rest of *Neuvorpommern* by Prussia, its property and income were left intact, as a result of which policy no contributions from the Prussian States were called for until 1874. This state aid amounts at the present day to about \$160,000 annually.

The progress of the university has been slow but well maintained during the past century. Its medical faculty was especially prominent during the middle of the last century, and its theological faculty is renowned to this day. In 1834 an academy of political science and agriculture was associated with the university, but it was replaced by an agricultural middle school in 1877. A number of new buildings have been erected since the celebration of the four hundredth anniversary of the foundation of the university, including a hygienic institute, a library, and a theological *Studienhaus* (1897).

The library, the beginnings of which go back to the gift of the valuable private collection of Rubenow, contains about 200,000 volumes and 800 manuscripts. Greifswald was the second German university to institute a summer school or series of vacation courses (*Ferienkurse*) in 1893. They have proved quite popular, and annually attract a number of foreign students, special stress being laid for their benefit on courses in German language and literature.

Among well-known former teachers may be mentioned Baum, Bardeleben, and Budge in medicine, Gass, Reuter, and Cremer in theology, Balthasar, Beseler, and Windscheid in law, Ernst Moritz Arndt (*qv*) in history, Oberbeck in physics, and C. W. Ahlwardt in classical philology. During the winter semester of 1909-1910 there were 1058 students (91 women) in attendance, including 101 auditors (51 women). The matriculated students were distributed as follows: theology 118, law 205, medicine 211, and philosophy 423. R T, JR

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#### GRENADA COLLEGE, GRENADA, MISS

—An institution for the education of girls, established in 1851 and now under the control of the North Mississippi Conference. Preparatory, collegiate, music, and art departments are maintained. About ten points of high school work are required for entrance to the college which gives the degrees of A.B. and B.L. on completion of the requisite courses. There is a faculty of thirteen instructors.

#### GRENOBLE, UNIVERSITY OF, FRANCE

—Founded in 1339 by a bull of Benedict XII. It was established under the influence of the University of Naples and there was no faculty of theology. The location and size of the town, however, were not favorable to the successful progress of the university and it had practically disappeared, when, in 1452, the University of Valence was established. It was revived in 1542 and theology was included. But the institution met with no greater success than at the first foundation and in 1565 it was amalgamated with the University of Valence, in spite of much protest and opposition. At the end of the eighteenth century there seemed a probability that the University would be reestablished; but the partial reorganization did not take place until the general establishment of the University of France by Napoleon. In 1805 the faculty of law was

established and with the exception of the years 1821-1824, when it was suppressed, has continued successfully till the present time. Under the July Monarchy the *École préparatoire de médecine et de pharmacie* and the faculty of letters and sciences were established. Finally, the three faculties were organized into a university by the law of July 10, 1896. Under the direction of the *Comité du patronage des étudiants étrangers de l'Université* a special course in French language and literature was established in 1898 for foreigners, and is given throughout the year. There are now three faculties, law, science, and letters, and preparatory schools of medicine and pharmacy. The university maintains a well-attended summer school, mainly in the interests of foreign students who desire to learn French. The enrollment in 1909-1910 was 1156 students.

See FRANCE, EDUCATION IN

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#### GRESHAM, SIR THOMAS (?1519-1579)

—The founder of the Royal Exchange in London and of the Gresham College, London. It is not known to what school Gresham went, but his uncle, Sir John Gresham, converted the mansion house of Holt into a free grammar school in 1546, so that the family was evidently interested in education. At an early age Thomas was sent as a pensioner to Gonville and Caius College, Cambridge. About 1535, on leaving Cambridge, he went as an apprentice to his uncle Sir John, and also became a student of Gray's Inn. Sir Thomas Gresham became the most eminent and most wealthy merchant of his time, and by raising of loans made himself a man of vast political importance. Yet he never lost his interest in literary and academic matters. He first stated the famous economic law which bears his name. He erected his Bourse or Royal Exchange in 1568, and in 1574-1575 he declared his intention to found a college in London for the free instruction of all who wished to attend the lectures. The public orator of the University of Cambridge (Richard Bridgewater) reminded Gresham of a promise he had made to give £500 either to an ancient foundation or a new college at Cambridge. An attempt was made to induce Gresham to give up the idea of a London college, which could not but be competitive to the older universities. In July, 1575, however, Gresham drew up his will, and laid down his bequest for a college to be the "Epitome of a University," and this was carried out on Gresham's death in 1579. His mansion house was, on Lady Gresham's death, to be handed over to the Corporation of London and the Mercers' Company. These

bodies were to nominate seven professors, to lecture, one on every day of the week, on the seven sciences of divinity, astronomy, music, geometry, law, medicine, and rhetoric. The salaries were to be fixed at £50, the purchasing power of which may be put at ten times that amount to-day. The professors were to be unmarried men, and to have rooms allotted them in the house, and free access to the gardens belonging to it. The rebuilding of the Royal Exchange after the Great Fire of 1666, absorbed the large revenues of the Gresham estate and the property available for the college demands, till in 1768 an act of Parliament disposed of it to the government in return for £500 a year — and an obscure room over the Royal Exchange was allotted for the lectures. In 1841 a separate building was erected at the corner of Gresham and Basinghall streets in London; and lecturers are still appointed to deliver courses in music, rhetoric, and divinity. The regulations drawn up in 1597 for the professorships are remarkable. The professors were to remember that the hearers will be “merchants and other citizens”; and therefore their lectures should be adapted to that kind of audience by being eminently practical. The divinity reader had the practical aim placed before him to “endeavor to confirm the truth of doctrine now established in the Church of England, and to refute the adverse party, and with just conscience and circumspection to sift out the true state of every controversy.” Some of the foremost scholars or scientists of their day have held professorships at the college, including Isaac Barrow, Hooke, Petty, and Sir Christopher Wren, and the relations between the college and the Royal Society were intimate. The development of better facilities for higher education in London in the last century has tended to minimize the importance of Gresham College. But the trustees seem to be showing renewed activity and propose to build a new college to accommodate 500 students, remodel the curriculum, and to found scholarships.

F. W.

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**GRESHAM COLLEGE** — See GRESHAM, SIR THOMAS

**GRIMKÉ, THOMAS SMITH** (1786-1834) — Statesman and apostle of common school education in the south; was born at Charleston, S.C., on Sept. 26, 1786, and was graduated from Yale College in the class of 1807. He was active in the organization of free schools in the southern states, and was one of the founders of the Western Literary Insti-

tute and College of Professional Teachers (*qv*), the first educational association organized in the United States. Author of *American Education and Science, Education, and Literature*. He died at Cincinnati in 1834.

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W. S. M.

**GRINNELL COLLEGE, GRINNELL, IA**

— Formerly called Iowa College, a coeducational, nonsectarian institution, established in 1846 by Congregational pioneers in the territory west of the Mississippi River, under the influence of the “Iowa Band,” consisting of six young men from Yale and Andover Theological Seminar. The institution was opened in 1848, and the first class was graduated in 1854. In 1859 an amalgamation was effected with Grinnell University at Grinnell. Women were admitted in 1860.

The institution maintains the usual undergraduate courses in arts and science, and in engineering. A school of music is also provided. Graduate courses lead to the degree of A.M. for one year's work in residence. The undergraduate work leads to A.B. and B.S. The group system was adopted in 1895. There are no college fraternities. Grinnell College is one of the institutions originally accepted by the Carnegie Foundation for the Advancement of Teaching (*qv*). The present corporate title was adopted in 1909. There is a faculty of fifty-seven members. The student enrollment in 1911-1912 was 655. C. G.

**GRIPPE** (French, *la grippe*, the term *influenza* is also frequently used) — A disease due, apparently, to a minute micro-organism — the *influenza bacillus* or Pfeiffer's bacillus — which invades especially the air passages. The relation of this bacillus to the disease is, however, still somewhat in doubt.

The symptoms of gripe are protean, the complications are many, and the after-effects are often serious. The disease seems to be usually spread from one person to another. Pfeiffer's statement is generally accepted: “A development of *influenza bacilli* outside the human body (in earth or in water) is not possible. The spread of *influenza* by dried or pulverized sputum can occur only in a very limited degree. Contagion is usually connected with the fresh, still moist secretion of the mucous membrane of the nose and bronchial tubes.”

It frequently happens that ordinary colds are mistaken for gripe, and many of the so-called cases of gripe are really colds, but as a cold is a germ disease, and the means of preventing both colds and the gripe are apparently much the same, careful differential diagnosis is not as necessary as hygienic protection.

The reason that colds and the gripe are so

prevalent and so serious among school children in many sections of the United States is probably the habit of sleeping in closed rooms and of keeping the schoolroom hot and dry, and the fact that when a child shows symptoms of a cold, instead of being put out of doors he is confined in the house. In many schools, under present conditions, the spread of grippe and colds is inevitable. The one important thing is to use the sovereign preventive and remedy which is always at hand, namely, fresh air. The school should be properly ventilated, and tubercular and anemic children should be taught out of doors, and in cases where children show the symptoms of a cold or grippe, or the like, it would be well to send the child home with a note to the parent from the school physician or nurse, reading somewhat as follows: "Your child ——— shows the initial symptoms of a cold or grippe, or something of this kind. If you can make it convenient to wrap him up warmly, to take care of him out of doors, and have him sleep for one or two nights out of doors or with the windows wide open, the cold air will probably 'effect a cure.' Where there are school physicians or nurses, teachers should always bring children with suspicious symptoms to their attention. Where there are no such officials, it is well to communicate with the parents."

W. H. B.

See COLDs, CONTAGIOUS DISEASES.

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**GRISCOM, JOHN** (1774–1852) — An American Pestalozzian, was born at Hancock Bridge, N. Y., on Sept. 27, 1774, and educated in the Friends' Schools. He taught a district school for some years, and was principal of the academy at Burlington, N. J., from 1794 to 1807. For several years he conducted a private school in New York, and later he was professor in Queen's College (now Rutgers). The years 1818 and 1819 he spent in Europe studying foreign educational institutions and problems. He became keenly impressed with the work of Pestalozzi at Yverdon, and returned to America and became a propagandist of the doctrines of the Swiss educator. Griscom was one of the leaders in both the American Lyceum Association (*qv*) and the American Association for the Advancement of Education (*qv*). He was the author of textbooks on grammar, geography, and physics, but his most important contribution to the literature of education was his *Year in Europe* (1819). This embodied the educational results of his travels and observations in the Old World. Henry Barnard said of this work: "No one volume in the first half of the nineteenth century had so wide an influence on our educa-

tional, reformatory, and preventive measures, directly and indirectly, as this." Griscom died at Burlington, N. J., on Feb. 26, 1852.

W. S. M.

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**GROCYN, WILLIAM** (1446?–1519) — The first scholar to deliver public Greek lectures at Oxford. Educated at Winchester College and New College, Oxford, he became a fellow of the latter in 1467. In 1481 he became divinity reader at Magdalen College, holding several livings at the same time. In 1488 he went to Italy, where he remained about two years studying at Florence under Politian and Chalcondyles. On his return he took up residence at Exeter College, where he delivered the Greek lectures in or soon after 1491. Grocyn belonged both at Oxford and in London to that remarkable center of English Renaissance culture which included More, Linaere, Colet, Lily, and Erasmus. Grocyn left Oxford about 1496, and held a living in London until in 1506 he was presented to the mastership of All Hallows College, Maidstone. Erasmus always referred to Grocyn in very high terms, and once as "the patron and preceptor of us all." Although he had the reputation of being a good Ciceronian stylist, no works of Grocyn's that are of any importance are extant.

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**GRONINGEN, ROYAL UNIVERSITY OF, HOLLAND** — Established in 1614 by the estates of the Province of Groningen, with the faculties of theology, law, medicine, and philosophy. Groningen had been an important seat of learning in the Middle Ages through the school of the Brethren of the Common Life (*qv*) and that at the St. Martin's Church. Toward the end of the seventeenth century the enrollment of students was over 6000, the majority, of course, being Dutch. From that time, however, a decline set in, and at the beginning of the nineteenth century there were only 200 students. With the French annexation this university became an academy of the University of France (1811), only to be reorganized as a royal institution in 1815. Since 1876 the university again began to make great progress. Buildings have been provided by the town. The five faculties are theology, law, medicine, philosophy, and letters. In 1909 the enrollment was 485 students.

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- Minerva, Handbuch der gelehrten Welt*, Vol. I (Strassburg, 1911).

**GROOTE, GERARD** — See BRETHREN OF THE COMMON LIFE.



**GROSSETESTE, ROBERT** (1175–1253) —

One of the most influential scholars, divines, and statesmen of the thirteenth century. Born of humble parentage at Stradbroke in Suffolk-shire, England, he rose to a position of great influence. His early education he may have received at the school of Lincoln, but he certainly studied at Oxford and then at Paris. In 1224 he became lecturer to the Franciscans at Oxford, and throughout his life evinced great interest in the friars, with several of whom he was on terms of great intimacy. His influence on the religious revival as Bishop of Lincoln, a diocese including about one third of England, and the democratic and national movements led by his friend, Simon de Montfort, in England in the thirteenth century, can but be mentioned here. In the field of scholarship his influence was no less, and his opportunity as the first recorded Chancellor of Oxford was unlimited. He was interested in the study of Greek and Hebrew, in Christian antiquity, in physics and mathematics, in music and agriculture. He was a voluminous and versatile writer, and in theology alone he is credited with one hundred and forty-seven *dicta* on questions of doctrine and scripture, between two and three hundred sermons, and sixty longer treatises. In a truly scholarly spirit he always, where possible, went to the sources, and in science employed observation and experiment. He devoted himself to the study of Aristotle, but with an interest in the physical rather than the logical side. He wrote commentaries on the *Sophistici Elenchi*, the *Predicaments*, the *Prior Analytics* and the *Posterior Analytics*, and *Nicomachean Ethics*, the last of which he translated probably with the aid of others. Under his direction and encouragement, Nicholas of St Alban's translated several works, including the *Testaments of the Twelve Patriarchs*. On the scientific subjects he wrote *Summa super VIII Libros Physicorum*, *On the Spheres*, a *Computus* (*qv*), and a *Computus Ecclesiasticus*. But his most important work was the encyclopedic *Compendium Scientiarum*, dealing with most of the then known subjects, and concluding with a chapter on the Unity and Simplicity of Knowledge. The metrical poem on table manners, *Status Puer ad Mensam*, which has been attributed to Grosseteste, is probably of later origin. Grosseteste's influence among his contemporaries is best attested by Roger Bacon (*qv*), an otherwise keen critic, who says "The Lord Robert (Grosseteste) alone . . . excelled all men in his knowledge of the sciences." Of Grosseteste and his friend, Adam Marsh, the Franciscan, he says elsewhere: "They were perfect in divine and human wisdom."

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 STEVENSON, F. S. *Robert Grosseteste* (London, 1899)

**GROTE, GEORGE** (1794–1871) —

Historian, born at Clay Hill, Kent, England. After a short stay at Charterhouse, he entered at the age of sixteen the bank in which his father was a partner. He continued his studies, however, devoting himself mainly to classics and philosophy. At the time of the Reform Bill agitation he ranged himself with J. S. Mill (*qv*) on the side of rationalist individualism. He entered Parliament as the representative for London, and for a time achieved some success. He retired in 1841 from active political life, and in 1843 from business. Always inspired by high democratic ideals, he devoted himself to writing a *History of Greece* as the supreme example of the workings of democratic institutions. The work was planned as early as 1822, but the first two volumes did not appear until 1845, the twelfth and last in 1856. Written with a purpose, this work is marked throughout by the democratic leanings of its author, while on the social and economic side his practical experience served as an excellent basis for interpretation. In 1865 was published Grote's *Plato and the Other Companions of Socrates*. Another work, on Aristotle, was not completed when the author died. Grote took a strong interest in the movement for spreading opportunities for university education, and was President of University College, London, and Vice-Chancellor of the University of London; he also held the position of trustee of the British Museum. He died in 1871, and was buried at Westminster Abbey.

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GROTE, MRS. *Personal Life of George Grote* (London, 1873)

**GROTIUS, HUGO** (1583–1645) —

Statesman, publicist, scholar, and theologian, born at Delft in 1583. He began writing Latin verse at the age of eight, entered the University of Leyden at eleven, and at fifteen began a commentary on Martianus Capella (*qv*), which had the approval of Joseph Scaliger. He took his degree in 1598, and accompanied Olden Barneveldt on an embassy to France, where he was presented by Henry IV with a gold chain. On his return to the Netherlands he began to practice as a lawyer at the Hague, and met with unbroken success. In 1609 he wrote his first work on international law, *Mari Liberum*. In the religious dispute which broke out in the Netherlands Grotius supported the Arminian views held also by Barneveldt, who was condemned to death with the approval of the Synod of Dort in 1619. Grotius was sentenced to life imprisonment, but through the aid of his wife was able to escape in 1622, and fled to Paris, where he was pensioned by Louis XIII. In 1625 he published the most

famous of treatises on international law, *De Jure Belli et Pacis*, and a theological work, *De Veritate Religionis Christianæ*. In 1634 he entered the service of Christina of Sweden as ambassador to France. In 1645 he secured his recall to Sweden and hoped to be able to retire to his native land, since the decree of perpetual banishment passed on him in 1630 seems to have been forgotten. But he was only able to reach Rostock when he died.

Grotius was one of the most remarkable men of his age, and one of the earliest advocates of international peace. He holds an eminent position in each of the four fields of statesmanship, law, theology, and scholarship. As a scholar he is known for his translations from Greek into Latin verse, for annotations to Latin texts, for an unimpeachable Latin style. His work, *Annales et Historiæ de Rebus Belgicis*, is obviously modeled on the work of Tacitus. The *De Jure Belli et Pacis* has been translated into most languages, and on certain points is still regarded as authoritative. His views on the educational equipment of a statesman are concisely stated in the *Epistola ad Benjaminum Maurerum* (1615), a letter written to Maurer, an ambassador of the King of France, who had consulted Grotius on a course of study, presumably for himself. A man in the position of his friend, says Grotius, should be versed in philosophy, both speculative and practical, always bearing in mind that the two are complementary and that both are based on logic. He should study this subject in some simple and short compilation, Aristotle is too prolix. These subjects are to be followed by physics, especially that part dealing with the nature of our soul, and metaphysics, also in some short and concise text. In practical philosophy Grotius recommends the study of ethics and politics, through Aristotle's works and a summary of the best commentaries to be supplied by a secretary. For character studies the works of Euripides, Theophrastus, Terence, Horace (*Satires*), Plutarch, and Seneca should be read, to which might be added the *De Officiis* of Cicero. In politics the statesman should be acquainted with Aristotle, Polybius, Dio, Sallust, Cicero's *Letters* with a commentary by a Roman historian. A knowledge of rhetoric would be acquired through Aristotle, and the public speeches of Demosthenes and Cicero. A study of public law would be made in the *Laws* of Plato and Cicero, Aquinas (*Summa Theologiæ*), *Pandects*, Justinian, and contemporary publicists. Only then would the reader obtain any real advantage from a study of history in which the trend of thought rather than specific details should be followed. In history, says Grotius, it is best to work out from the present to more remote and ancient periods. Any further recommendations or details Grotius leaves to a future meeting. It will be noticed that in this rapid sketch Grotius is by no means ahead of the educational

thought of his time, which sought all training for modern conditions in the works of classical authors. But coming from a man who must have known the needs of his position from his own experience, the *Letter* acquires an increased interest.

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**GROUP CONSCIOUSNESS** — See SOCIAL PSYCHOLOGY

**GROUP GAMES.** — See GAMES; PLAY

**GROUP INSTRUCTION** — The practice of separating the children of a single classroom into groups for the purposes of alternate instruction is called the "group system" of teaching. The group method is characteristic of the ungraded school of rural communities. It is much used in cities, regardless of the fact that the teacher may have only a single grade in his charge. It gives the teacher an opportunity to work with a small number of children at a time, and permits the children to have periods of study while their fellows are reciting. The grouping of children under this plan is not the same for all the subjects, thus providing for large flexibility in adjusting to particular subjects and individuals. The drawing and music might be taught to the whole grade at once, languages and history in two groups, and arithmetic in three. A given child, because of variation in his ability in different subjects, might be taught in the more able or advanced group in history, and in the least efficient group in arithmetic. H. S.

See INDIVIDUAL INSTRUCTION.

**GROUP PLAN OF GRADING** — See GRADING AND PROMOTION

**GROUP SUPERVISION.** — See SUPERVISION OF TEACHING.

**GROUP SYSTEM** — See COLLEGE, AMERICAN (section on Administration of College Curriculum); COLLEGE, GRADING AND PROMOTION, for use of term in American schools.

**GROVE CITY COLLEGE, GROVE CITY, PA.** — Organized in 1876 as the Pine Grove Normal Academy, and incorporated as a college in 1884, reporting to the Presbyterian College Board. Academic, collegiate, and music departments are maintained. The entrance requirements are equivalent to fourteen units of high school work. The degrees of A.B., B.S., and Ph.D. are conferred. A postgraduate department is maintained, leading up to the

## GROWTH

Ph D degree, for which only attendance at two summer schools and work *in absentia* are required. The total enrollment in 1910-1911 was 744. The instructors number twenty-three members.

**GROWTH.** — The question of physiological growth of children is of great importance in education. Up to the present studies have dealt largely with the establishment of normal age standards of growth. Much still remains to be done in correlating growth, attainments and educational progress. During life all the organs of the body undergo important structural and functional changes, and therefore present different characteristics at different ages. The physiological development of the body does not proceed at an equal rate in all individuals, who therefore do not all reach the same physiological development at the same ages, some being accelerated in their development, while others are retarded. The stage of development of the individual may be best observed in those cases in which a noticeable anatomical or physiological change accompanies the attainment of a certain physiological condition. The progress of ossification, the eruption of teeth, pubescence, the beginning of sexual maturity, the eruption of the beard, and in later life the menopause in women, the turning of the color of the hair, the appearance of wrinkles, and the diseases of old age, offer opportunities for observations. All of these show that the uniformity of physiological development is greater in young children than in older individuals. If the distribution of stages of development were a matter of chance, they would increase proportionally to the square root of the age, but the progress of their variability seems to be quite irregular and very rapid. The range of individual differences may be indicated by those ages within the limits of which one half of all the individuals observed attain a certain physiological development. Thus, in one half of all the individuals observed there occurs —

	Years	INTERVAL Years
Birth between the limits of	0.03 and 0.03	0.06
Eruption of the first incisors	0.46 and 0.74	0.28
Eruption of the first molars	1.4 and 1.8	0.4
Eruption of the inner permanent incisors of girls	5.9 and 8.1	2.2
Eruption of the bicuspids	7.1 and 10.9	3.8
Eruption of the permanent canines	10.6 and 12.0	1.4
Pubescence of boys	13.2 and 14.6	1.4
Menarche	13.6 and 16.2	2.6
Eruption of wisdom teeth	20.8 and 23.2	2.4
Menopause	41.0 and 48.0	7.0
Death due to arterial diseases	53.7 and 71.3	17.6

It appears from these data that during school age the individual differences may be measured by a probable variability of about 2.5 years. These data refer only to the develop-

## GROWTH

ment of certain organs, but they are an indication of the variability of the development of the whole body, although nervous, muscular, osseous, etc., systems may each develop somewhat independently of the other. The measurements of children of the same age represent, therefore, individuals of different physiological developments; and these differences are the greater, the older the children. From this observation, and from the fact that during school age the variability of the stage of development remains about the same throughout, the conclusion must be drawn that during this time the individual differences in measurements, structural and functional traits, must be the greater the more rapid the rate of development and growth. Almost all measurements indicate that the rate of absolute growth of the organism is greatest at the time of birth, and shows a rather rapid decrease until the ninth year in girls and the eleventh year in boys. During the period of adolescence the rate of growth increases very much, and reaches a maximum, for girls about the twelfth year, for boys about the fourteenth year. After this the rate of growth decreases rapidly, and the skeleton has attained its full length with about seventeen years in females, with twenty years in males. Growth of muscles continues several years longer, and fat is added for many years. The central nervous system also continues to grow and develop. Owing to these conditions, the variability of anatomical, physiological, and probably also mental conditions of children is greatest during the period of most rapid growth, for girls of about twelve years, for boys of about fourteen years. These characteristics of growth have been observed for stature, weight, length of trunk, length of limbs, and measurements of the head.

Nevertheless the measurements of each organ exhibit characteristic features. Thus during childhood the limbs grow more rapidly than the trunk; the total amount of the growth of the head from birth until the adult stage is relatively small, the principal part of the development being completed before birth. The following table shows the amount of growth in stature, width of face, and length of head, from the fifth year to the adult stage, in per cent of the final size —

	MALES Per cent	FEMALES Per cent
Stature	37	33
Width of face	16	15
Length of head	9	7

The annual increments for various measurements, obtained from long series and various types, show the following values (in millimeters) —

## GROWTH

## GROWTH

AGES	MALES			FEMALES		
	Stature	Length of Head	Width of Head	Stature	Length of Head	Width of Head
5-6 . .	56	1 5	1 3	57	1 1	0 9
6-7 . .	53	1 1	1 0	54	0 9	0 9
7-8 . .	50	1 2	0 9	52	1 1	0 7
8-9 . .	48	1 0	0 6	49	1 9	0 6
9-10 .	46	0 9	0 7	50	1 2	0 7
10-11	44	0 8	0 6	53	1 2	0 7
11-12	45	1 0	0 7	59	1 4	0 8
12-13	53	1 2	0 6	62	1 3	0 7
13-14	64	1 5	0 9	48	1 3	1 0
14-15	73	1 6	0 9	30	0 3	0 4
15-16	54	1 6	1 0	15	0 3	0 1
16-17	37	1 6	0 8	8	0 2	0 0
17-18	24	1 0	0 6	4	0 6	0 2
18-19	14	0 8	0 3	1	0 1	0 3
19-20	7	0 9	0 4	—	0 0	0 2
20-21	3					
21-22	1					

The absolute measurements for New England school children are as follows —

## MALES

Age	Stature	Height sitting	Weight	Length of Head	Width of Head	Length of Fore-arm	Width of Hand
6	1129	622	45 7	178 2	140 7	309	58
7	1179	642	49 7	179 6	142 1	319	60
8	1228	663	54 1	180 1	143 6	331	62
9	1278	685	59 4	181 2	144 0	344	65
10	1329	711	65 8	181 7	144 5	359	67
11	1374	727	71 3	183 4	144 6	373	69
12	1426	748	87 4	183 3	145 6	387	71
13	1479	771	86 9	185 2	146 8	405	74
14	1546	806	98 2	187 2	146 9	427	78
15	1620	842	113 8	188 3	148 1	445	80
16	1660	866	122 6	190 8	149 2	454	83
17	1686	885	132 7	191 6	149 5	—	—

## FEMALES

Age	Stature	Height sitting	Weight	Length of Head	Width of Head	Length of Fore-arm	Width of Hand
6	1120	616	43 8	173 1	138 0	304	58
7	1171	639	47 9	174 7	139 1	315	58
8	1221	660	51 9	175 0	140 3	328	60
9	1270	680	58 0	176 3	140 2	337	62
10	1330	705	64 1	177 8	142 1	357	65
11	1372	726	70 0	178 2	142 1	370	67
12	1443	758	81 0	180 0	143 2	382	70
13	1490	788	89 7	181 7	144 0	407	72
14	1539	815	100 6	182 5	144 0	413	74
15	1569	835	106 2	184 3	145 4	427	74
16	1572	840	108 7	183 7	144 6	422	74
17	1591	853	114 6	184 8	145 2	—	—

It appears from these data that the following relations prevail between the two sexes: stature, length of trunk and of leg, and weight, of girls are smaller than the corresponding measurements of boys until the period of prepubertal acceleration, which sets in earlier in girls than in boys. As soon as this period begins, about the eleventh year, the measurements of girls exceed those of boys. With the fourteenth year the period of acceleration of the growth of

girls is passed, while the corresponding period begins for the boys, who from now on exceed the measurements of girls considerably. Length and width of head of girls are always smaller than those of boys of the same ages, and the same is true of the size of the face. At the same period, when the total stature of girls exceeds that of boys, the girls show an approach of their head measurements to those of boys, without, however, reaching them. In accordance with the more rapid rate of growth of the body as compared to that of the head, the ratio between head and body shows a constant decrease during the period of growth. The ratio is less in girls than in boys until the fifteenth year, when the continued rapid growth of the boy's body begins to depress this ratio under the value attained by the girl. The ratio between the length of the trunk and stature decreases until the thirteenth year among girls, until the fifteenth year among boys. Later on it increases again. Until the thirteenth year this proportion is about the same in both sexes. After this period the trunk of the girl is relatively longer than that of the boy. The face of girls as compared to the head is larger than that of boys, while the long-continued growth of the face of boys brings about a reversal of these relations after the sixteenth year. The cephalic index (ratio of length and width of head) shows a slight decrease during the period of growth. The head of girls is a little more rounded than that of boys. The width of hips is smaller among young girls than among boys of the same age, but it is ultimately much larger than the corresponding measure of men. All transversal diameters and circumferences continue to grow slightly for a long period.

Owing to the rapid increase of the rate of growth during adolescence, and its later still more rapid decrease, the distribution of the amounts of annual growth is very asymmetrical. For instance, among boys eighteen years old, many do not grow at all, while others show the characteristic rates of growth of boys fifteen, sixteen, and seventeen years old. The asymmetry of distribution of annual growth makes also all the series of measurements of statures, weights, etc., asymmetrical. The correlations between the various measurements are greatest during periods of rapid growth, owing to the fact that retardation and acceleration affect all the parts of the body at the same time, although not all to the same extent.

Little is known about racial differences in growth. All the series that have been taken show the same essential characteristics here described, but it may be that the periodic distribution of lesser and greater energy of growth is not quite equal in different races. It would be of great importance to investigate the question of early arrest of development of some races. This phenomenon, which might perhaps be correlated with an early arrest of

mental development, has often been claimed to exist in the negro race, but no satisfactory proofs have been given. We do not know whether there is an earlier arrest of growth of the brain, earlier synostosis of sutures, and earlier arrest of post-pubertal development of the central nervous system. On the whole, all investigations that have been made tend to show that racial differences are present in young children, although not so markedly as in the adult, and that they increase in intensity in the course of growth. They become more marked in the male than in the female.

A considerable amount of information has been accumulated in regard to the influence of environment. It has been shown particularly that better economic conditions bring about a more rapid and also a greater development of the body than occurs under less favorable conditions. Among the poor the period of diminishing growth which precedes adolescence is lengthened, and the acceleration of adolescence sets in later. Thus the whole period of growth is lengthened, but the total amount of growth during this longer period is less than the amount of growth attained during the shorter period of growth of the well-to-do. Therefore we find throughout that a young child which grows slowly will continue to grow slowly until the period of adolescence sets in. Afterwards the child that has grown slowly during the early years of childhood will grow rapidly. It is not certain to what causes these phenomena must be ascribed,—whether, for instance, climatic conditions affect the period and total amount of growth. There is some evidence favoring this opinion, but no definite data are available. It is generally assumed that nutrition exerts a direct effect upon growth. This is true in so far as underfeeding diminishes growth, but it seems plausible that in the bulk of our population the better development of man in modern times is less due to better nutrition than to the fact that hygienic conditions of childhood have improved. These are expressed in a lessened infant mortality. It seems plausible that, with the diminution of the number of diseases that attack the individual, and the consequent elimination of their retarding influences, growth suffers less interruption, and that thus the final bulk of the body is increased. The differences between social classes are great. In American cities they are partly due to differences in the racial composition of the well-to-do and the poor, the latter group containing a larger proportion of immigrants, but in Europe they occur among groups of almost the same descent. The differences between these groups are partly due to a general retardation and acceleration; so that during the period of growth, the whole group of the poor are at any given time physiologically younger than the well-to-do. For this reason the differences between social groups seem to be greatest during the period of most rapid growth.

Other causes for differences of development lie in the size of family, urban and rural environment, and other causes whose mode of action is not by any means clear. According to some authors, natural selection plays an important part in these apparent changes which develop in the series of observed individuals, but weighty reasons speak against the acceptance of this theory, particularly observations on differences in type between parents who have grown up under one environment and their children who have grown up in a different environment.

Through the investigations of Porter and Crampton it has been shown that retardation of physical development is closely associated with retardation of progress in school. To the same causes which keep back the physical development of the child must be partly due its late entrance upon school life and its slow promotions. Children who are older than the average age of their grade are therefore, on the whole, physiologically retarded children, and those who are younger are, on the whole, children accelerated in physiological development. These observations make it plausible that the assumption which has been made so frequently—that a period of slow development of the body is correlated with a period of rapid development of mental faculties, and vice versa—is not correct, but rather that rapid physical and mental development go hand in hand. If during the period of rapid growth the child has to be guarded against overexertion, both mental and bodily functions are equally concerned. The close correlation between the two emphasizes the need of proper care of body and mind.

The study of growth has been applied extensively to the work of school gymnasiums, and as a result of this work numerous tables of so-called normal growth have been published. On the whole, the results of these studies have shown that temporary practice of the body may result in a temporary strong development of parts of the body, that, however, the greater part of these results is quickly lost as soon as practice is given up.

The methods of anthropometrical work have been developed in school and college gymnasiums and similar institutions, but also by students of anthropology. The instruments used are not very complicated, and are made and sold by the makers of gymnasium appliances and by large dealers in surgical instruments. On the whole, advancement of anthropometrical work has not been commensurate with the time and energy bestowed upon it, because no adequate provision has been made for its statistical discussion. A considerable number of tables of averages and of "percentile grades" have been published, in which the measurements of each individual are so placed that the per cent of individuals of the whole series are given who have lower values of the measure-

ments than the individual in question, and it is then assumed that he should be in all respects on the same percentile grade, — an assumption that is entirely inadmissible. By far the greater number of data relating to growth have been obtained by a study of a large number of children of various ages, the so-called generalizing method. Only limited series are based on repeated measurements of the same children, the so-called "individualizing method." F B

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**GROWTH, PHILOSOPHICAL CONCEPT OF** — See DEVELOPMENT, EVOLUTION

**GRUBE METHOD** — Grube (1816-1884) published his method of teaching arithmetic (*Leutfaden für das Rechnen*) in Berlin in 1842. It was a small manual, of no particular originality or merit, but on account of the translations made by Soldan (1878) and Seeley (1891) it became an object of interest a generation ago in the United States. Grube used the "concentric circle" idea of teaching number, a phase of the spiral method (*qv*), but it was not original with him, having been suggested by Krancke as early as 1819. The idea of the concentric circle arrangement is that the child should master all number relations within the circle 1-10, then those within the circle 1-100, then within the circle 1-1000. Grube also carried the use of objective work far beyond the point where it ceased to be helpful, thus weakening rather than strengthening the number concept. He also attempted to teach the four processes simultaneously, unmindful of their difference in difficulty and importance. The result was that his method was mechanical and uninteresting, serving its chief purpose in leading many American teachers to consider with greater care the early stages of arithmetical work. It illustrates the ease with which a narrow method can be created, and the danger that arises from following such a method.

D E S

**GRUNDTVIG, NIKOLAI FREDERIK SEVERIN** (1783-1872) — Danish historian,

poet, divine, and statesman, of great importance in the history of Danish education as the inspirer and founder of the People's High Schools (*Folkehøjskoler*), and thus of the revived nationalism of the country in the last century. Influenced by a visit to England in 1829-1831 and a study of the works of Fichte, Grundtvig devoted himself to uplifting the people, who were suffering under material and intellectual depression. He saw the only remedies in a revived patriotism and a living religion. In his *Brief Writings on the Historical High School* he attacks the Latin schools of his day as "schools for death," as he characterizes them, and pleads enthusiastically for people's high schools or "schools for life." Training was already provided for all kinds of professions; the new schools should train Danish citizens. Taking as the basis of these schools the *Royal Resolutions* of 1847, which he inspired, he proposed the establishment of institutions where peasants and artisans could receive an education in the mother tongue, national songs and the national history, mythology and folklore. Above all, instruction was to be oral, for the living word is of greater value than book learning, which is deadening. Intercourse between leaders of such schools and the students was to be free and democratic, for patriotic, self-respecting, loyal citizens were to be the outcome. In addition to this cultural education some insight was to be given into the constitution, economic resources, and industries of the country, with personal contacts so far as possible.

The first school opened under the influence of Grundtvig was opened in Rodding by Professor Chr. Flor in 1848, but the present system received its impetus from the school established by Kristen Kold with Grundtvig's assistance at Ryslinge in Fühnen in 1851, until at the present time they are spread over all the Scandinavian countries, and have representatives in America.

See DENMARK, EDUCATION IN

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**GUADELOUPE** — See FRENCH COLONIES, EDUCATION IN

**GUAM, EDUCATION IN** — The island of Guam, situated at the southern extremity of the Ladrone Archipelago, was ceded by Spain to the United States on Dec. 10, 1898, and on account of the convenient harbor affords a desirable naval station. By direction of the

President, the naval commander at that port assumed the government of the island. According to a census taken in 1901, the population was 9676 (4566 males, 5110 females). They comprised original inhabitants, called by the Spaniards *Chamorros*, *Tagal* settlers, and mixed people of Spanish and native ancestry. Nearly all the inhabitants could speak the Spanish language, and about 35½ per cent could read and write Spanish. They lived, as a rule, in small towns, which are said to have been in very neat condition. The American commandant at once issued orders for the government of the island, confirming such Spanish laws as did not conflict with those of the United States, and shortly after the new order of things was established, three schools were opened in the capital, Agaña, for teaching English, under the superintendence of Mr H. H. Hiatt. Similar schools were soon started in other towns, especially Asan and Agat, the non-commissioned officers of marines ably seconding the efforts of the superintendent. A circulating library was also established in the capital. The first general order relating to education issued by the commandant, bearing the date Jan. 22, 1900, placed the schools under government control. Attendance was made compulsory for the ages of eight to fourteen. Sectarian instruction was prohibited, and it was required that the English language should be the medium of instruction as rapidly as the necessary teachers could be secured. The recent progress and status of the schools are shown by the following statistics from reports made to the United States Navy Department. —

STATISTICS PERTAINING TO GOVERNMENT SCHOOLS

YEAR OF REPORT	NO. OF CHILDREN OF SCHOOL AGE	ENROLLMENT			NO. OF TEACHERS	TOTAL EXPENDITURE
		BOYS	GIRLS	TOTAL		
1908	1392	896	692	1588	33	
1909	1471			1572	35 <sup>1</sup>	\$7335
1910	1730	977	813	1790	53	8142

<sup>1</sup> Native teachers only.

On the enrollment above given an average attendance has been maintained ranging from 96 per cent in 1908 to 95.6 in 1910. The number of teachers reported in 1910 includes enlisted men detailed for the schools in outlying villages, and eleven laborers from the commandant's office. During the year a building for school purposes was constructed at Agaña, at an expense to the island treasury of \$2600. This increased accommodation will enable full-day sessions to be maintained for both boys and girls. Unfortunately, on account of the anticipated decrease in the revenues of the island, it has become necessary to drop a number of

teachers for the new fiscal year. The natives seem anxious to learn, and competent teachers are especially needed to introduce manual training. A. T. S.

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**GUARINO, BATTISTA** (1434-1513) — Renaissance scholar, son of Guarino Veronese (*qv*), in whose school he gained such proficiency in learning as to be appointed professor of rhetoric at Bologna at the age of twenty-one. On the death of his father he was appointed to succeed him. Battista has left a brief account in the form of a letter to a pupil of the educational ideals and system of his father. In this work *De Ordine Docendi et Studendi* (*Concerning the Order and the Method to be Observed in Teaching and in Reading the Classical Authors*, 1459), the pursuit of letters is accepted as the most worthy object of ambition, and the educated gentleman is he who is familiar with Greek and Latin literature. The first point emphasized is the choice of a teacher who must be well bred, and, of course, a scholar. Corporal punishment should not be employed, but rather emulation and rivalry, for which purpose boys should be paired off. From the beginning perfect enunciation must be insisted on. Grammar should be taught by practical examples and drill, and should include prosody and rhythm. Greek and Latin should be taught side by side. It is interesting to compare the arguments employed for the study of Greek with those now employed by the extremist for the retention of classics. While great stress is laid on rhetoric and style, Guarino does not exclude broad reading for content, especially in history and geography, but the aim of these studies, as of philosophy and ethics, is to illuminate the references which occur in the readings. As compared with the later Ciceronian movement, the statement may be noticed that "distinction of style is the fruit of a far wider field of study" than the *Letters* of Cicero. Other valuable suggestions are the keeping of commonplace books (*qv*) and of reading aloud as an aid to clear enunciation and memory. Lastly, there is the testimony that from his father's Academy "proceeded the greater number of those scholars who have carried learning not merely throughout Italy, but far beyond her borders."

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**GUARINO DEI GUARINI, DA VERONA, or VERONESE** (1374-1460) — One of the early humanist scholars and teachers. He studied in turn at Padua, Venice, and Florence.

## GUATEMALA

From 1403 to 1408 he was in Constantinople as a *famulus* in the house of Chrysoloras, the famous Greek teacher, and studied mainly under the son of Chrysoloras. On his return he opened a school at Florence, where he met with success, but in 1414 he moved to Venice, where he taught Vittorino (*q v*) Greek and entered into a lifelong friendship with him. In 1418 he was called to Verona as professor of rhetoric, and in 1429 came the invitation from Niccolò d'Este of Ferrara to act as tutor to his son, Leonello. He was permitted, as Vittorino was, to take additional pupils, day students and boarders. The presence of Guarino attracted many distinguished scholars from all parts of Europe to Ferrara, so that in 1436 the municipality appointed Guarino civic professor of rhetoric, and in 1442 obtained the rights to establish a university. Guarino continued his studies until the end of his long life. He was an eager collector of manuscripts, and on his return from Constantinople he brought back some fifty Greek Mss., and later he collected or had transcribed numerous Latin Mss. Among his writings were an elementary Latin grammar (*Regulæ Guarini*), which was widely used, and many translations, including an abridgement of Chrysoloras' *Erotemata*, and parts of Lucian, Isocrates, Plutarch (fifteen of the *Lives* and *περὶ παιδων ἀγωγῆς*), and the whole of Strabo. As a schoolmaster his aim was avowedly eloquence and scholarship (*vir bonus peritus docendi*). He divided the studies into three stages: (1) elementary, including reading Italian, Latin, and grammar, (2) grammatical, including formal grammar, and reading of the classics for content and style, Greek and Latin being taught side by side, and (3) rhetorical, consisting mainly of Cicero and Quintilian for style and composition. Guarino's educational ideals are set forth in a letter to his pupil Leonello d'Este and in the *De Ordine Docendi et Studendi* by his son Battista Guarino (*q v*).

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**GUATEMALA, EDUCATION IN**—The republic of Guatemala was established Mar. 21, 1847, and the present constitution was adopted in December, 1879, but it has since been repeatedly modified. Under the direction of the president, who is elected for six years, public affairs are administered by the heads of six departments, one of which is charged with public instruction. The population of the state is nearly 2,000,000, about 60 per cent being pure Indians, and the larger proportion of the remainder half castes. In the country at large, the population of pure European ancestry is very small, but in the capital, Guatemala la Nueva, they form about five sixths of the total

## GUATEMALA

(125,000, in 1906). The prevailing religion is Roman Catholic, but complete religious liberty is guaranteed.

Public elementary schools are free, and parents are obliged by law to secure the instruction of their children, but with choice between public and private agencies. Public schools are under government inspection, and are maintained partly by local funds and partly by appropriations from the general treasury. In 1909 there were 1330 elementary schools, with 51,820 pupils, an increase over the corresponding totals for 1907 of 68 schools and 7580 pupils. The 1330 schools reported in 1909 include 174 attended by both boys and girls, thirty-one night schools, and four practical schools for boys and three for girls. In the latter schools training for trades or industries is combined with ordinary subjects and with special instruction in morals and hygiene. The Minister of Public Instruction, in his latest report (1909) dwells upon the admirable results of this class of schools, which promise, he believes, rapid increase in numbers.

In addition to the elementary schools, there is a national secondary school for boys, *Instituto Nacional Central de Varones*, a corresponding school for girls with a normal department, and a national normal school for men with a secondary department, all at the capital. At Quezaltenango there is a secondary school for boys, and at Chiquimula one secondary school with a normal department for young men, and a normal school for young women. In 1909 1202 students (758 boys and 444 girls) were enrolled in these secondary and normal institutions. The number of students in the normal school and in normal departments included in the foregoing total was seventy-one. In addition to the public schools and institutes, the chief cities are well supplied with private schools.

Higher education is represented by a school of law with 49 students in 1909, and a school of medicine and pharmacy with 135 students (94 medicine, 41, pharmacy). The school of engineering was temporarily suspended pending the erection of new buildings for the military school, of which it will hereafter be a part. There are also at the capital a national school of handicraft for women, a national conservatory of music, and a school of art. The national library contains about 20,000 volumes.

The public appropriation for education in 1909 amounted to 2,526,015 pesos (\$885,146), which was a little less than 7 per cent of the total appropriation for all purposes. A. T. S.

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**GUERNSEY, ELIZABETH, COLLEGE.** — See GRAMMAR SCHOOLS, ENGLISH, COLLEGE, ENGLISH; PUBLIC SCHOOLS

**GUIANA, EDUCATION IN** — British Guiana, with a population of 304,000 in 1909, had 223 public schools, attended by 33,888 pupils. These schools were supported in part by local funds and in part by government grant, amounting in the year named to £25,274 (\$116,370). The wealthy residents of Georgetown, the capital, and the owners of the rich sugar estates employ private tutors for their children or send them to private schools.

Dutch Guiana has a population of about 81,000 exclusive of negroes, and in 1909 reported twenty-three public schools with 2580 pupils and thirty-seven private schools with 4993 pupils. There are also boarding schools maintained by the religious denominations, Roman Catholic, Moravian, etc. A T S

**GUIANA, FRENCH** — See FRENCH COLONIES, EDUCATION IN.

**GUIDANCE, LABOR** — See VOCATIONAL GUIDANCE

**GUIDANCE, VOCATIONAL** — See VOCATIONAL GUIDANCE

**GUILDS AND EDUCATION** — See GILDS AND EDUCATION

**GUILFORD COLLEGE, GUILFORD, N C.** — A coeducational institution founded in 1837 by the North Carolina Yearly Meeting of Friends as the New Garden Boarding School, and re-chartered in 1888. Preparatory and collegiate departments are maintained. The entrance requirements to the freshman class are equivalent to about twelve points of high school work. Degrees of A B and B S are conferred. The faculty consists of fourteen members.

**GUILFORD, NATHAN** (1786-1854) — Lawyer and legislator, active in the establishment of the common school system in Ohio, was graduated from Yale College in 1812. He was for a few years principal of a classical school at Worcester, Mass., and then engaged in the practice of law in Ohio. As a member of the Ohio legislature he was active in the enactment of the first general school law (1821). From 1818 to 1825 he published *Solomon Thrifty's Almanac*, the forerunner of such publications in the United States, extensively used between 1825 and 1850 for the spread of doctrines of common school education. Guilford's almanac contained the calendar, the "weather" predictions, astronomical changes, advice to farmers, and on every page something about the value of education and the need of common schools in Ohio. He was also the author of an arithmetic and a spelling book. W. S. M.

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**GUINEA, FRENCH.** — See FRENCH COLONIES, EDUCATION IN

**GUIZOT, FRANÇOIS PIERRE GUILAUME** (1787-1874) — French historian, man of letters, orator, and statesman, and member of many French academies. He was minister of public instruction from 1832 to 1837, except for brief intervals in 1834 and 1836. Under his ministry the whole scheme of primary instruction was entirely reorganized, higher primary schools were established, the departmental normal schools were put upon an entirely new basis with more effective control by the central authorities; the office of primary inspector was created, and a fresh and lasting impetus was given to the cause of popular education. His circulars to prefects, rectors, inspectors, and teachers form a veritable treatise on education. These were still further reinforced through the columns of the *Manuel général de l'instruction primaire*, which he established with the view of keeping the teachers in touch with the newer educational methods. Among the better known of his historical works are: *Histoire générale de la civilisation en Europe depuis la chute de l'empire romain jusqu'à la révolution française* (1828), *Histoire générale de la civilisation en France depuis la chute de l'empire romain* (1830), *Histoire de la révolution d'Angleterre*. F E F.

See FRANCE, EDUCATION IN

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**GUMMERE, JOHN** (1784-1845). — A leader in secondary education among the members of the Society of Friends, was principal of Friends' schools in New Jersey and Pennsylvania for forty years. He was at the head of the school at Haverford, which later became Haverford College (*qv*), he was active in the American Philosophical Society (*qv*), and was the author of works on *Surveying* (1814) and *Astronomy* (1822). His brother, Samuel R Gummere (1789-1866), was principal of a school for girls at Burlington, N.J. (1821-1837), and the author of a *Geography* (1817), *Spelling Book* (1831), and work on *Elocution* (1857). W. S M.

See FRIENDS, EDUCATIONAL INFLUENCE OF SOCIETY OF

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**GURNEY, M.** — See WOMEN, EDUCATION OF.

**GUSTATORY SENSATIONS** — Sensations derived through the organs of taste. There are four qualities of such sensations; namely, bitter, sweet, sour, and saline. To these four qualities are sometimes added two others, which are, however, of doubtful character, namely, metallic and alkaline. Different parts of the tongue have different susceptibilities to these qualities. Thus the tip of the tongue receives sweet tastes more easily than others, while the back of the tongue is more sensitive to bitter.

C. H. J.

**GUSTAVUS ADOLPHUS COLLEGE, ST PETER, MINN** — See LUTHERAN CHURCH, EDUCATIONAL SYSTEM OF, IN UNITED STATES

**GUTHRIE, THOMAS** (1803–1873) — Scotch preacher and philanthropist, born at Brechin. At the age of twelve he entered Edinburgh University, where he studied for ten years, first taking a general course, then theology and medicine. This he followed up by study at the Sorbonne in Paris, where he took up natural philosophy, chemistry, and anatomy. He was ordained in 1830, and very soon came into prominence as an influential preacher. When located in Edinburgh, he devoted himself to social work and established savings banks, Sunday schools, and education. His work in the last field gives him a place of importance in the history of British education. Guthrie disclaims the title of founder of Ragged Schools (*qv*) in Scotland, giving the credit to the Sheriff of Aberdeen, Mr. Watson. However that may be, it is certain that by his writings Guthrie did more than any other man to spread the idea of the Ragged Schools (*Pleas for Ragged Schools*, 1847–1849). His work among the poor had opened his eyes to the fact that while the provision made in poorhouses, hospitals, asylums, and free schools reached a large majority of the population of Edinburgh, nothing was done for the very lowest classes — the shiftless, drunken, immoral beings who drove their young children on the streets to beg and steal. For the adults Guthrie was not so very much concerned, except that he strongly advocated a limitation on the facilities for obtaining drink, but the young must be taken in hand, for prevention is better than cure. These children needed food and clothing first and education afterwards, hence the need of special schools, or Ragged Schools, to deal with them. These schools were to find food and shelter, to bring back the poor waifs by sound religious education, and to fit them for some vocation by industrial training. Such a system would not add to national expenditure, but would reduce the cost of maintaining police, courts, magistrates, jails, and penal settlements. The "Original Ragged Schools" were established in Edinburgh in 1847, and spread rapidly to other Scotch towns, and in his *Third Plea* (1860) Guthrie was able

to report the disappearance of juvenile beggars and a decrease in juvenile crime, and to point to respectable mothers and fathers who had been reclaimed by the Ragged Schools. No better testimony to the affection in which Guthrie was held can be pointed to than the remark made by a girl at his funeral, "He was all the father I ever knew." Guthrie edited the *Sunday Magazine* from 1854 to his death, and contributed frequently to *Good Words*.

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**GUTS MUTHS, JOHANN CHRISTOPHER FRIEDRICH** (1759–1839) — Physical educator; was born at Quedlinburg and obtained his early education in that town, studied theology, mathematics, physics, history, and modern languages at the University of Halle for three years, became private tutor in the family of a physician, and in 1785 accompanied two sons of the latter to Salzmann's school at Schnepfenthal, where he remained in active service as a teacher until a short time before his death. Guts Muths took charge of the boys daily and led them in foot races, vaulting, jumping across a ditch, jumping for height, forced marches, throwing at a mark, estimating with the eye the distance from one place to another, walking on the thin edge of a plank, lifting with a staff a weight moved nearer or farther from the hands according to one's strength, skating, swimming, sliding, etc.

He kept accurate records of each boy's progress from week to week. To the most diligent and proficient boys he taught riding on horseback, and the use of firearms. He also paid much attention to matters of diet, clothing, personal cleanliness, and ventilation of sleeping and study rooms. He encouraged walking, work in the garden, and other outdoor activities. Guts Muths exerted a powerful influence on the development of physical education, by his fifty years of teaching and by his writings on the subject.

His two most important books are: *Gymnastik für die Jugend, enthaltend eine praktische Anweisung zu Leibesübungen. Ein Beytrag zur nothigsten Verbesserung der körperlichen Erziehung. Spiele zur Übung und Erholung des Körpers und Geistes, für die Jugend, ihre Erzieher und alle Freunde unschuldiger Jugendfreuden. Gesammelt und praktisch bearbeitet von Guts Muths, Erzieher zu Schnepfenthal* (1796). These two books passed through several editions, and have been translated in many languages. They were the first modern manuals on the subjects of gymnastics and play.

G. L. M.

For the influence of Guts Muths on the development of gymnastics, see GYMNASTICS, GERMAN

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- Guts Muths 1793-1893. *Die Kupfer und Einiges vom Texte der ersten Turnunterrichtsbücher der Welt, "Schnepfenthal 1793" Mit einer turngeschichtlichen Einleitung* (Leipzig, 1893)

**GUYAU, JEAN MARIE** (1854-1888) — Poet, philosopher, and sociologist, who in a short life of thirty-three years made some valuable contributions to knowledge. When only nineteen he was crowned by the Académie des Sciences Morales et Politiques for his work, *Mémoire sur la Morale utilitaire depuis Epicure jusqu'à l'École Anglaise* (1874). Until his health broke down completely he taught philosophy in the Lycée Condorcet. In his many philosophical works he emphasized the practical and the social as the best standards of criticism. Philosophical problems should accordingly be stated in terms of society. It is from this point of view that his chief pedagogical work, *Education et Hérité* (1887) was written. "Man being made to live among men," he writes, "we cannot go too far in the process of moulding the child for social life." The title of this work is somewhat misleading, for very little attention is given to heredity beyond a brief inquiry into the instinctive equipment of the child on which the educational process may be built up. Guyau offers some sound criticism of the French system of examinations, and gives a comparative sketch of secondary education in England, France, and Germany, and also draws illustrations from American practice for the training of initiative. He accepts the definition of education as harmonious development, and discusses the place of physical, moral, civic, and intellectual education. On instruction he says "teaching must never be a matter of memory, erudition, or pure knowledge, but rather of intellectual, moral, and civic training." In the earlier part of his book he devotes some attention to suggestion as a method of training in right habits. The work on the whole is a valuable appendix to Spencer's *Education*. Guyau also wrote a series of textbooks for use in elementary schools for children from five to eleven, dealing with moral instruction. *L'Année enfantine*, *L'Année Préparatoire*; *la première Année de Lecture Courante* (*Education, Instruction, Civisme*, one volume for pupils and one for teachers). Two readers on the basis of the reading-writing method were also written by him (*Méthode Guyau*, *La Lecture facilitée par l'Écriture*). Among his philosophical works may be mentioned *La Morale anglaise contemporaine*, *L'Irreligion de l'Avenir*, *L'Art au point du Vue sociologique*. His best known poetical work is the *Vers d'un Philosophe*.

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**GUYOT, ARNOLD HENRY** (1807-1884) — Geographer, born at Neufchatel, Switzerland, on Sept 28, 1807. He was educated at the College of Neufchatel and the University of Berlin. He was for ten years professor of physical geography in the college at Neufchatel, and came to America in 1848. For six years he was employed by the Massachusetts State Board of Education as lecturer on geography in the state normal schools at Westfield, Framingham, Bridgewater, and Salem. He was professor of physical geography at Princeton University from 1854 to 1884. He was greatly influenced by Karl Ritter during his studies in Germany, and he brought to America the first rudiments of geography as a science. The textbooks of Guyot were the first to present the study of geography as a science to the English-speaking world. His works include *Earth and Man* (1849), *Geographical Teaching* (1866), geography textbooks for elementary and secondary schools, and many maps and charts. W. S. M.

See GEOGRAPHY, TEACHING OF

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**GUYOT, THOMAS** — See PORT ROYALISTS

**GYMNASIUM** — Originally applied to the exercise ground or public training school maintained, as for example, at Athens, not only for the ephebi, but for all men of military age, this term by a process of transference came to be used in the sense now usually attached to it, i.e. an institution for higher education. (See GREEK EDUCATION, under the caption Educational Practice.) Though the gymnasium was free, the teachers and trainers in gymnastics were paid, and as the poorer citizens had to earn their own living, the Athenian gymnasium, like the modern university, came to be chiefly frequented by the well-to-do. There being plenty of leisure between the exercises, and the spectacles attractive, the gymnasia tended to become fashionable lounges, in which the leisured class spent a large portion of its time. The older men naturally became spectators and critics rather than active performers. Among them developed the walking and talking clubs, which were the origin of Greek schools. Here the Sophists met and discussed the laws

of nature and of art, and practiced intellectual as well as physical culture. In the suburban gymnasium, called the Academy (*ἀκαδημία*) after the local deity or hero Academus, the sophist Plato started his discussion forum, or courses of free lectures, which, when at his death he devised his neighboring house and garden to his pupil, Speusippos, developed into an endowed University College. Hence our modern Academies (*qv*). In another gymnasium, the Lyceum, Aristotle, one of Plato's pupils, established his lectures, open to the inner circle only in the morning, and to the public in the afternoon. Hence the French *lycée*. The term "gymnasium" itself apparently is first used as equivalent for school only in a Greek epigram of uncertain but probably late date in the literally exact phrase "the schools of the Academy" and the metaphorical phrase "in the school of Homer" (*ἐν Ὅμηρῳ γυμνασίῳ*).

In Latin the term is not used simply as equivalent to "school", but as the locally correct term in such phrases in Cicero as "all the gymnasiums and schools of the philosophers." The Romans despised gymnasia. Until the time of Nero there were none in Rome. In the Middle Ages, the gymnasium, both thing and term, was unknown, except to one or two exceptionally learned writers, such as Matthew Paris, who described the school kept by Lanfranc at Bee as a gymnasium. But with the Renaissance the passion for Greek made the name reappear. Knighton describes a Lollard conventicle as a gymnasium, *i.e.* school, of heresy. The coming of Manuel Chrysoloras (*qv*) to teach Greek at Florence in 1396 and at Pavia in 1400, and the consequent passion for the study of Greek made Greek terms fashionable. Hence already in a letter written in 1422 Guarino of Verona uses "gymnasium" as the equivalent of "school," and speaks of Cicero as flying with the highest glory through all the schools of Italy (*gymnasia Italorum*). Vittorino da Feltre (*qv*) called his school the *Gymnasium Palatinum* or Palace School. This school became the model for many, and so *Ginnasio* became the common term in Italy for a public school of the humanist type. It is possible that the prominence given in this school to physical culture, games and sports being cultivated almost as much as in our modern public schools and universities, may have partly suggested and justified the use of the term "gymnasium." From Italy the term was transported into Germany, and seems to have been first used of the great Netherlands schools, which, alike in the numbers attending, the age to which the pupils stayed, and the subjects of instruction, were almost as much universities as schools, *e.g.* the schools connected with the Brethren of the Common Life (*qv*), Emmerich, 1474, and Deventer under Hegius and Luttich or Liège in 1498. These schools became the model for the great Reformation gymnasium founded, or rather reconstituted

by John Sturm (*qv*) at Strassburg under the control of the Town Council in 1538. It was probably the fame of this school that finally stamped the term "gymnasium" on the German language as the technical term for the great high schools in which the classics formed and still form the main subjects of instruction.

In England the term "gymnasium" never became popular. It was occasionally used by way of grandiloquence, and schoolmasters were sometimes absurdly termed *gymnasiarcha*, especially in epitaphs, just as in the new cathedral schools of Henry VIII they are termed *archididascalus* and *hypodidascalus* (which one learned antiquary translated into "master of the horse"). One learned person who died master at Fotheringhay, having been second master at Eton, whence he fled from the Roman wrath of Mary, even went so far as to describe himself on his tombstone as *paidotriba*, the term applied to the gymnasium official who rubbed the youth down with oil. But as a rule the common-sense Englishman stuck to the simple and ancient "grammar school" (*qv*). A. F. L.

**GYMNASIUM** — The equipment of a modern educational institution is not complete without a gymnasium. The provision of a special place devoted to the physical education of youth is not an innovation of modern times, for gymnasia occupied a very important place in Greek education (*qv*) and it is interesting to note that the use of the term in the scholastic sense has been retained in Germany, while the French *lycée* recalls the Lyceum, the gymnasium where Socrates and Aristotle met their disciples.

"Gymnasium" as a term in modern English education dates only from the introduction of physical training under cover into English schools. Probably the earliest building used as a general gymnasium in England was the hall for physical training, furnished with giant's strides, parallel bars, leaping horses, ladder, ropes, and the like, known as Mohammed's Gymnasium, established at Brighton about 1848. To this the numerous preparatory schools which then flourished abundantly in Brighton resorted for an hour twice a week or so. In Germany in 1870 gymnasiums were recognized by law as an essential part of the equipment of public secondary schools. But in England physical culture had for more than a century at all events, and perhaps for longer, been developed by games, such as cricket, football, and hockey. In England though some of the new public schools had gymnasiums, that at Rugby College being built in 1859, and at Marlborough College made out of a covered playground in 1869, they did not reach the old schools, now become a recognized requirement of a well equipped secondary school, till the last decade of the twentieth century. Even now in the great Public Schools and the grammar

schools situate in the country or country towns, with ample playing fields, the gymnasium plays an insignificant part in school life

#### A F L

The first gymnasium connected with an educational institution in the United States was that of the Round Hill School, Northampton, Mass., built in 1825. The first college gymnasium was one fitted in a hall of one of the Harvard College buildings in March, 1826. Outdoor gymnasiums were established at Yale in 1826, and at Williams and Amherst and Brown in 1827. The wave of interest in gymnastics which was responsible for the erection of these gymnasiums had passed by 1830 and was not revived until 1860, when Harvard, Yale, and Amherst built new gymnasiums, and were followed by other colleges. Except for a temporary check during the Civil War, the building of gymnasiums has gone on steadily since 1860, and nearly all colleges and secondary schools and many elementary schools are now equipped with them. The size, equipment, and cost of gymnasiums vary over very wide limits according to the size and financial resources of the different institutions. There are several college gymnasiums that have cost more than \$200,000.

A typical gymnasium building includes one large hall with suspended running track, smaller rooms for boxing, fencing, wrestling, handball, baseball winter practice, rowing on machines, etc., offices and examination room, locker rooms, bathrooms, and swimming pool. In planning a gymnasium building, the first consideration is the dimensions necessary to accommodate the number of students in the institution when the building is erected and to provide for the probable increase in twenty or twenty-five years. The rectangular form is better than the square for the main hall. A room 40 by 60 feet is the minimum size in which satisfactory work can be done. A gymnasium of this size would be sufficient for an institution with one hundred students. The size should increase approximately 500 square feet for every 100 additional students; thus an institution with 1000 students would need a gymnasium 70 by 100 feet. The height of the ceiling should be at least 22 feet in a gymnasium 40 by 60 feet and increased approximately by one foot for every additional 500 square feet of floor area.

The bottom of the running track should be at least 10 feet from the floor and the surface of the track at least 8 feet wide and curved to facilitate turning corners. The number and size of accessory rooms for special forms of exercise would vary with the number of students to be accommodated. With a small gymnasium 40 by 60 feet, it would be enough to have a baseball cage about 20 by 70 feet, a handball court 15 by 30 feet, and a room about 20 by 30 feet for other purposes. With a gymnasium 70 by 100 feet, a cage 30 by 100 feet, four hand-

ball courts, and three or four rooms 20 by 30 feet would furnish adequate equipment. All these rooms should have a height of at least 15 feet. The locker rooms should have an area of approximately four square feet for each locker when lockers are arranged in double tiers. The best modern bathrooms in gymnasium buildings are equipped with shower baths only, each shower having a single mixing valve. The number of showers necessary for one hundred students is about eight and two more showers for each additional one hundred students. The administrative office, director's office, and examination room should be arranged en suite in the central part of the building. The latest college and school gymnasium buildings have a large hall or room, near the entrance, in which the athletic trophies, banners, and team photographs are displayed.

There is no building in the equipment of an educational institution where adequate heating and ventilation and absolute cleanliness are so important as in the gymnasium building. Scientists have demonstrated that a man exercising vigorously vitates the air about ten times as much in a given time as when sitting at a lecture or recitation. The failure to take this fact into consideration when planning gymnasium buildings is largely responsible for the bad air usually found in gymnasiums. The air should be washed, heated, humidified, and pumped into the gymnasium in sufficient quantity to supply 100 cubic feet a minute for each individual using the room. The installation and operation of heating and ventilating equipments adequate to do this work involves a very large expense, but it is unwise economy to curtail expenses in this direction. The temperature should be maintained at 62 to 64 in rooms devoted to exercise and 72 to 74 in locker rooms and bathrooms. The cleaning of the gymnasium, locker rooms, bathrooms, and other accessories is equally important. Every part of the building should be cleaned daily, the floors washed frequently and the gymnasium mats kept free from dust by the use of vacuum cleaners. With adequate ventilation and absolute cleanliness in a gymnasium building, there is no appreciable difference in the physiological effects of indoor and outdoor exercise.

**Gymnasium Equipment.** — The selection of a proper equipment for the gymnasium of a school or college should receive the most careful attention. The essential points to be considered are: First, to supply enough apparatus for the largest class to be taught; second, to have all the apparatus so constructed that it may be easily and quickly set up and removed; and third, to distribute the apparatus from the standpoint of practical class management rather than architectural expediency.

A typical equipment for a school or college gymnasium in which the largest classes have sixty students would include the following

2 vaulting bars, 2 horizontal bars, 2 parallel bars, 2 horses, 2 bucks or vaulting boxes, 2 boms, 2 horizontal ladders, 8 climbing ropes, 30 stall bars, 2 pairs jumping stands, 4 inclined boards, 2 springboards, 2 pairs flying rings, 8 traveling rings, 6 mats, 5 × 10 feet, 4 mats 3 × 8 feet, 1 pair basket ball goals, 2 basket balls, 1 indoor baseball outfit, 6 medicine balls, 10 chest weights, 2 neck machines, 2 rowing machines, 60 pairs dumb bells, 60 pairs Indian clubs, 60 wands, and a piano. The cost of such an equipment would be approximately two thousand dollars.

If the gymnasium is to be used by girls only, the horizontal bars, horses, and parallel bars may be omitted.

The three largest manufacturers of gymnasium equipment are the Narragansett Machine Co., of Providence, R I., the A G Spalding Co., of Chicopee Falls, Mass., and Fred Medart of St. Louis, Mo. G L M

See ATHLETICS, EDUCATIONAL, ATHLETIC FIELD, ARCHITECTURE, SCHOOL, BATHS, SWIMMING POOL; VENTILATION AND HEATING.

**GYMNASTIC TEACHERS** — See PHYSICAL DIRECTOR

**GYMNASTICS** — The term as used by the Greeks applied to all forms of physical exercise such as calisthenics, running, jumping, wrestling, boxing, dancing, and throwing the javelin and discus. After the long period of neglect of organized physical instruction during the Middle Ages, systematic exercise in various forms found a place in the new schemes of education. The universal and ineradicable impulse of all healthy children to play, and the appreciation on the part of educators of the important function of motor training in education, are responsible for the increasingly large place accorded to physical exercise as an integral part of educational procedure since the days of Vittorino da Feltre (*qv*).

The differentiation of the forms of exercise into gymnastics, games, and athletic sports occurred at the end of the eighteenth and the beginning of the nineteenth century. It was during that period that Guts Muths, Jahn, and Spiess (*qv*) developed the German system of gymnastics. Ling (*qv*) founded in Sweden the system of gymnastics which bears his name, and athletic sports and games were taken up in the colleges and preparatory schools of Great Britain. There are two main classes of gymnastic exercises: first, calisthenics (*qv*), which includes free movements of arms, legs, trunk, etc., exercises with dumb bells, wands, bar bells, Indian clubs, rings, hoops, balls, etc., marching, and dancing. Second, apparatus gymnastics, which includes parallel bars, vaulting and horizontal bars, horse, buck, vaulting box, stall bars, jump stands, ropes, poles, ladders, and many kinds of developing appliances, such as chest weights, and other

machines built on the principle of weight and pulley or friction.

The main difference between gymnastics and athletics (*qv*) is one of aim. The aim of gymnastics is discipline or training for its effect upon the health, normal development, and general efficiency of the individual. The chief aim of athletics is pleasurable activity for the sake of recreation, in the athletic games of boys and young men we see the highest and fullest expression of the play instinct. While the characteristic aims of gymnastics and athletics are essentially different, some of the most important results of physical training are secured from both forms of activity. This is true especially of the hygienic effects of muscular activity upon the circulation, respiration, digestion, assimilation, and excretion. These effects vary over wide limits according to the kind of exercise selected.

In considering the educative value of gymnastics and athletics the most important principle is, that neither of these activities can serve as a substitute for the other. Each contributes some essential parts of a complete physical education. Gymnastic exercises are largely subjective in character, they serve particularly to stimulate normal physical development, promote good carriage and easy coordination in motion and locomotion. Every gymnastic exercise is given for a definite purpose. The object may be to secure motor coordination, hygienic benefit, or some æsthetic effect. In this respect, gymnastics differs radically from athletic exercises, for in the latter the primary object is always to produce some effect outside of the individual, as hitting a ball, throwing an object as far as possible, or reaching a goal before an opponent. The effect of such exercises upon the individual is always incidental and secondary. Another advantage of gymnastics is, that selection based on scientific principles of anatomy, physiology, and mechanics makes it possible to adapt each exercise to the particular needs of the individual, with a view to producing the effect desired. The educative, hygienic, and æsthetic effects of exercise are susceptible of definite control in gymnastics, but in athletics the effects produced on the individual are indefinite and accidental. The particular effect produced by gymnastics depends partly upon the movements selected, but mostly upon the manner of their execution. The best hygienic effects are produced by adapting the movements to the strength of the individual, bringing into play the large muscles of the trunk and thighs, and accompanying the exercise with music, which adds pleasure to the work. The educative effects are best secured by careful selection and sequence of exercises suited to the state of psycho-motor development of the individual, and by a method of teaching which demands accuracy, precision, and speed in execution. The æsthetic effects of form, carriage and grace

## GYMNASTICS FOR GIRLS

of motion and locomotion result from gymnastic dancing and other exercises of the same type. The recreative value of gymnastics depends upon the ability of the teacher to make the work interesting, and in a measure upon the attitude of the student toward the work.

In general, the relative effects secured from gymnastics and athletics are as follows —

GYMNASTICS	
PRIMARY EFFECTS	SECONDARY EFFECTS
Educative	Organic (vigor)
Hygienic	Recreative
Æsthetic	Psycho-motor
	Moral
ATHLETICS	
PRIMARY EFFECTS	SECONDARY EFFECTS
Organic (vigor)	Educative
Psycho-motor	Hygienic
Recreative	Æsthetic
Moral	

It is very evident from this table that gymnastics constitutes an essential part of a rational scheme of physical education. The results obtained from gymnastic training vary widely for the same reasons that results vary in all branches of education. Poor teaching and inadequate facilities always produce unsatisfactory results in gymnastics as in any other subject. The need for systematic psycho-motor training and vigorous muscular activity for organic development tends to increase as life becomes more complex and specialized. The growing appreciation of the physical basis of human efficiency cannot fail to bring about increased recognition for gymnastics in the school curriculum, more competent teachers, and increased material equipment. G L M

See ATHLETICS, EDUCATIONAL, CALISTHENICS, GREEK EDUCATION, PHYSICAL EDUCATION

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**GYMNASTICS FOR GIRLS** — In all schemes of education, the tendency has been to provide better facilities and a more extensive curriculum for boys than for girls. This has been true particularly in regard to physical training. In Germany, England, and the United States various forms of physical training were provided for boys, while this subject was entirely neglected in schools for girls. Adolf Spiess, the founder of German school gymnastics, was the first to advocate gymnastic training for girls, but the traditional idea that womanly deportment is in contradiction to exercise has hindered the development of physical training for girls. Organic vigor and psycho-motor development are as essential to girls as to boys. The results to be accom-

plished are the same, but the methods employed must vary because of physiological differences in the two sexes.

The gymnastics best suited to girls include marching, calisthenics without hand apparatus and with wooden dumb bells, wands, bar bells, Indian clubs, rings, hoops, etc., simple exercises in vaulting and climbing (omitting, in general, all exercises requiring support of the body on the arms for more than an instant), easy exercises in jumping, and dancing. Æsthetic and folk dancing constitute one of the most valuable forms of physical training for girls of all ages. By means of judicious selection and adaptation, it is possible to secure from dancing most of the essential values of exercise, such as organic vigor, psycho-motor training, and recreation. Girls need also the training that comes from participation in athletic sports and team games. The qualities of courage, self-reliance, loyalty, and capacity to cooperate with others and subordinate personal interests to the interests of the team which result from participation in team games and sports are as desirable for girls as for boys. This training is especially valuable to counteract the tendency of some girls to be sensitive, introspective, and live too much on the subjective side of life.

In general, girls under twelve or thirteen years of age can do all except the very strenuous exercises indulged in by boys of the same age. With the onset of puberty, considerable modification of the forms of exercise given to girls is made imperative by the anatomical and physiological changes which occur at that time. The most important modifications necessary are the elimination of exercises requiring the support of the whole body by the shoulder girdle for more than an instant, the restriction of exercises involving jumping to those involving very little jarring of the body, and in general the elimination of violent exercises. The introduction of competitive athletic games in schools and colleges for girls from 1890 to 1900 was accompanied in some places by public contests between teams representing different institutions. This feature of athletics for girls has been abandoned by the leading schools and colleges because it was found to be detrimental to the best interests of education.

G L M

See ATHLETICS, EDUCATIONAL; DANCING; WOMEN, EDUCATION OF, etc

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**GYMNASTICS, GERMAN.** — The German system embraces three distinct branches, known

as *Volksturnen*, or popular gymnastics, *Schulturnen*, or school gymnastics, and *Militärturnen*, or military gymnastics. The organization of the last two branches is maintained and controlled by the government for strictly educational purposes; the popular gymnastic societies are voluntary associations.

The names of three teachers are identified with the upbuilding of German gymnastics: Guts Muths (*qv*), 1759-1839, Jahn (*qv*), 1778-1852; and Spiess 1810-1858. Before the period covered by the activities of these men, the only physical training found in German schools was the knightly exercises in riding, fencing, vaulting, and dancing taught in the *Ritterakademien*, and instruction in running, jumping, climbing, balancing, and carrying of heavy weights, given in Basedow's school at Dessau. Salzmann (*qv*), who had been an assistant at Dessau, founded the Schnepfenthal school in 1784, and introduced the simple exercises known as the Dessau pentathlon. A year later, Guts Muths entered upon his service as a teacher at Schnepfenthal, and devoted himself to the development of a rational system of gymnastics and games. He published his *Gymnastics for the Young* in 1793, the first German manual of gymnastics, this was followed three years later by a book on plays and games. Guts Muths' aim was distinctly pedagogical; he divided physical exercises into gymnastics, manual training, and youthful plays, and defined gymnastics as "a system of exercises having bodily perfection for their aim." The success of Guts Muths' gymnastics at Schnepfenthal led to their introduction in many private and a few public schools. In 1804 Guts Muths urged upon the Prussian minister, Massow, the importance of introducing physical education into the schools. The minister replied that he proposed to make bodily training an essential part of his plan for national education, but the war with Napoleon prevented the carrying out of these plans.

The particular contribution of *Turnvater* Jahn to the German system of physical education was to make gymnastics popular through the organization of independent associations. In *Die deutsche Turnkunst*, published in 1816, Jahn describes the aims of his system of gymnastics as follows. "The turning system would reestablish the lost symmetry of human development, would connect a proper bodily training with mere exclusive intellectual cultivation, would supply the proper counteracting influence to the prevailing overrefinement, and would comprehend and influence the whole man by means of a social mode of living for the young. Every turning institution is a place for exercising the bodily powers, a school of industry in manly activity, a place of chivalrous contest, an aid to education, a protection to the health, and a public benefit. It is constantly and interchangeably a place of teaching and of learning. In an unbroken circle follow

constantly after each other direction, exemplification, instruction, independent investigation, practice, emulation, and further instruction. Thus the turners do not learn their occupation from hearsay. They have lived in and with their work, investigated it, proved it, and perfected it. It awakens all the dormant powers, and secures a self-confidence and readiness which are never found at a loss."

From 1820 to 1842, Volksturnen was prohibited by the government, gymnasia were closed, and gymnastic instruction was generally neglected in the schools. In 1842 the King gave his sanction to the proposal offered by the ministers of War, the Interior, and Education, that "bodily exercises should be acknowledged formally as a necessary and indispensable integral part of male education, and should be adopted as an agency in the education of the people." Massmann, who had been engaged in teaching gymnastics in Munich since 1827, was in 1843 called to Berlin to aid Eichorn's department in carrying into effect the plan advocated in the King's cabinet order. He had been trained in the methods of Jahn, but not being endowed with sufficient skill or energy to adapt Volksturnen to school needs, his administration, which lasted until 1850, was, on the whole, a failure.

Massmann was succeeded by Adolf Spiess, who has been called the "father of German school gymnastics" and the "founder of gymnastics for girls." He received his first instruction in gymnastics at his father's private school, where the methods of Guts Muths were followed. Later he became acquainted with Jahn and his methods. In 1830, while still a student, Spiess formed a class of boys at Giessen, and taught them "common exercises" (*Gemeinübungen*), or class drill in "standing, walking, running, and jumping." In Jahn's system the members of the class follow their foretuner. In 1833 Spiess became a teacher of history, singing, drawing, and turning in the public schools of Burgdorf, Switzerland. He removed to Basel in 1844 to take charge of the gymnastic instruction in the higher schools of that city, and in 1848 he returned to Germany, having been appointed to a high office in the department of education of the Grand Duchy of Hesse. He was successful in the work of organizing and supervising physical training in boys' and girls' schools throughout that state.

Spiess adopted the method of "class turning," which consists in the simultaneous performance by the whole class, either with or without the use of apparatus, of given exercises at the word of command, this method constitutes one of the fundamental principles in German school gymnastics. Spiess based his theory of bodily training on the laws of anatomy and physiology, and arranged his exercises in compliance with his understanding of those laws. He made use of a great variety of exercises, such as free movements, marching, jumping, climbing, and



Jahn's heavy gymnastics The free movements were often executed to music. The distinctive contribution of Spiess was to render German gymnastics systematic and scientific, and to adapt them to pedagogical purposes and methods. His principal books were *Lehre der Turnkunst* (Basel, 1840-1846), and *Turnbuch für Schulen* (Basel, 1846-1851).

The progress of gymnastic instruction in German schools was hindered by the lack of competent teachers. In 1851 the Royal Central Gymnastic Institute, with parallel courses of instruction for officers of the army and school teachers, was established in Berlin under the joint control of the ministers of War and Education, and Captain H. Rothstein, of the Prussian army, who had studied Swedish gymnastics in Stockholm, was placed at its head. In 1877 the institute was divided into two separate schools, one for army officers and the other for teachers of gymnastics in schools. Rothstein attempted to introduce Swedish gymnastics in the institute, and banished some of the most popular exercises of German gymnastics. His action led to a bitter controversy, in which prominent teachers, physicians, and professors of the Berlin University opposed him. He was finally defeated, and resigned his position in 1863.

Gymnastics constitutes an integral part of the curriculum in schools of all grades in Germany. Each class has its special time for gymnastics, just as it has special hours for arithmetic and reading. The exercises are carefully adapted to the age and sex of the pupils. The youngest pupils, from six to ten years old, engage in a great variety of simple games, easy free movements, marching, jumping, and climbing exercises, and the easier of the fundamental exercises on the gymnastic apparatus. In free movements and heavy gymnastics the exercises grow more complicated and difficult with the advancing age of the pupil. Walking tours, skating parties, and excursions into the woods are frequently made under the lead of those who teach turning. The gymnastic course for girls comprises the ordinary free gymnastics with or without hand apparatus, skipping ropes, marching, dancing, and balancing exercises, various games of ball, easy jumping, swinging, and climbing, and a few of the simplest exercises on the parallel and horizontal bars.

A description of German gymnastics as a system of physical training would be inadequate without mentioning the extensive development of games and plays, which has taken place in German schools during the last twenty-five years. Practically every school in Germany is equipped with a playground, and nearly all boys' schools have facilities for swimming. Organized and supervised play constitutes an essential part of the present system of physical training.

In the United States the German system of gymnastics has been adopted in many large

cities and German teachers appointed to direct the work. This is true of Chicago, Cleveland, Cincinnati, Indianapolis, Minneapolis, St. Louis, Philadelphia, etc. G. L. M.

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#### GYMNASTICS, HYGIENE OF — See PHYSICAL TRAINING, HYGIENE OF

**HABIT — Use of Term** — The term "habit" in the various writings on the subject is used in a number of different ways. It is used by some writers to cover all of the organized responses of an organism. Such authors speak of the habits of the bee, of the ant, and of animals generally, meaning thereby the whole repertoire of reflexes, instincts, and habits. With advances in comparative psychology there should come a strict limitation in the use of the term "habit." *Habit should refer only to those motor acquisitions which have been acquired by an organism during its lifetime.* The term "mental habit" is sometimes used to refer to mental organization along any line. James, for example, speaks of perception as a "kind of habit." Such a use of the term should be avoided, since it introduces a vagueness in the expression similar to that now present in the term "memory."

**Rise of Consciousness and Rise of Habit Simultaneous** — Movement first appears in an organism in the form of reflexes, somewhat later, as growth processes take place, in the more complex form of instincts. Many of these instincts are not completely adaptive. In most organisms the reflexes and instincts are not numerous enough and complex enough to preserve the life of the organism. In such cases (and probably in no organism are the congenital responses wholly adequate) the instinctive and reflex groups must be supplemented by *habits*. Habits when perfected subserve the same function as reflexes and instincts. Angell and Dewey assume that consciousness arises at the moment reflexes and instincts break down — i.e. at the point where habit formation begins. As long as congenital responses are adequate, there is no consciousness, the moment adjustment begins, consciousness appears. Its appearance is an integral part of the formation of every habit. On the other hand, as habits are perfected and approach reflexes (so far as efficiency is concerned), consciousness tends to die away. To

speak figuratively, the focus of consciousness throughout life is always directed upon the difficult and new aspects of any adjustment

**Neural Basis of Habit.**—The simplest neural mechanism operating in any habit must consist of a receptor, a series of conductors, and an effector. But such a mechanism serves equally well for instincts as for habit. Two fundamental differences, however, appear between the two sets of mechanisms: (1) the "pathways" involved in instinct are inherited, while those in habit are acquired in ontogeny; (2) the series of conductors involved in habit probably always leads through the cortex, both in the early stages of the formation of the habit, and even in the later, perfected stage. In the case of many of the instincts, the neural arcs apparently may lie wholly infra-cortical. In the early stages of habit the cortex as a whole is unquestionably involved. It is a commonly expressed opinion, at least, that as habits become more and more automatic (as conscious oversight or attention becomes less and less necessary) the neural processes become more and more segmental in character—that the seat of neural control (as *e.g.* in the eye-hand or eye-foot reactions) passes to lower nervous centers, *e.g.* to the basal ganglia. The work of Franz has thrown some interesting light upon this question, but it is still an open one. Franz in his early experiments upon cats showed that if they were allowed to establish associations between food and the opening of problem boxes, they lost these associations if the frontal lobes were sectioned, but that they could relearn them. His more recent experiments upon primates confirms this earlier work, and adds the new point that if the association was completely formed there was no loss when the frontal lobes were sectioned. It would look as though the system of integration did change and become more circumscribed so far as the association area in the frontal lobe is concerned, as the habit became more complete. Whether the pathway could be still further shortened, so that the association areas of the cortex need not be involved at all, remains to be decided.

In psychology since Hartley's time (and more recently revived by James) we have spoken as though the nervous system was "modified" so as to respond in a highly special way to a stimulus which did not at first elicit a coordinated response. We have spoken as though an actual pathway was formed between the sense organs and the voluntary muscles, as though the nerve fibers became modified molecularly in such a way as to give passage more easily to an oft-repeated stimulus. Sherrington's conception of transverse membranes situated in the gray matter between the end of one axone and the dendrites of the next neurone (*Synapse*) throughout the pathway, is a more recent conception. These surfaces of separation "might restrain

diffusion, bank up osmotic pressure, restrict the movement of ions, accumulate electric charges, support a double electric layer, alter in shape and surface tension with changes in difference of potential, alter in difference of potential with changes of surface tension or in shape, or intervene as a membrane between dilute solutions of electrolytes of different concentration or colloidal suspensions with different signs of charge." In other words, we have at the synapses a mechanism delicate and complex enough to account for the "formation of pathways," reinforcement and inhibition of habits, etc., without supposing that there is any actual change or modification occurring in the neurone itself (the conductor) as the result of repetition of stimulus.

Habits come to preponderate over reflexes and instinctive activity in those organisms born with the least mature nervous systems. Watson and Allen's comparative experiments on the rat and the guinea pig respectively show that the rat with its immature nervous system begins to form habits (10-12 days) much later than the guinea pig (2-3 days), which is born with a relatively mature nervous system, but that the rat can form a greater number of such associations and continue to form them for a much longer time. *Plasticity* is the term used to cover the fact that an animal can *modify* its reflexes and instincts in the direction of habit. In general, the higher we ascend in the scale of animal development, the more plastic the nervous system seems to be, its culmination being in man. Yet this advance in plasticity is not continuous. Even in the rodent group we have great differences in plasticity between the rat and the guinea pig. While the chimpanzee and orang-outang stand next to man, certain other of the primates, baboon, rhesus, etc., are probably not greater in plasticity than the dog. (See PLASTICITY).

**Facilitation and Inhibition.**—The subject of facilitation and inhibition in the formation of complex habits is a topic strangely neglected in experimental psychology. We have in Sherrington and in many other neuro-physiological treatises a large amount of data on inhibition and reinforcement of the simpler neural processes. But experimental pedagogy has more or less neglected studies, *i.e.* from the standpoint of facilitation and the reverse, of the simultaneous formation of several habits, the mutual relations existing among groups of habits, etc.

On the neural side we have known for some time (thanks to the work of Exner, Mitchell and Lewis, Lombard, Bowditch and Warren, and more recently, of Sherrington and of Yerkes), that the end effect produced by any given reflex arc is dependent upon the intensity of the stimulus arousing that arc, upon the internal condition of the arc, and upon the number and temporal relations of preceding reflexes and upon the action taking place

simultaneously in other reflex groups. A sound conveyed to the ear of a chloralized rabbit increases the amplitude of the reflex movement of the foot induced by the stimulus applied to the foot a moment later. The amplitude of the movement of the knee jerk in man likewise can be diminished or increased by stimulating, *e g* some distance receptor at varying intervals before administering the electrical stimulus calling out the reflex. For a careful treatment of the neural processes, see Sherrington, *Integrative Action of the Nervous System*, pp 175 ff (reinforcement), 191 ff (inhibition), 199 ff (interference), and 36 ff (summation).

**Early Habits: the Acquisition of Motor Control** — Early habits are formed both in the child and in the animal by the trial and error process (*qv*). The start of voluntary control may best be seen in the child in its first attempts to grasp objects. There are several stages in the process, first, there must be an objective stimulus which arouses movement. Bright objects, moving objects, those making tones or noises of medium intensity, or those possessing certain pleasing contact value, in the normal child are most likely first to elicit movements. In the second place, if progress toward coordination is to be made, some one of the moving organs of the child must come into tactual motor relations with the object. The rattle which is first seen elicits a number of motor responses. Usually and in the long run the hands, being the most motile organs, are first to touch the object. Touching this object, reflexly leads to grasping, the grasping of the object then leads to new forms of stimulation, *i e* auditory and visual (of movement of object). The object is now under control, and adaptation is complete. It is supposed that a strong affective tone, intensely pleasurable in character, appears on the completion of the adaptation—upon the successful effort to control the object. It is supposed further that this affective accompaniment means on the physiological side an increased blood supply for those neuro-muscular processes which have just been active, *i e* for the group bringing about the success. Thorndike speaks of this as the “stamping-in process.” The failure of any group of muscles to bring success, on the other hand, brings about a loss in tone in those muscles, which results in their discontinuance. In other words, the neuro-muscular system bringing success is made prepotent (by some change taking place probably at the synapses).

The second trial of the child or animal shows usually, but not always, a decrease in the number of useless movements and an increased speed in the use of the muscular group which brought success on the first trial. Subsequent growth takes place through the entire elimination of all useless movements. In the perfected form the sensory impulses

aroused by the object release immediately the proper motor response.

Such command over the muscular system is finally attained that in adult life operations requiring a long series of muscular acts may be executed without the exercise of continuous voluntary control. The initiation of the first movement in the chain is usually a voluntary process. As James has well shown, this initial movement becomes the stimulus to the second, the first and second to the third, and similarly throughout the series. In other words, the “cue” to the second and succeeding acts finally may come to be kinesthetic.

**Formation of Hierarchies of Habit. Acquisition of Skill** — In the acquisition of any skillful act, as, *e g* piano playing, typewriting, sending and receiving the telegraphic code, there are displayed, in addition to the simple sensory-motor coordinations, complex or integrated groups of coordinations, which when studied in detail show an interesting history. W F Book describes five separate steps in making a single letter on the typewriter, as follows: (1) getting the copy, (2) actual spelling or thinking of each letter to be made, (3) mentally locating it on the keyboard, (4) getting the proper finger to the key, (5) again pronouncing the letter or initiating the final letter-making movements. These simple habits are short-circuited or abridged by a long, slow process until the mere sight of the letter initiates the movement for depressing the key, *i e* the letter association has been formed. Long before the process has become automatized the next higher order of habit has put in its appearance, *i e* these simple “letter habits” become integrated into “syllable habits,” then into easy “word habits,” then into complex word habits, into easy “phrase habits,” etc., until finally the expert stage is reached, where the word and phrase habits have become so perfected that the writing is absolutely continuous. In this process of acquiring skill, simple habits are not first mastered and then the next higher order, etc., until the expert stage is reached. All orders of habits “make gains simultaneously, but not equally” (Bryan and Harter, *Psych Rev*, Vol VI, 1899, pp 346-375). Book compares the development of the different orders of habit to the march of a flock of sheep, the whole flock moves forward, now fast, now slow, but any particular animal may push ahead at this moment and lag behind at the next.

**Breathing Places and Plateaus** — The onward movement of the group of habits as a whole is often checked. There are daily fluctuations, due in part to mood, fatigue, and the actual forgetting between one day's practice and the next, especially when new and higher orders of habits are just appearing (see Book on “warning-up process”). In addition to these easily understood fluctuations there are

longer and more serious breaks in the process, lasting from six to eight days (Book), and still longer periods called plateaus, occurring at critical stages in the learning process and enduring for a much longer time than the "breathing places" (thirty-three days in one case mentioned by Book). These plateaus (including the "breathing places" under this heading) appear in the work of Bryan and Harter (telegraph sending and receiving), Swift (tossing and catching balls), and Book (typewriting). Bryan and Harter suppose that these plateaus appear when the lower order habits are approaching their maximum of development, but are not sufficiently automatic for use as elements in the higher order habits. For these investigators they are necessary periods of "incubation," where elementary habits are making substantial gains preparatory to their organization into higher order of habits. Book objects to this theory of plateaus on the ground that there is not a sufficient time sequence in the development of the different orders of habits. He separates the breathing places from the plateaus. The breathing places are due to irregular lapses in attention. A bad day's work may dampen the learner's ardor for several days. Plateaus, on the other hand, while not appearing in all of Book's curves, occur, when at all, at critical stages in the learning process. They are, according to Book (a) "Resting places in the learner's interest and effort, or (b) 'break-down' stages caused by excessive effort wrongly applied."

As a matter of fact, a complete analysis of these breaks in the learning process cannot yet be given. Nearly all of the investigators have chosen habits which are too complex for complete analysis. From the standpoint of neural control, there seems to be no conceivable reason why a learning curve should show fluctuations other than those reflecting the general bodily condition and those due to changes in metabolism.

**Transfer of Habit: Cross-Education** -- It is apparently firmly established that the exercise of any one muscular organ of the body will improve the bilaterally symmetrical organ. Volkman found that practicing the left arm in discrimination produced a very marked improvement in the right without any practice in the latter. Similar experiments show that practice upon the dynamometer with either hand will improve the strength of grip in the other (Scripture, Downs, *et al.*). Similarly Davis found that improvement in the quickness of the tapping with the right great toe was accompanied by 151 per cent improvement in the left foot, 100 per cent as much in the right hand and 83 per cent in the left hand. Woodworth has made experiments with similar results upon the accuracy of hitting a dot. Davis's conclusions that the effects of exercise may be transferred to a greater or lesser

degree from the parts practiced to other parts of the body, and that the transference is greatest to symmetrical and closely related parts, is firmly established, but the interpretation of the facts is not very clear. The whole question is more or less bound up with that of the effects of training upon memory. (See MEMORY.) Thorndike, with his theory of "identical elements" in memory transfer, attempts with some success to extend his theory to cross education, *e.g.* holding that Woodworth's transfer obtained in striking at a dot with the left hand is due largely to the fact that the practice with the left hand trained the eye, and that this training is largely responsible for the improvement noted in the right (unpracticed) hand. The more recent and thorough work of Ebert and Meumann tends to establish the fact against James, and to some extent against Thorndike as well, that rote memory can be improved by practice. The position that such effects were due to common elements and to common modes of attack, better use of attention, elimination of useless methods of attack, increase of interest in problem, etc., is still a tenable one. It must be said, however, that Ebert and Meumann themselves hold that in addition to these factors there is a training of some common memory capacity.

**Automatism and Allied Phenomena** -- In hypnosis, in certain functional nervous diseases, and in sleep walking, we meet with automatic reactions of various kinds. They may show themselves in the form of word repetitions, *echolalia*, gesture repetitions, *echopraxia* (in hypnosis, *katatonia*, etc.), and in stereotypy. Stereotypy may take different forms, *e.g.* we may have a stereotypy of attitude, of movement, or of language (*verbigitation*). In these cases we often see patients maintaining uncomfortable attitudes for hours, others will walk for long distances, taking alternately three steps forward and two backward, others will repeat phrases or verses indefinitely. Such phenomena belong to the field of psychiatry rather than to that of psychology and education. In normal individuals such phenomena are occasionally met in fits of abstraction and in sleep.

**Social and Pedagogical Implications of Habit** -- The ideal training of a human being would give him the ability to react adequately and rapidly and with a minimum of fatigue to any individual or social situation. In our complex civilization, which is ever changing in its point of stress, which is ever presenting new problems, an organism must automatize as many adjustments as possible, and as easily and as rapidly as possible in order to leave the mind free to meet the point of stress. The early formation of right personal habits has been insisted upon in all writings upon habits. Probably the necessity of forming habits which are not immediately utilizable

has not been sufficiently insisted upon. During adolescence there is, especially if there is a bad inheritance, a period when many new and strange demands are made upon the nervous system. At times it breaks down under the strain. Good personal habits — those relating to temperance, control of the sex impulses, the right use of money, respect due to other members of society, etc., serve oftentimes to carry the individual with poor inheritance safely over the periods of conflict. Often when this faulty inheritance is present it is augmented by carelessness in the formation of the early habits (in paranoia, *e g* we find carelessness in the use of money, extravagances, etc., in many forms starting very early in life. The implication is that such tendencies might be checked if noted early enough). Much has been and is still being done in the case of functional nervous diseases by the process of reeducation. In regard to the second point, — forcing the youth to form habits not immediately utilizable, — possibly enough has not been said. Normal development in certain cases ceases after a fixed low level of efficiency has been attained. Such subjects either have to be carried through life by other members of society, or else they must be trained to take a more modest but independent place in life. Manual training for the male and similar training for the female in household work, sewing, millinery, etc., is of the utmost necessity. Even though normal development continues, these habits in times of financial reverses are of the utmost advantage to their possessors. J. B. W.

See ACQUIRED CHARACTERISTICS.

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**HABITUATION.** — See HABIT.

**HACKETT, HORATIO BALCH** (1808–1875) — Philologist and college professor, was graduated from Amherst College in 1830 and from the Theological Seminary at Andover in 1834. He subsequently studied at Halle and Berlin in Germany. He was tutor at Amherst College and professor at Brown University and

the Newton Theological Seminary. He published a *Chaldee Grammar* (1845), a *Hebrew Grammar* (1847), a *Hebrew Reader* (1847), and numerous works on Biblical literature.

W. S. M.

**HACKLEY, CHARLES WILLIAM** (1809–1861) — College professor and textbook author, was graduated from the United States Military Academy at West Point in 1829, and was instructor there for three years (1829–1832). He was professor in New York University (1835–1838), president of Jefferson College, Miss. (1838–1843), and professor in Columbia University (1843–1861). His publications include *Treatise on Algebra* (1846), *Elementary Course in Geometry* (1847), *Elements of Trigonometry* (1850), and several works on scientific subjects.

W. S. M.

**HACKNEY COLLEGE.** — See LONDON, UNIVERSITY OF.

**HADLEY, JAMES** (1821–1872) — Textbook author and college professor, was educated at Fairfield Academy and graduated at Yale College in 1842. He was many years professor of Greek at Yale, and was the author of a widely used series of Greek texts.

W. S. M.

**HAGAR, DANIEL BARNARD** (1820–1896) — Normal school principal, was born at Newton, Mass., on Apr. 22, 1820. He was educated in the public schools of Newton and graduated at Union College in 1843. He was for several years principal of academies in New York, and later was principal of the high school at Jamaica Plain, Mass. From 1865 to 1896 he was principal of the State Normal School at Salem, Mass. He issued the call for the organization of the National Teachers' Association (*q.v.*), was one of the organizers of the Massachusetts Teachers' Association, and for some years one of the editors of the *Massachusetts Teacher*. He also wrote numerous papers on normal school education.

W. S. M.

**HAILEYBURY COLLEGE** — See GRAMMAR SCHOOLS, ENGLISH, COLLEGE, ENGLISH, PUBLIC SCHOOLS.

**HAITI, EDUCATION IN** — The Republic of Haiti occupies the western part of the island of Haiti, the second in size of the West Indies. The original inhabitants were practically exterminated in contests with the Spanish invaders, who eventually gained peaceful possession of a depopulated island. It was repopulated by African slaves, first imported in 1517. The Spaniards gradually deserted the island for the more attractive regions of the American continent. French and English adventurers formed a settlement on the northern shore,

which was recognized as a department of France in 1714, to which country that portion of the island had been ceded by the Treaty of Ryswick, 1697. The uprising of the negroes in 1791, the heroic leadership of Toussaint l'Ouverture, and the final surrender of the island to France, in 1795, are memorable episodes in its early history. After a long period of struggle and uncertain destinies, the Dominican Republic was proclaimed in 1824, and in 1858 the Republic of Haiti was established. This division of the island covers an area of about 10,200 square miles and has a present population estimated at 2,029,000, of whom nine tenths are negroes and the remainder, save two or three hundred Europeans, are mulattoes.

For purposes of local administration the republic is divided into five departments, comprising eighty-six communes. The people are Roman Catholics, and society retains the distinctions of the old régime in France, the upper class possessing wealth and refinement, in striking contrast with the ignorant masses. The leaders of the republic have professed great regard for education, and their public utterances on this subject reflect the theories and sentiments of the leaders of the French Revolution, but with few exceptions, among whom should be named in particular President Fabre Geffrard, they have been theorists merely, or prevented by repeated revolutions from giving effect to their purposes.

Public instruction was represented in the government of the new republic by a cabinet officer, and the country was divided into fourteen districts, to each of which was assigned a government inspector of schools and higher institutions. In 1860, or two years after the republic was proclaimed, a law was passed providing that public instruction should be gratuitous, and the establishment of primary schools obligatory upon local authorities. Through the efforts of the Minister of Public Instruction, M. Elie Dubois, schools were established in the principal cities, and they have been maintained to the present day. In the country districts very little progress has been made, the fitful endeavors in this direction having been constantly interrupted by political commotions. At present there are about 480 public primary schools, of which number 275 (122 for boys, 153 for girls) are in the cities. The total includes 39 schools for boys in charge of Christian Brothers (*q.v.*), and more than 50 schools for girls in charge of sisterhoods. Schools established by the teaching orders of the Church are adopted as public schools and receive appropriations from the public treasury. In fact, to the teaching orders must be credited nearly all the progress in education thus far realized in the island.

The influence of French precedents is seen in the establishment of schools in which training for the industrial arts is combined with general

education. The earliest institution of this sort in Haiti was the *Maison Centrale*, created in 1849 during the imperial rule of Souleouque, whose adventurous career reached its climax in 1846, when he was acclaimed Emperor under the title of Faustin I. The *Maison Centrale*, or School of Arts and Trades, is a government institution, occupying a commodious site at Port-au-Prince, and having accommodation for 150 boarding pupils. The course of instruction includes academic studies, technical branches, religion, music, and military tactics. The school is equipped with fourteen workshops for wood and metal work, blacksmithing, carriage manufacture, etc., but still needs provision for some of the pressing demands of Haiti in industry. A second technical school, *École libre professionnelle*, was established at Port-au-Prince under private auspices in 1892, but through lack of financial support was soon discontinued. There are two orphanages for girls, one at Port-au-Prince and the other at Cayes, both managed by sisterhoods, but subventioned by the government. The former and more important of the two, the *Orphelinat de la Madeleine*, was founded Feb. 18, 1893, by the Mother Superior, Eustochie, of the sisters of St. Joseph of Cluny. The institution receives an annual grant from the State of 444 gourdes (\$429). The instruction includes, besides the elementary branches, housekeeping and household arts, sewing and cutting, embroidery, lace making, etc.

For the secondary education of boys there are in the six principal cities public lycées which follow official programs. A commission appointed in 1893 to advise as to desirable modification in the plan of study recommended changes in favor of modern subjects, especially the scientific studies that prepare for the medical profession and for the technical arts. There are a number of business colleges for young men and several excellent secondary schools in charge of the teaching orders, also a college supported by the Wesleyan mission.

Higher education is represented by a national school of medicine and pharmacy, a school of maternity, and a school of law, all at Port-au-Prince, and by private schools of law in other cities, which receive grants from the public treasury. The national school of applied sciences at Port-au-Prince is equipped with a bacteriological laboratory at which important investigations are conducted. The fine arts are promoted by the national school of drawing and painting, also at the capital.

A select number of youths are sent every year by the government to study in Europe or in the United States; but while opportunities are thus provided for an élite circle, the low state of the masses is recognized and deplored. An earnest effort at reform was begun in 1910 by the passage of a compulsory education law with penalties for its violation, but subsequent revolutions have prevented further progress in

respect to general education, and have interrupted plans for developing technical education, more especially as related to agriculture. The annual budget for public instruction is about 4,000,000 francs (\$800,000). A. T. S.

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**HAKLUYT, RICHARD** (?1552–1616) — The great historian of Elizabethan travels, under the title of the *Principal Navigations, Voyages, Traffiques and Discoveries of the English Nation within the compass of these 1600 years* (published 1589), was educated at Westminster School, where Honter's *Cosmographia* was taught. In 1570 Hakluyt was chosen student of Christ Church, Oxford, and took his M.A. in 1577, and became a preacher. In the Epistle Dedicatory of his *Principal Navigations* he narrates how his cousin Richard Hakluyt in his chambers at the Middle Temple had instructed him in certain books of Cosmography, with a universal map, pointing with his wand to all the known seas, gulfs, bays, straits, capes, rivers, empires, etc., and giving him full geographical information about them. When he went to Christ Church, he continued these studies, reading whatever he could find extant in the Greek, Latin, Italian, Spanish, Portuguese, French, and English languages. "In my public lectures," he says, "I was the first that produced and shewed both the old imperfectly composed and the new lately reformed Maps, Globes, Spheres, and other instruments of this art for demonstration in the common schools, to the singular pleasure and general contentment of my auditory." On Apr. 1, 1584, Hakluyt wrote a letter to Sir Francis Walsingham, directing the foundation of a lectureship in mathematics and another on the art of Navigation in London in or about Ratchiff, at a yearly stipend of £50 each. He cites the case of the mathematics lectureship secured at Paris by Peter Ramus (*qv*). Though Hakluyt was not successful in getting a lectureship in navigation established, the teaching of the subject in mathematical schools (principally private) in the seventeenth century became a settled practice. F W

See GEOGRAPHY.

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**HALDEMAN, SAMUEL STEHMAN** (1812–1880) — Naturalist and author, was born at Locust Grove, Pa., and was educated in a classical school at Harrisburg, at Dickinson College, and at the University of Pennsylvania. He was for many years professor in Delaware College and at the University of Pennsylvania. He was one of the founders of the American Philosophical Association and the American Association for the Advancement of Science (*qv*). He wrote numerous works on agriculture, chemistry, and natural history, and the following school books, *Elements of Latin Pronunciation* (1851), *Analytic Orthography* (1860), *Outlines of Etymology* (1877), and *Word-building* (1880). W S M

**HALE, BENJAMIN** (1797–1869) — Third president of Hobart College (*qv*), was graduated from Bowdoin College in 1818 and the Andover Theological Seminary in 1822. He was tutor at Bowdoin (1823–1827), professor at Dartmouth College (1827–1835), and president of Hobart College (1836–1858). He was the author of *Introduction to Principles of Carpentry* (1827), and of several religious books. W S M

See HOBART COLLEGE

**HALES, ALEXANDER OF** (d. 1245) — The first great schoolman, exercising a powerful influence over his successors, who made the thirteenth century the golden age of Scholasticism. He was born and educated at Hales in England, and became a Franciscan friar. He was one of the most famous professors at the University of Paris, and won for himself the titles of *Doctor Inefragabilis*, *Doctor Doctorum*, *Theologorum Monarchia*, and *Fons Vita*. Bonaventure was one of his pupils, and Thomas Aquinas and Duns Scotus were profoundly influenced by him. Writing just after the recovery of the works of Aristotle, he was the first to bring the Aristotelian ethics and philosophy to bear upon the Christian system. While his psychology was Aristotelian in its general trend, it followed the traditional Augustinian views of the soul and its faculties. His most important contribution to philosophy was the development of the scholastic method (*qv*) and its application to the discussion of theological problems. This method, which controlled the thought of several succeeding generations, and is still dominant in Roman Catholic theology, was fully developed in his vast *Summa Theologiae*, which was written at the request of Pope Innocent IV and printed at Nuremberg in 1482, and served as the model for the great summists of the next generation. His chief contributions to Theology were the doctrines of the Treasury of Merits and the Indelibility of the Sacraments, which have ever since held so prominent a place in the teaching and practice of the Roman Catholic Church. W. R.

## HALF-DAY SESSIONS

See FRANCISCANS; SCHOLASTICISM.

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**HALF-DAY SESSIONS** — See HOLIDAYS, SCHOOL, SESSIONS, LENGTH OF SCHOOL.

**HALF-TIME PUPIL**. — See ENGLAND, EDUCATION IN, EXAMINATIONS; SESSIONS, LENGTH OF SCHOOL.

**HALF-TIME SYSTEM, PART TIME SCHOOL ATTENDANCE**. — See SESSIONS, LENGTH OF SCHOOL, HOLIDAYS, SCHOOL.

**HALIFAX, MARQUIS OF**. — See SAVILE, GEORGE.

**HALL or HOSTEL** (*Aula, Hospitium, Pædagogium*). — Originally a house (or even a single room) tenanted by a group of university students in common. In some cases these would perhaps be boarders with a master, we find early university statutes directed against masters canvassing on the one hand for pupils among the freshmen, and, on the other hand, outbidding each other for houses. In other instances the principal was originally one of the scholars, or even a townsman, who made himself responsible for the rent, etc. In any case the halls were at first startlingly democratic; principals were elected and statutes were framed by the consent of all the students; and this custom influenced the earliest colleges, which were in fact only endowed *hospitia*. An instance of the transition between a hall and a college may be seen in the foundation of St-Honoré at Paris. This was "a certain house, to be furnished with thirteen beds for the use of poor scholars" under the wardenship of one of the Canons of the Church of St-Honoré, who was however to be removed if the students showed just cause of complaint against his rule (Denifle, *Chart Univ Paris* 1 68). The earlier colleges were in fact generally styled "House" or "Hall," a fact which may best be illustrated by enumerating the first twelve Cambridge endowments in order of their foundation. These are Peterhouse (1284), Michaelhouse (1324), Clare Hall (1326), King's Hall (1337), Pembroke Hall (1347), Gonville Hall (1348), Trinity Hall (1350), Corpus Christi College (1352), King's College (1441), Queen's College (1448), St Catharine's Hall (1475), Jesus College (1496). The great foundation of Trinity (1546) absorbed two older colleges (Michaelhouse and King's Hall) and seven hostels, of which one (Garret Hostel) retains its name to the present day. Dr. Rashdall has traced the steps by which the halls passed from simple lodging houses into officially recognized and controlled communities. University control may be said to have

## HALL

begun with the thirteenth-century legislation which enacted that a house once tenanted by students might thenceforth be let to no outsider so long as there were still students to hire it. Then (about the beginning of the fifteenth century) the authorities attempted to enforce residence in colleges or halls upon all but the richest and poorest students, and, at the same time, to enforce stricter rules within these buildings. The principalships were restricted to masters, and in many other ways collegiate reacted upon aularian discipline, yet these reforms worked so slowly that at Paris, as late as 1486-1487, "certain women kept halls and colleges," as in later times the Dames' Houses flourished at Eton. We must therefore look upon the original meaning of "Hall" as a rather elastic term. Among Cambridge colleges, Clare and St Catharine's kept the title until quite recent times, Trinity Hall keeps it still to avoid confusion with Trinity College. At Oxford, not only the title, but the thing still survives in St Edmund's Hall, endowed as early as 1260, but never formally incorporated, and existing since 1557 in partial dependence upon Queen's College, others were merged into colleges during the nineteenth century. A few modern halls have been founded both at Oxford and at Cambridge for certain groups of non-collegiate students, mostly on a denominational religious basis. The term "hostel system" has been applied in modern times to the more economical arrangements in force at the recent foundations of Keble College, Oxford, and Selwyn College, Cambridge, where the students have all meals in common, and in other ways conform more closely to the collectivist economy of medieval halls and colleges. G G C.

See DORMITORIES, UNIVERSITIES, STUDENT LIFE.

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**HALL, ARETHUSA** (1802-1880) — Leader in the movement for the higher education of women, privately educated. She was principal of academies at Greenland, N H., and Haverhill, Mass (1826-1849). At the latter academy she was the instructor of the poet John G Whittier. She was also engaged in secondary school work at the Brooklyn Female Academy (now Packer Institute) and the Brooklyn Heights Seminary (1849-1860). She wrote *Manual of Morals* (1849), *Literary Reader* (1850), and papers on the higher education of women. W. S. M.

See WOMEN, EDUCATION OF.



**HALL, BAYARD RUST** (1798-1869) — Educational writer and principal of secondary schools, was graduated from Union College in 1820 and Princeton Theological Seminary in 1823. He was president of the College of Indiana (which subsequently became Indiana University) at Bloomington from 1823 to 1831, and principal of academies in New York, Pennsylvania, and New Jersey from 1831 to 1846. His educational publications include a *Latin Grammar* (1828), *The New Purchase* (a satire on the higher educational institutions in the Middle West, 1843), *Teaching a Science* (1848), and *The Teacher Taught* (1852) W. S. M.

**HALL, JOHN** (1627-1656) — An English scholar, wrote at the age of twenty-two years, *An Humble Motion to the Parliament of England concerning the Advancement of Learning and Reformation in the Universities*. He was educated at Durham School and studied at St. John's College, Cambridge. He removed to London in 1647, and entered at Gray's Inn. The *Humble Motion* contains a vigorous onslaught on the university studies and teaching of the time, written, as the title shows, under the inspiration of Bacon's writings. He complains of the abuse of the endowments of the university. The revenues might be devoted to the establishment of more professorships and fewer fellowships. He says, speaking of Cambridge, that there are only professorships for the three principal faculties, and "these but lazily read, and are carelessly followed." He complains that no chemistry is studied, an early reference to the subject by this name. He deprecates the lack of "quick or dead anatomies, or ocular demonstration of herbs." Nor is there any "manual demonstration of mathematical theorems or instruments." He suggests "a calculation and amendment of the epochs of time." He suggests that the needed reformation of the universities can be brought about by reducing the "friar-like" list of fellowships, so that it only includes working fellows of different kinds. Money thus saved could be applied to experiments and inventions, etc. Improving on Humphrey Gilbert (*q v*) he suggests that two (instead of one) new books could go to the public library, and that copies of foreign books sold in England should also be required. Antiquities, *e g* medals, statues, ancient rings, etc., taken from confiscated estates, should go to the public museums, and foreign scholars should be honored. Like Comenius, he is an advocate of realistic instruction in the school. In short, his University demands are the further development of mathematics, the determined investigation of natural science and cataloguing of results, and the drawing up of a synopsis of medicine. Hall is said to have had a pension from the Commonwealth authorities equivalent to £350 a year of present money, and Thomas Hobbes the philosopher said of

him: "No man had ever done so great things at his age." F. W.

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**HALL, SAMUEL READ** (1795-1877) — One of the earliest organizers of American institutions for the training of teachers, was born at Croydon, N.H., on Oct. 27, 1795. He was educated in the district schools and at Kimball Academy, Meriden, N.H. For ten years he was a teacher in the district schools, and in 1823 he organized a seminary for the training of teachers at Concord, Vt. The seminary was later moved to Andover, Mass., and subsequently to Plymouth, N.H. During the seventeen years (1823-1840) that Mr. Hall conducted his teachers' seminaries, the first of their kind in the United States, he was active in agitating the cause of professional education. His *Lectures on School-Keeping* (1829) and his *Lectures on Female Education* (1832) were important contributions to the scientific study of education during the early period. Hall was one of the founders of the American Institute of Instruction (*q v*), and he is reported to have made the first use of blackboards (*q v*) in the United States. The late Henry Barnard is authority for the statement that Hall used blackboards in the district schools that he taught prior to 1815, and extensive use was made of blackboards in the teachers' seminaries that he conducted between 1823 and 1840. Besides the two educational books already referred to, Hall was the author of numerous textbooks, including *The Child's Assistant* (1827), *Geography for Children* (1832), *School History of the United States* (1832), and *School Arithmetic* (1836) W. S. M.

See EDUCATION, ACADEMIC STUDY OF

**HALL, THOMAS** (1610-1665) — Minister and schoolmaster — a pedagogical follower of John Brinsley (*q v*). He was educated at the King's School, Worcester, where Henry Bright was schoolmaster, from 1624 to 1629 he was at Oxford. He returned to Worcestershire and taught a "private school at the Chapels belonging to King's Norton." He became curate of King's Norton and master of the free grammar school at the same place. In his school work, some persons of quality sent their sons "to table (board) in the house with him," and many of his scholars proved able ministers. He contributed to the library of the Free School at Birmingham, and at King's Norton he gave his study of books, on condition that the parish built a library house for them.

The classical school textbooks written by Hall are. (1) *Wisdom's Conquest — or An Explanation and Grammatical Translation of the*

13th book of *Ovid's Metamorphosis* (1651); (2) *Phaeton's Folly or the downfall of Pride. Being a Translation of the 2nd Book of Ovid's Metamorphosis, paraphrastically and Grammatically* (together with Flowers, Phrases, Rhetoric, Etymologies) (1655)

Hall further wrote the *Vindiciæ Litterarum, the Schools Guarded* (1654), in which he attacked the position of the Anabaptists, who argued according to Hall that the arts and sciences are "idols, anti-christian, the smoke of the bottomless pit, filth, froth, dung, needless and useless for the right understanding of the Scripture. The Spirit alone was sufficient without the human help of learning." Hall therefore undertakes to prove the excellency and usefulness of arts, sciences, languages, and history and all sorts of human learning in subordination to divinity and preparation for the ministry. Hall's defense of learning is cast in logical form. It is followed by *Centuria Sacra*, a hundred rules for expounding the Scriptures and a Scriptural rhetoric, containing a compendium of all the most material tropes and figures in the Scriptures. In the same volume is contained the *Histriomastix*, or a whip for Webster — an examination of John Webster's (*qv*) *Examen of Academies*, which Hall calls "delusive," and claims to show the sophistry of Webster's "new-found light," which Hall thinks tends to the subversion of universities, philosophers, physicians, magistrates, ministers. Hall also wrote books on the *Loathsomeness of Long Hair*, 1654, and the *Downfall of May-Games*, 1660 F W.

**HALLE.** — See FRANCKE, AUGUST HERMANN; GERMANY, EDUCATION IN, under UNIVERSITIES, THOMASIIUS, CHRISTIAN, WOLFF, CHRISTIAN.

**HALLE, THE ROYAL FREDERICK UNIVERSITY OF** — This institution was established in 1694, the University of Wittenberg (*qv*), established in 1502, being incorporated with it in 1817, this explains the official title, *Vereinigte Friedrichs-Universität Halle-Wittenberg*. The plan of founding a seat of higher learning at Halle goes back to the Elector Frederick III of Brandenburg, who was desirous of maintaining a university for the newly acquired duchies of Halberstadt and Magdeburg, thereby removing the existing dependence upon the nearby Saxon university of Leipzig, he was furthermore anxious to possess another Lutheran citadel of learning besides the somewhat remotely situated University of Königsberg. The celebrated jurist Thomasius (*qv*), whose advanced ideas had led to his dismissal by the conservative University of Leipzig, transferred his activities to the city of Halle in the late eighties of the seventeenth century, and was followed a few years later by the theologian, August Hermann Francke (*qv*), who had been forced to leave the same institution. The imperial sanction for the establishment of a regular university was not secured, however,

until 1693 (Oct. 19), the formal opening taking place on July 12 of the following year. From the beginning an institution of four faculties was planned, the theological faculty representing more liberal Lutheran tendencies than prevailed at Wittenberg and at Leipzig. Indeed, the entire spirit of the new institution was *modern*, in consequence of which it has been styled by Paulsen the first modern university. Thomasius had evoked considerable opposition at Leipzig not only by announcing, but actually delivering his lectures in the German language, at Halle he was free to do as he chose, and as a result of his example German gradually displaced Latin as the vehicle of expression in university lectures. The theological faculty was for many years the most important of the university, pietistic tendencies prevailing, and during the third and fourth decades of the last century was the most renowned in Germany. The medical faculty did not attain importance until the beginning of the nineteenth century, several clinics having been established at the end of the previous century, at which time the natural sciences were still included in this faculty. The faculty of philosophy had secured wide renown at the beginning of the eighteenth century, largely through the influence of Christian Wolff, professor of mathematics and philosophy, who was dismissed for his radical applications of philosophy to theology by King Frederick William I of Prussia, but reinstated by Frederick the Great, and again at the close of the century through Friedrich August Wolf, the philologist, who organized a philological seminar in 1787, and who was largely instrumental in divorcing this discipline from theology, upon which it had been dependent. Another prominent name connected with this faculty is that of the philosopher Eduard Erdmann, whose connection with Halle covered a span of sixty years (1836-1896). In the course of the nineteenth century various scientific institutes (physical, chemical, biological, etc.) were established, and in 1863 the best equipped agricultural institute in Germany was organized as an integral part of the university, being included under the faculty of philosophy. The political science seminar (1872) contains an excellent collection of statistical material, and has been publishing a valuable series of contributions since 1877. The library is housed in a modern building (1882), and contains about 250,000 volumes and almost 1000 manuscripts. Connected with the University Library is the Hungarian National Library, founded in Wittenberg in 1725, and containing over 100 manuscripts and over 4000 volumes of Hungaria and old Wittenberg theological literature. The university also possesses an archaeological museum, containing a numismatic collection and a collection of engravings. The annual budget amounts to approximately half a million dollars. During the first half of the eighteenth century Halle attracted more stu-

dents than any other German university with the single exception of Jena, but toward the end of the century it was passed by Leipzig, although it had grown larger than Jena in the meantime. During the winter semester of 1911-1912 its 3112 students were distributed as follows: Theology 378, law 389, medicine 356, philosophy 1572, auditors 233, more than half of the total number of matriculated students being enrolled in the faculty of philosophy. The teaching staff consists of about 100 professors and 60 docents.

R T, Jr

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**HALLUCINATION.**—A perception that does not originate from a stimulus from the world external to the body. There is no psychological distinction between hallucinations, illusion (*q v*), and perceptions (*q v*), for all are interpretations of sensory data. The distinction is sometimes made that perceptions have a sensory basis, and the interpretations from the sensory data are like those of most people, that illusions are wrong interpretations of sensory stimuli, while hallucinations have no external object corresponding to the stimulus, and that the interpretations of the mental sensory data are necessarily erroneous. The normal perceptions and illusions may therefore be called exogenous in origin, and the hallucinations are endogenous. This differentiation, however, will not hold in all cases, and there is no such sharp dividing line between perceptions, illusions, and hallucinations as is indicated by this definition. That hallucinations are abnormal, that perceptions are normal, and that illusions may be partly normal and partly abnormal is another distinction that has been drawn, but this is only partly true. Hallucinations are found to a great extent in abnormal people, but they are of almost constant occurrence in normal individuals in a certain form (in the condition of dreaming).

The qualitative characteristics of hallucinations are the same as those of perceptions. They have the subjective element of reality, they have color, form, depth, tone, and emotional effect. All these qualities are similar to those in perception of so-called normal character. We may say, therefore, that an hallucination is a perception most often due to the activity of the central nervous apparatus without the intervention of the peripheral organs, and commonly found in abnormal mental conditions.

All kinds of hallucinations may be present at the same time, *e g.* that of an animal (visual),

moving (visuo-motor), of horrible color (visual), giving forth obnoxious fumes (olfactory), that of poison (organic?), and bellowing loudly (auditory); that of being transported through the air (organic), of having wings grow (skin and organic), of seeing (visual) and talking (auditory and motor) with angels.

The most typical condition in which hallucinations are found is that of delirium, in which condition the hallucinations are sometimes the only abnormal phenomena. All toxic states in their acute forms are accompanied by hallucinations, and the diagnosis is sometimes made, other information being lacking, from the character of these perceptions. In dementia precox hallucinations are common, and they lead to the abnormal impulsive actions so characteristic of this form of mental disease. In epilepsy, the auras may be considered as hallucinations, and the confusional states following an epileptic attack are often made up of hallucinations of hearing, sight, and the organic senses. In mania, hallucinations are occasionally met with, and in paranoia they form the foundation on which the subsequent structure of delusions of persecution and ideas of grandeur is built.

The presence of hallucinations usually indicates a grave condition, although it must be remembered that the accumulation of cerumen in the ear, the presence of a catarrh or of polypi in the nose, decayed teeth, and injuries to or disease of the eye may lead to the formation of hallucinations of the appropriate sensory character. The hallucinations of peripheral origin are usually of a vague type, but if unattended to they may lead to central, *i e* cerebral, disturbances and become definite. It is generally believed that constant stimulation eventually leads to lack of attention to the sensation, but this is not always true, for we find that the constant buzzing sounds from ear affections often lead to an exaggeration of the mental character of the sensations, owing to the abnormal degree of attention being given to them, and there may result an elaboration of the sensation into a complex of a fixed character. It is, therefore, of importance that at the first sign of an abnormal sensation (hallucination) a careful examination of the sense organ be made, for the treatment of a bad physiological condition in the early stages will stop the vague hallucination and prevent the formation of a more definite one.

S I F

See DELIRIUM, DEMENTIA PRECOX, EPILEPSY, INTOXICATION, PARANOIA.

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**HAMBURG, FREE TOWN OF, EDUCATION IN.**—See GERMANY, EDUCATION IN.

**HAMERTON, PHILIP GILBERT** (1834-1894). — English art critic, etcher, and essayist; born near Oldham in Lancashire, where he was educated at school and privately. A great part of his life he spent in France. After devoting himself for some time to painting and sketching without much success, he turned to art criticism and writing, and contributed much to spreading a knowledge of art among the public and in popularizing etchings. His best known work is the *Intellectual Life* (1873), a collection of essays in the form of letters, marked by clear, simple style, if not by a remarkable depth of thought. The thesis which Hamerton sets up is that "intellectual living is not so much an accomplishment as a state or condition of the mind in which it seeks earnestly for the highest and purest truth." In the section of the work which is devoted to education there is an insistence on the *non multa sed multum*. Modern education attempts to cover too many subjects, with the accompanying scattering of interest, lack of mastery, absence of concentration, and pressure. Hence he approves of the old and somewhat restricted curriculum, of few subjects, but thoroughly cultivated, and of a system which would now be called elective, namely the granting of certificates of competence for ability in any subject rather than insisting on a definite course concluding in a university degree. "The only hope for us is to make a selection from the attempts of our too heavily burdened youth, and in those selected studies to emulate in after-life the thoroughness of our forefathers."

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**HAMILTON COLLEGE, CLINTON, N. Y.**

— An institution which developed out of the Hamilton Oneida Academy, established by Samuel Kirkland, a missionary of great influence among the Oneida Indians, who had been a pupil at Dr. Wheelock's Indian School at Lebanon (see DARTMOUTH COLLEGE). The academy was chartered in 1793, and among its trustees was Alexander Hamilton. John Niles, a Yale graduate, was the first principal when work was begun in 1798. In 1812 it was decided to extend the scope and influence of the institution, and funds were raised for a college through the efforts of Rev. Caleb Alexander, a grant was also obtained from the legislature. Hamilton College was chartered in 1812, and it was proposed to begin with professors of chemistry and mineralogy, surgery, and anatomy, the institutes of medicine, and obstetrics. Nothing became of the suggested medical chairs, however, for some time. The first president was Rev. Dr. Azel Backus, a graduate of Yale (1812-1817). The number of students rose rapidly, and buildings were added at the

cost, however, of the reserve fund, so that by 1835 a second permanent fund was established. Under President Simeon North (1839-1857) progress was again very well marked; buildings were improved and added to; and new subjects were introduced, including geology and mineralogy, elocution and rhetoric, law, political economy and history, moral philosophy and religious instruction, French and German. The succeeding presidents have been Dr. Samuel Ware Fisher (1858-1866), Dr. Samuel Gilman Brown (1868-1881), Dr. Henry Darling (1881-1891). Hamilton College has had a number of distinguished scholars on its faculty, and on its roll of alumni are to be found the names of many who have achieved distinction in the Christian ministry and in all fields of public life.

The college is well situated in the midst of beautiful scenery, with a campus of ninety acres, and comprises sixteen buildings used for recitation and other purposes. The entrance requirements are equivalent to fifteen units. Two courses, classical and Latin scientific, are offered, leading to the degrees of A B, Ph B, and B S. The student enrollment in 1911-1912 was 190. Provision is made to receive the students in dormitories and fraternity houses. There is a faculty of twenty members. Melancthon Woolsey Stryker, D D, LL D, is the president.

**HAMILTON COLLEGE, LEXINGTON, KY**

— An institution for the education of young women, established in 1869. College preparatory, collegiate, music, art, and expression courses are offered. Two years of college work are offered, for which credit is given at the Transylvania University (qv). There is a faculty of twenty-five members.

**HAMILTON, JAMES** (1769-1829) — In-

ventor of a new method of learning languages — the Hamiltonian System. He was born in London, but spent most of his time in Europe as a merchant. He studied French, German, Italian, Latin, and Greek. A reversal of fortune compelled him to resort to teaching languages. His system consisted in putting foreign textbooks with literal interlinear translations into the hands of his pupils and giving them a vocabulary before he taught grammar. He made an experiment in London on a number of poor boys placed under his charge by an English member of Parliament for six months, at the end of which they could translate the Gospel of St. John and Cæsar's *Commentaries*. Hamilton taught languages very successfully (1815-1823) in most of the large Eastern towns in America, as well as Montreal and Quebec. On his return to England he taught in London and many other towns. He was several times attacked as a charlatan and impostor, but although he certainly employed methods of advertising which were not above suspicion,

there is no reason to believe that he was not honest. He published many keys, including the Gospels of St. Matthew and St. John in Greek; Gospel of St. John, *Æsop's Fables*, Eutropius, *Phædrus* in Latin, Gospel of St. John, Perrin's *Fables*, in French, Campe's *Robinson Crusoe* in German, Gospel of St. John in Italian. His system he describes in *History, Principles, Practice and Results* . . . of the *Hamiltonian System* (Manchester, 1829).

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SMITH, SYDNEY *Essays Social and Political*. (London, n. d.)

**HAMILTON, SIR WILLIAM** (1788-1856). — A leader in the school of Scottish metaphysics. After some schooling in Scotland and two years in London, Sir William went in 1807 as a Snell exhibitioner to Balliol College, Oxford, where he pursued his studies zealously, though with some independence, devoting himself chiefly to the study of Aristotle and the classics. Graduating with honors in 1810, he became a member of the Scottish bar, and took up his residence in Edinburgh. He was not markedly active or successful in his chosen profession, chiefly because his life was mainly that of a student, he devoted himself to researches of all kinds, unbroken except for occasional excursions into the field of practical politics and social reform. In 1820 he was an unsuccessful candidate for the chair of moral philosophy in the University of Edinburgh, where, however, in 1836, he was appointed to the professorship of logic and metaphysics, a position which he held till his death. Meanwhile, in 1829, his career as a philosophical writer began with the appearance in the *Edinburgh Review* of some articles on *The Philosophy of the Unconditioned*. His edition of the works of Reid appeared in 1846, that of Stewart in 1855.

His philosophy was not systematically developed, but its main points are clear enough. The central point is his view of consciousness, which he analyzed under three aspects. (1) As it is in itself. In this sense consciousness is noumenal and is another name for immediate or intuitive knowledge. (2) As divided into the three groups, cognition, feeling, and conation. Consciousness is recognition of its own acts and affections. But it is only cognition which has received at his hands adequate treatment. The laws of cognitive activity he has developed with remarkable precision. His doctrine of perception was influenced by both Hume and Kant, and usually teaches that matter is in itself unknown, and that, so far as it is perceived, it is perceived only in its relations to the perceiving mind. (3) Consciousness is called conditioned, and assumes the form of common sense. The facts here he classified into truths of perception and truths of reason, both of which are alike inscrutable in their essence and

therefore inexplicable. Yet the facts themselves are evident. Hamilton was clearly a realist in his psychological doctrine. He does not develop his doctrine of the will, with which he coupled desire, except in fragmentary discussions of ethical import, and feeling is likewise treated only in some lectures in which he maintains that pleasure is the reflex in consciousness of the spontaneous energy of the soul, pain being the consciousness of restrained exertion. Thus he planted himself on the authority, yet the limited sphere, of human consciousness. In his logic and metaphysics the formal consequences of this standpoint are seen.

Hamilton's chief practical interest was in education, in which he distinguished himself both as a teacher and writer. His lectures in psychology, metaphysics, and logic at the University of Edinburgh were for twenty years (1836-1856) the most powerful factor in the thought of Scotland. They, together with his writings, won him widespread recognition as the most stimulating teacher, the most learned metaphysician, and the profoundest speculative thinker in Great Britain. His contributions to educational literature consist of a series of eight essays originally published in the *Edinburgh Review* during the years 1830-1836. While they have not the universal human interest possessed by those of Spencer, published some twenty-five years later, they attracted general attention, had a decisive practical effect, and contained much of permanent value. Five of them were devoted to the subject of university reform in its various aspects. With great dialectical skill and enormous learning he argued for the restoration of their ancient powers and prerogatives to the universities of Oxford and Cambridge. He contended that these universities had been absorbed by the colleges which had grown up in connection with them and usurped their time-honored functions. In the universities as originally constituted the cycle of instruction was distributed amongst a body of professors, all professedly chosen from merit, and each concentrating his ability upon a single subject. But since the Reformation the academical instruction had been monopolized by the colleges and left in the hands of tutors and fellows, appointed from favoritism, and each undertaking to teach the whole curriculum. This usurpation of the teaching function by the colleges he vigorously attacked as illegal, modern, and destructive of educational efficiency, and advocated the restoration to the universities of their former functions. The reforms which he championed have since been accomplished. The university professoriate has been resuscitated, reorganized, and re-endowed; restrictions have been removed from the fellowships and they have been thrown open to merit, the conduct of examinations and the granting of degrees has been restored to the university authorities, students are now admitted to the universities without becoming

## HAMLIN

connected with any college; and, finally, all religious tests (against which Hamilton argued trenchantly and which prevented the attendance of Dissenters and Roman Catholics) have been abolished by the universities, though not by the colleges

Hamilton was an ardent humanist. One essay was devoted to the defense of the humanities as the most useful subject of instruction. Another goes at length into the controversy between mathematics and philosophy, as to which is the more useful as a means of mental training. His conclusion is that "no study cultivates a smaller number of the faculties, in a more partial or feeble manner, than mathematics, and therefore they ought not to be made the principal, far less the exclusive, object of academic encouragement"

H D and W R

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**HAMLIN, CYRUS** (1811-1900) — Missionary, educator, and first president of Robert College, was born at Waterford, Me., in 1811. He was graduated from Bowdoin College in 1834, and three years later from the Bangor Theological Seminary. He went to Turkey as a missionary in 1838. At the close of the Crimean War he secured from Christopher R. Robert, a New York merchant, a gift for the organization of an undenominational Christian college near Constantinople. Robert College was opened in 1860, and Mr Hamlin was its president until 1876. He was a professor in the Bangor Theological Seminary from 1877 to 1880, and president of Middlebury College from 1880 to 1885. For an account of his educational activities among the Christians, Moslems, and Jews of Turkey, see his *My Life and Times* (Boston, 1883).

W. S. M.

See ROBERT COLLEGE.

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WASHBURN, GEORGE *Fifty Years in Constantinople and Recollections of Robert College* (Boston, 1909.)

**HAMLIN UNIVERSITY, ST PAUL, MINN** — A coeducational institution, established in 1854 at Reading, Minn., and after a period of suspension reopened at Hamline in 1880. About one half the contributions to the university have come from members of the Methodist Episcopal Church. There are no college fraternities. The departments include the college of liberal arts, conferring degrees of A B and Ph B, and a preparatory school

## HAMPDEN-SIDNEY COLLEGE

There were in 1910-1911 twenty-three members of the instructing staff, and the students numbered 226 in the college of liberal arts, and 25 in the preparatory school

C. G.

**HAMMA DIVINITY SCHOOL, SPRINGFIELD, OHIO** — A theological seminary of the Lutheran Church, established in 1850. Degrees are not granted

**HAMMOND, CHARLES** (1813-1878) — Academy principal; was educated in the common schools of Connecticut and at Monson Academy and Yale College, graduating at the latter institution in 1839. He subsequently took the course at the Andover Theological Seminary. He was principal of the Monson (Mass.) Academy from 1845 to 1878. His publications include *New England Academies and Secondary Schools* (1867), *History of Groton Academy* (1856), and numerous papers on secondary education.

W. S. M.

See ACADEMY IN AMERICA.

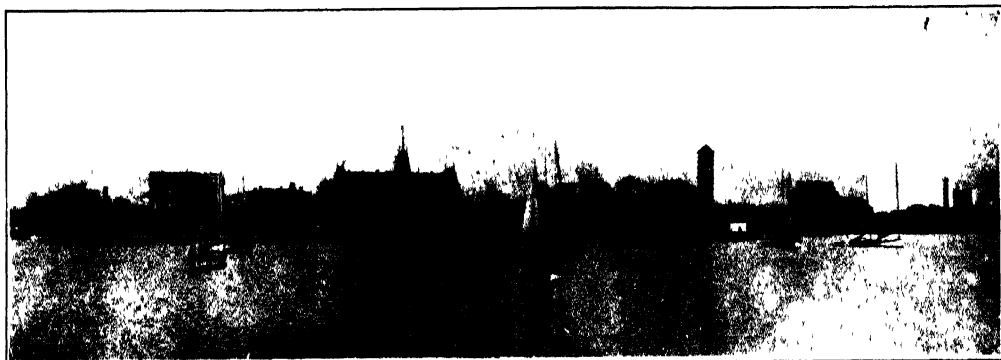
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**HAMPDEN-SIDNEY COLLEGE** — A small but historic institution, situated in the village of Hampden-Sidney, near Farmville, Va. Its beginning is found in measures taken in 1774, by the Presbyterian Church, to establish a "public seminary" in Prince Edward County. The prospectus of the Hampden-Sidney Academy declared that no sectarian consideration should influence the conduct of the school, a pledge kept throughout its history. The academy was opened on Jan 1, 1776. The name was a memorial to the English patriots, John Hampden and Algernon Sidney. In May, 1783, a college charter was secured from the General Assembly of Virginia, among the incorporators were Patrick Henry, James Madison, and a number of famous Virginians. The college increased rapidly in the scope of its work, number of students, and endowments up to the Civil War. From 1863 to 1866, inclusive, no students were graduated, all of them enlisting in the Confederate army as soon as they reached the age for service. At this time less than thirty boys remained in college.

The record of the alumni is remarkable. Early students included William Cabell, Governor and judge of the Virginia Court of Appeals; Joseph Carrington Cabell, co-founder with Thomas Jefferson of the University of Virginia; William Cabell Rives, twice minister to France, and representatives of many old Virginia families. From 1787 to 1789 William Henry Harrison was a student. Among the alumni there have been two members of the Cabinet, ten senators, twenty-two members of the House of Representatives, eight governors of states, and four ministers to foreign coun-





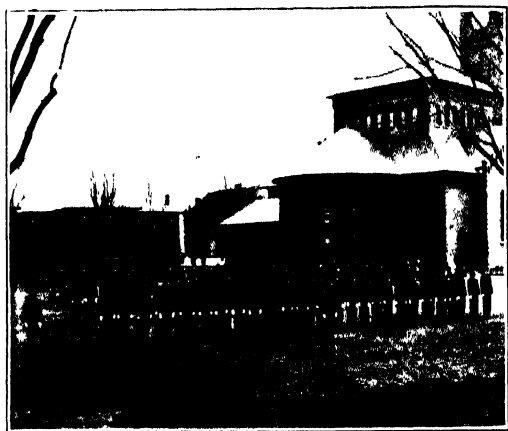
General View from Hampton Roads



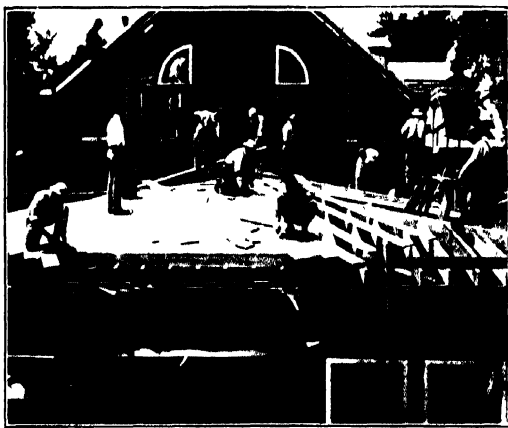
Instruction in Wagon Building



Instruction on the Hand Loom.



The Cadet Corps



Instruction in Carpentering.



tries Alumni also held many important posts in the Confederate States

The institution maintains a preparatory school and undergraduate courses, conferring the bachelor's degree in arts and letters, admission to which is by examination or certificate from an approved high school The degree of A. M. is conferred There were in 1910-1911 eleven professors in the faculty, and 113 students C. G.

**Reference: —**

History of Hampden-Sidney College in the biographies of its presidents, 1775-1900, in *National Cyclopaedia of American Biography*, Vol. II, pp. 21-27

**HAMPTON NORMAL AND AGRICULTURAL INSTITUTE, HAMPTON, VA —**

This school for negroes and Indians was founded by General Samuel Chapman Armstrong (*q. v.*) in 1868 on the shore of Hampton Roads, near Fort Monroe, Va., for the purpose of providing a practical education for the children of the ex-slaves For two years it was under the control of the American Missionary Association In 1870, however, it became independent of any association or sect, receiving a charter from the state of Virginia

Hampton Institute is now an undenominational industrial school, controlled by a board of seventeen trustees The school property includes 1100 acres of land and 135 buildings, among which are a church, an academic hall, a library, dormitories, and buildings for the teaching of agriculture and the mechanical trades The number of students (1912) was 1699, of whom 81 were Indians (Indians were first admitted in 1878), 899 are negro boarding pupils, and 457 are negro children in the Whittier day school, which is used as a practice school for the training department The negro boarding pupils pay for their board and clothing, partly in cash, partly in labor, the Indians are assisted by the government in these payments But the great majority of students cannot pay their tuition, which is provided by churches, Sunday schools, benevolent societies, and individuals

Hampton Institute offers elementary and advanced academic and agricultural courses, thirteen trade courses, and courses in business, home economics, library methods, matron's work, and the training of teachers Its object is to train teachers and industrial leaders for the negro and Indian races Great stress is laid on character building and on the development of a missionary spirit in the pupils Besides the regular work on the school grounds, which includes a summer school for teachers, a farmers' conference, and a general negro conference, Hampton Institute carries on extension work of a very varied character, influencing schools and communities in all parts of Virginia and in many other Southern states More than seven thousand young people have

had the benefit of Hampton's ideals and training. They have for the most part gone back to the Western plains or to the Southern states, and there have become centers of influence — teachers, farmers, skilled mechanics, thrifty homemakers — leading their people more by deeds than by words to a higher plane of citizenship. H. B. F

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LUDLOW, H. W. *Twenty-two Years' Work of the Hampton Normal and Agricultural Institute* (Hampton, Va., 1893)

**HANCOCK, JOHN** (1825-1891). — School superintendent, was educated in the district schools of Ohio He was for four years (1845-1849) a teacher in the common schools of Ohio, principal of schools in Cincinnati, 1850-1864, instructor in a business college, 1864-1866, city superintendent of the schools of Cincinnati, 1867-1874, city superintendent of the schools of Dayton, 1874-1884, city superintendent of Chillicothe, 1885-1888, and state superintendent of public instruction in Ohio, 1888-1891 He was the author of numerous papers on educational subjects W. S. M

**References: —**

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WHITE, EMERSON E. John Hancock *Proc. N. E. A.* for 1891, pp. 44-48

**HANDBALL** — One of the oldest and most universally played games is that of bouncing a ball against a wall by hitting it with the open hand From this simple children's game, various difficult and complex games have been developed in different countries In Ireland the game of handball is played in a rectangular court surrounded by four smooth walls, the ball is caromed around the walls and returned with the hand In Spanish-American countries the game called pelota (ball) is very similar to handball, only the hand is reinforced by a wooden scoop strapped to the forearm Another interesting development of the "handball game" is the game of "fives," which it is claimed originated with the boys at Eton and Rugby The Eton fives court was originally formed by two buttresses of the chapel, the side obstacle, called the "pepper box," being the end of the banister belonging to the chapel steps, and the "hole" merely an accident The Rugby fives game is slightly different from the Eton game Both varieties of this game are very popular in the Public Schools of England as well as at Oxford and Cambridge

In recent years a simple game of handball has been developed in the United States This new form of the old game is rapidly growing in favor as an indoor game, and is now played in nearly every gymnasium in the coun-

try. The rules of this new game vary in different parts of the country, but the essential principles are the same everywhere. In its simplest form the game is played against a smooth surface of brick, cement, or wood, about fifteen to twenty feet wide and twelve to fifteen feet high. The floor in front of the wall is of wood or cement, the court is marked by parallel lines running back from the corners of the walls about twice the width of the walls. A transverse line across the middle of the court serves as a service line. The game is played by two, three, or four players. When there are three players, each player scores for himself when serving, and the other two players play as partners against the server. When played by four players, the game is called "doubles," and the players are divided into sets of partners who score together. The rules of the game are similar to those of lawn tennis. The server stands in the front half of the court, bounces the ball on the floor, and hits it with the open hand against the wall, the ball must land in the back half of the court and be returned by the receiver on the first bounce. The ball is then bounced against the wall and returned either "on the fly" or after one bounce on the floor, in any part of the court, until one player fails to return it or makes it bounce outside of the court. The server continues to serve until he fails to return the ball in the court when he is "out" serving. Each point missed by the receiver counts one point for the server. The game is for twenty-one points. Much interest is added to the game by the presence of a side wall or other obstruction, making possible a greater variety of difficult plays. The game is extremely popular, first, because it is easily learned and yet affords unlimited opportunity for the development of skill, second, because it may be played in any good-sized room with a smooth wall or on smooth ground adjoining a smooth building wall, and third, because all the equipment necessary for the game is a small rubber ball.

Handball is a most valuable form of physical training because it combines most of the advantages of the best athletic games. As a form of exercise it is admirable, for it brings into play all the different groups of muscles, the abdominal organs are stimulated by the bending and twisting movements, and the activity of the heart and lungs is accelerated. The game may be played lightly or vigorously, according to the strength of the players. Handball is also valuable as a means of physical education. It serves to develop agility, judgment, accuracy, and endurance. In addition to these physical and educational values, handball affords wholesome recreation of the kind that is most beneficial to students and teachers. Another valuable characteristic of handball is that it can be played outdoors as well as indoors. There are many handball courts in

the yards and on the roofs of college and school gymnasia  
G L M

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**HANDWORK IN EDUCATION** — See ART IN EDUCATION, also APPRENTICESHIP AND EDUCATION, INDUSTRIAL EDUCATION, MANUAL TRAINING

**HANDWRITING** — See WRITING

**HANNAK, EMANUEL** (1841–1899) — Austrian educator, born at Teschen, where he received his school education. In 1859 he entered the University of Vienna, and devoted himself mainly to the study of history. In 1866 he became a teacher in a gymnasium in Vienna, and at the same time private docent in the university. His main interest was in history and the teaching of that subject. In 1870 he gave instruction at the *Padagogium*, of which Dittes (*qv*) had charge, for the further training of teachers. He became greatly interested in pedagogy and the training of teachers. In 1874 he was appointed director of the Normal School at Wiener-Neustadt, and with this in view visited the chief normal schools of Germany. He achieved great success in this position, and through his interest in education and the after training of teachers won the support of residents and teachers. In 1881 he succeeded Dittes as director of the *Padagogium* in Vienna, his work there attracted attention not only throughout Europe, but also in the United States. In 1889 he became honorary member of the New York Industrial Association, and two years later wrote a monograph on *The Training of Teachers in Austria* for the New York College for the Training of Teachers Educational Monographs (Vol 11, No 3, pp 87–112). Besides his other activities, he took a prominent part in promoting the higher education of women, and the first German gymnasium for girls was opened at the *Padagogium* in 1891. Of his writings the majority deal with the teaching of history and textbooks in history. *Lehrbuch der Geschichte für Mittelschulen*, *Lehrer- und Lehrerinnenbildungsanstalten*, *Lehrbuch der österreichisch-ungarischen Geschichte* (1884), *Historischer Schulatlas* (1886), *Methodik des Unterrichts in der Geschichte* (1891). In 1889 he issued a new edition of K Schmidt's *Geschichte der Pädagogik*, to which he contributed the section on education in ancient times. He was a contributor to Rein's *Encyclopädisches Handbuch*, and wrote several reports on the teaching of history for international expositions.

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**HANOVER** -- See GERMANY, EDUCATION IN.

**HANOVER COLLEGE, HANOVER, IND**

— A coeducational institution, the successor of Hanover Academy, a school opened in a log cabin in 1827, by the Rev John Finley Crowe, at the request of the Presbytery of Salem, Ind. The first students were sons of the Scotch-Irish Presbyterians who settled in Indiana. On Dec 30, 1828, the school was incorporated by the legislature of Indiana. The Theological Department, established to meet a condition imposed by the synod, was continued until 1840, when it was removed to New Albany, Ind., and later became the McCormick Theological Seminary (*qv*). In 1833 the institution was chartered as Hanover College, and opened on the manual labor (*qv*) system, which soon failed. On Feb 25, 1909, the charter was amended to eliminate denominational control. One trustee is nominated each year by the alumni.

The college maintains, besides the usual undergraduate courses, admission to which is based on entrance requirements of fifteen units, a summer school, a preparatory academy, and graduate courses conferring the degree of M A for one year's work in residence. There were in 1911-1912 twenty-one members of the instructing staff, and an enrollment of 260 students. C G.

**HARDENBERGH, JACOB RUTSEN** (1736-1790) — First president of Rutgers College, was educated in the academies of New Jersey, and was for several years engaged in the ministry of the Dutch Reformed Church. He was instrumental in the establishment of Queen's (now Rutgers) College, and was its first president (1770-1790). W S M

See RUTGERS COLLEGE.

**HARDIN COLLEGE, MEXICO, MO** — An institution for the education of young women, founded in 1873. High school and junior college, music, and art work are given. There is a faculty of twenty-four instructors.

**HARKNESS, ALBERT** (1822-1907) — Author of Latin textbooks and college professor, was graduated from Brown University in 1842, and subsequently studied in Germany. He was for ten years instructor in secondary schools, and in 1855 he became a professor in Brown University. He was one of the founders of the American Philological Association and of the American School of Classical Studies at Athens (*qv*). He was the author of seventeen Latin textbooks. W. S M

**HARMAR, JOHN** (1594-1670) — Classical scholar and schoolmaster, educated at Winchester and Magdalen College, Oxford. He took his B A in 1614, and was a master in Magdalen College School, Oxford, in 1617.

He became headmaster of St Albans School in 1626, whence he dates his translation of the *Janua linguarum* of William Bathe or Bateus, a Jesuit of Salamanca (1626). In 1650 he returned to Oxford as professor of Greek. He wrote school textbooks, *Praxis Grammatica*, 1622, and the *Lexicon Etymologicum Græcum*, being an edition of Scapula, with a *Lexicon Etymologicum Linguae Græcæ*, compiled by Harmar himself in 1637. He is also noteworthy as the translator of the Assembly's *Shorter Catechism* into Greek and Latin, 1659.

F W

**HARMONY, MUSICAL** — See MUSICAL TERMS

**HARMONY, HARMONIOUS DEVELOPMENT**

— The social philosophy of the later eighteenth century was cosmopolitan, not nationalistic, in tenor. It regarded the divisions of mankind into different political states as arbitrary or artificial, and took Humanity as its ideal object of endeavor. Man was more than the citizen. Consequently the educational systems that had national, or any particularistic political or religious, ends were looked upon with hostility. In opposition to them were urged the superior claims of an education which should develop the individual as a member of humanity. The motto of such an education was the harmonious development of all the faculties of the individual, as against the partial and narrowing tendencies attributed to national and confessional systems of education. The conception of harmony of development was strengthened by the tendency toward "Hellenism" — that is, to regard the Greek personality as the normal expression of human powers. (See CULTURE.) It was also associated with the popular objective and absolute idealisms of the time, which regarded the individual as universal mind in miniature, and which treated development as the process of actualizing the latent or potential universality. Under this influence the idea of harmony took in some cases (as in that of Froebel) a romantic or even mystical turn, instead of the classic form characteristic of the Hellenic ideal. J D

See DEVELOPMENT, FROEBEL; GOETHE, HERBART, LESSING, NEO-HUMANISM, PESTALOZZI, ROMANTICISM, VOLTAIRE

**HARNISCH, WILHELM** (1787-1864) --

German educationist of the Pestalozzian school, was born in Wilsnack, near Potsdam, Prussia, attended the gymnasium at Salzwedel, and in 1806 entered the University of Halle. After about half a year his study there was rudely interrupted, as the university was closed by order of Napoleon I. He spent a year in tutoring, and then completed his studies at the University of Frankfurt-on-the-Oder. In 1809 he was called as a teacher to a private

school in Berlin, which had been founded by Plamann, a direct disciple of Pestalozzi. There he also came in contact with Jahn (*qv*), and was inspired by him with a great love of gymnastics. In 1812 Harnisch was appointed as principal of the teachers' seminary at Breslau, which institution he soon made one of the most important centers of Pestalozzian ideas in Germany. When the war of liberation began, he, with all of his students, volunteered to join the army against Napoleon, but the educational authorities refused their consent, as they regarded the work he was doing as too important to be interrupted, even on account of such patriotic motives. Nevertheless, when later on the era of political reaction set in, Harnisch, like so many other patriotic Prussians of his time, was denounced as a demagogue. He had instituted an open-air gymnasium, which had become even more popular than the famous "Turnplatz" of Jahn in the "Hasenheide" near Berlin. It was just this influence of Harnisch over the young men of the country which rendered him suspicious to the government. His "Turnplatz" was closed, and even the natural history excursions which he used to undertake with his pupils were arbitrarily interfered with. In 1822 he was even transferred to the teachers' seminary at Weissenfels, a much inferior institution, which, however, by twenty years of devoted efforts, he raised to the rank of one of the best training schools in Prussia. In 1842 he resigned his position, and lived for the rest of his life as the pastor of a village near Magdeburg.

Not only through his training of teachers, but also through his literary activity, Harnisch was very influential in shaping the character of the German public school. Like Diesterweg (*qv*), he emphasized the individuality of the pupil, but he also laid stress on the social factor in education. His contributions to the methodology of arithmetic, geometry, and geography are very important. In geography he introduced into the Prussian schools the method by which the child first studies his home surroundings (*Heimatkunde*), and from them passes on to the study of his country and of the world.

Among his works may be mentioned. *Handbuch für das deutsche Volksschulwesen*, first published in 1812, reedited by Bartels, Langensalza, 1893, two pedagogical magazines, edited by him, the one (*Der Schulerat an der Oder*) from 1814 to 1820, and the other (*Der Volksschullehrer*) from 1824 to 1828, *Die Weltkunde* (geography), Breslau, 1817, and *Das Weissenfelser Schullehrerseminar und seine Hilfsanstalten* (*The Weissenfels teachers' seminary and its auxiliary institutions*), Berlin, 1838.

F M.

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**HARPEDONAPTÆ** — The philosopher Democritus (*qv*) is reported as having said, in his usual boastful fashion, that no one had as yet surpassed him as a geometrician, "not even the so-called Harpedonaptæ of Egypt." These were probably the recognized teachers of geometry among the Egyptians, since the fact that Democritus speaks of them as interested "in the construction of plane figures with proof" shows that they were more than simple surveyors. The word means "rope stretchers," and originally referred to the custom of surveyors to stretch a rope around three pegs so as to make a triangle with sides equal to three, four, and five units, respectively. This formed a right triangle, and it enabled the surveyor to run a line at right angles to a given line. The plan is still used by surveyors. It is probable, however, that the word had lost its original meaning, just as geometry (*qv*) has long since ceased to be "earth measure," and that the harpedonaptæ were the teachers of geometry of Egypt. This plan of constructing a right triangle by means of rope stretching is a very old one. It is found in China and India as well as in Egypt, and the process is pictured upon the temple at Edfu, the inscription dating from the Ptolemaic period. D E S.

**HARPER, WILLIAM RAINEY** (1856-1906). — An educator, born at New Concord, Ohio, July 26, 1856, was graduated from Muskingum College in 1870, received the degree of Ph D. from Yale in 1875, taught in minor academic positions in Tennessee and Ohio, 1875-1880; was professor of Hebrew in the Baptist Theological Seminary, Chicago, 1880-1886, served as principal of the Chautauqua Summer Schools and correspondence courses, 1884-1898, and was professor of Semitic languages in Yale University, 1886-1891. In 1891 he became head professor of Semitic languages and literature and first president of the University of Chicago. He died in January, 1906. Dr. Harper's experience and training gave him a singularly wide range of interests and sympathies. His graduate work at Yale inspired him with high ideals of productive scholarship, his duties in preparatory schools and the theological seminary revealed and developed remarkable powers as teacher and lecturer, his experiments in organizing correspondence instruction in Hebrew and his summer work at Chautauqua gave him firm faith in popular education, his contact with men and institutions evoked extraordinary capacity for leadership and organization. All these aptitudes and abilities were energized by a tireless will and directed by an original mind. The founding of a new university afforded its first president an unusual opportunity, of which he took full advantage. The characteristic features which he impressed upon the institution were (a) the division of undergraduates into two groups,

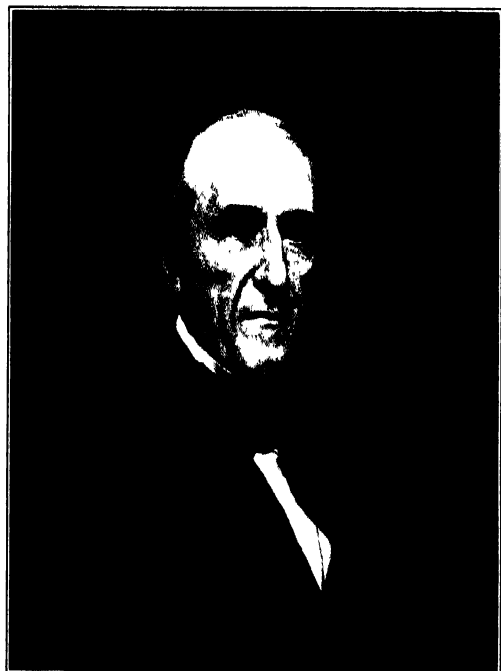




Cyrus W. Hamlin (1811-1900) See p. 214



William T. Harris (1835-1908) See p. 219



Mark Hopkins (1802-1887). See p. 310.



B. A. Hinsdale. (1837-1900.) See p. 280.

A GROUP OF AMERICAN EDUCATORS.

## HARRINGTON

the Junior College (freshmen and sophomores) and the Senior College (juniors and seniors), — a division based upon the theory that the first two years belong more properly to a six-year secondary school period, while the last two are an introduction to university studies; (b) the division of the academic year into four periods of three months each — a plan by which buildings and equipment are in continuous use, and students may be matriculated or graduated quarterly instead of annually, (c) the concentration of the student's attention for each quarter upon three, or sometimes four, courses which met four or five hours a week, (d) the inclusion as regular divisions of the institution of both university extension lecture courses and correspondence instruction, (e) the establishment of a press division as an integral part of the university, (f) the outlining of a policy of affiliation by which smaller colleges were through supervision and subsidy to be standardized, and brought into relation with the senior colleges and graduate schools. The General Education Board and the Carnegie Foundation (*qq v*) are carrying out on a national scale plans which in many respects Dr Harper hoped to realize with the University of Chicago as a center. Dr Harper's published works include textbooks for teaching Hebrew, Greek, and Latin, constructive and critical studies in the Old Testament with especial reference to the priestly element and to prophecy, and volumes of essays and addresses on Biblical, ethical, and educational subjects. G E. V.

See CHICAGO, THE UNIVERSITY OF.

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**HARRINGTON, HENRY FRANCIS** (1814–1888). — School superintendent and textbook writer; was educated in the schools of Boston, at the Phillips Exeter Academy, and graduated at Harvard in 1834. He was teacher and principal of elementary and secondary schools in Massachusetts from 1834 to 1864, and superintendent of schools at New Bedford, Mass., from 1864 to 1888. He was the author of *Graded Spelling Book* (1880), *Harper's Introductory Geography* (1888), and numerous papers on educational subjects. W. S. M.

**HARRIS, WILLIAM** (1765–1829). — Fifth president of Columbia University; was graduated from Harvard College in 1786. For several years he engaged in the work of the ministry. He was principal of a classical school in New York City from 1802 to 1811, and

## HARRIS, WILLIAM TORREY

president of Columbia from 1811 to 1829. He was the author of several historical works. W S M

See COLUMBIA UNIVERSITY

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## HARRIS, WILLIAM TORREY (1835–1908)

— American educator, was born near North Killingly, Conn. After attending rural schools, he completed in New England academics his preparation for college. He entered Yale College, where he remained for more than two years, making an unusually brilliant record. Desiring greater freedom to devote himself to the study of the natural sciences, he withdrew from Yale, and removed to St. Louis, Mo., in 1857, where he remained for twenty-three years, serving first as a tutor in a private family and as a teacher of shorthand, afterwards as a principal of a grammar school, later, from 1866 to 1867, as assistant superintendent of schools, and from 1867 to 1880, as superintendent of schools. In 1880 he severed his connection with the schools of St. Louis, and, after spending some months in European travel, settled in Concord, Mass., becoming one of the founders of the Concord School of Philosophy and Literature (*q v*), and engaged in philosophic study and writing. In 1889 he was appointed United States Commissioner of Education by President Harrison, and filled that office until 1906, when he voluntarily retired. The remaining years of his life he spent in congenial study, his last service being connected with the editorship of Webster's *New International Dictionary*.

*Philosophical Contributions* — Under the influence of a young German, Brockmeyer, Harris became an earnest student of philosophy and one of the foremost exponents of Hegelianism in the English-speaking world. *Hegel's Logic* is one of the fruits of this influence. On the appearance of Spencer's *First Principles* in 1862, Harris wrote a review, but, unable to find a magazine to accept it, he founded and edited, from 1867 to 1893, the *Journal of Speculative Philosophy*, at the time the most important enterprise in philosophy ever undertaken in America. Considering philosophy as the most practical of all subjects, he soon became accustomed to interpret every question, whether of art, religion, science, politics, or education, in the light of its standards, for, as he said, "the test of any system of philosophy is the account it gives of the institutions of civilization." A thesis composed of passages from Harris's writings, and compiled in 1890 by Marietta Kies, forms the only organized presentation of his work. Although he was not a professor in a college or a university, yet he greatly stimulated the study of philosophy through the *Journal of Speculative Philosophy*, through his labors in the Concord School of Philosophy and Litera-

ture, through his educational reports and addresses, and through his personal contact, public and private, with his fellow men

*Contributions to Education* — Harris was America's first great educational philosopher. Because of his protracted, intelligent, and scientific study of the psychology, the history, and the philosophy of education he developed such insight into school problems as was enjoyed by none of his predecessors and by few, if any, of his contemporaries.

His activities and contributions in books and articles, as well as addresses, were extraordinary, whether viewed from the standpoint of quantity or quality or the range of subjects treated. The bibliography of his writings (see references) contains 479 separate titles, which cover all the important questions that have been discussed in the educational world during the last half century. Among his more important writings are to be included his thirteen annual reports of the public schools of St. Louis, which established his reputation as an educational thinker of the first rank, his report as chairman of a subcommittee of the Committee of Fifteen upon the correlation of studies, which was submitted to the National Educational Association, and which constituted an epoch-making contribution to the educational literature of our times; his report as the chairman of a subcommittee of the Committee of Twelve, which considered the problems of instruction and discipline in the rural school, his annual reports as United States Commissioner of Education from 1889 to 1906, which commanded the respect of educators at home and abroad, and by which the Bureau of Education became an educational clearing house for the world, the prefaces and introductions to the volumes of *The International Educational Series*, of which he was the editor, Webster's *New International Dictionary*, of which he was editor-in-chief, and *Psychologic Foundations of Education*, in which he sets forth in its thirty-nine chapters the psychological explanation of the more important educational factors of civilization and its schools.

In his executive work as superintendent of city schools in St. Louis and as Commissioner of Education in Washington, he demonstrated his ability to realize educational ideals born of critical observation and reflection. He was such an administrative and supervisory officer as he himself describes in an article in the *Educational Review* (City School Supervision), Vol. III, 1892, pp. 167-172.

In his contributions to education, he labored continuously to accomplish three great purposes. The first was to psychologize education. Along with other leaders in the school world, he showed the futility of the old-time psychology, with its so-called "faculties of the mind," and demonstrated the worth of the new. His second purpose was to establish faith in the school as an institution having sociological functions and value. In the *Report of the Com-*

*mittee of Fifteen* he discussed four bases for the correlation of studies: (1) the logical order of topics and studies, (2) the symmetrical whole of studies in the world of human learning; (3) psychological symmetry; (4) the pupil's natural and spiritual environment.

His final purpose was to place education upon an enduring foundation. He subjected the whole field to critical analysis, interpreting and justifying the school, and assigning to it its proper place in the scheme of institutional life. His view of the world, in which was embodied the altruistic, missionary idea at the bottom of our civilization, included the notions that education is a process of conscious evolution and that it is the only rational, reliable agency by which man may work out his destiny in harmony with the will of the Divine Being. W. S. S.

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**HARRISON, GESSNER** (1807-1862) — Author of textbooks and college professor; was graduated from the University of Virginia in 1828. He was professor there from 1828 to 1848, and subsequently established a classical school at Belmont, Va. His publications include *Greek Prepositions* (1848), and *Latin Grammar* (1852). W. S. M.

**HARROW SCHOOL** — This school, one of the seven great Public Schools of England included in the Public Schools Act, 1868, was sixth of these in the date of legal foundation, but last in its actual commencement, which took place in 1615, ranked in general estimation as third or second by virtue of its record as a resort of the rich and a producer of statesmen and men otherwise prominent in the world, especially the political world of England. Its development, however, as a great school for the aristocratic and wealthy class is comparatively recent. Unlike Winchester, Eton, and Westminster, which were especially designed as great schools to furnish men to serve in high stations in Church and State, and have done so from their beginnings, Harrow has developed in a way which its founder certainly never contemplated, and which he would possibly have resented. For there can be no doubt, alike from the station of the founder and the statutes which he prescribed, that what he meant to establish was a small local grammar school, chiefly for the poor of a small rural parish, not a great national establishment for the wealthiest of the *nouveaux riches* of the realm. The



founder was John Lyon, who lived at Preston, a hamlet in the extensive parish of Harrow in Middlesex, some twelve miles from London then, now a suburb of that ever-extending city. The whole of the property left by him produced only some £138 a year. The foundation of Harrow school, like that of Rugby (*q.v.*) a few years before, is an indication of the growth to independence and moderate wealth of a new middle class on the partial ruin of the great ecclesiastical and secular nobility which took place under Henry VIII. The era of more than princely foundations like those of Wykeham and Wolsey, great soul-purchasing colleges, had given way to the more humble charitable gifts by kindly disposed people of moderate means who had no children of their own for the benefit of the more prolific and less prosperous of their neighbors. Lyon devoted his whole possessions to the school, and that is why the process of foundation took no less than forty-four years. The first step, which on parchment was the foundation of the school, was taken on Feb. 19, 1571, the date of Letters Patent from the Queen. They recited the intention of John Lyon of Preston in Harrow "yeoman" to newly found a grammar school for the perpetual education, teaching, and instruction of the boys and youths of the parish, and to maintain two scholars at Cambridge and two at Oxford University, and the repair of the common ways between Edgware and London and surrendered lands copyhold of the manor of Harrow, which he had only bought in 1569, to the governors for the use of the school, and that not at once, but only after the death of himself and his wife Joan or Jane. It was not for another fifteen years, viz. on Jan. 19, 1590, that he drew up the ordinances and statutes for the school. These provided that within half a year after his own and his wife's death the governors were to meet and appoint a school-master, an M.A., and an usher, and if he left an heir of his body, pay them £20 and £10 each, if he left no heir (which happened), 40 marks (£26. 13. 4) and 20 marks (£13. 6. 8) a year, with 5 marks each for fire. He must have been somewhat of a reactionary in religion, as he directed that both masters should be single men, unmarried and should be removed, if they married. Another £10 was to go for thirty sermons a year in Harrow Church, which the master or the vicar might preach at 6s. 8d. a sermon. Another £20 was to be distributed, 6s. 8d. each, to the sixty poorest householders in the parish. £20 also was to go for exhibitions to four poor scholars from the school, and "of the poorest sort," two at Gonville and Caius College, Cambridge, just augmented by Dr. Caius, who lived at Ruiship in the parish of Harrow, and two at Oxford, with preference for his own next of kin born in Harrow. He then directs the governors to accumulate the rents for three years so as to provide £300 to build the school, if he did not

do it in his lifetime. But he ordered them nevertheless "to continue 20 marks a year which I the said John Lyon have used to give and pay for the teaching of 30 poor children of the parish." The governors were to set down "a meet and competent number of scholars as well of poor to be taught freely for the stipends aforesaid as of others to be received for the further profit and commodity of the said school-master." For in 1590 £26. 13. 4 a year was much below the standard of payment of headmasters of the larger schools, seeing that even in 1510 Colet had provided for his master at St. Paul's, and prices had gone up enormously since then. The Rules added to the Statutes carried out this still further. "The school-master may receive over and above the youth of the inhabitants of the parish, so many foreigners [*i.e.* non-parishioners] as the whole number may be taught and applied and the place can conveniently contain, and of the foreigners he may take such stipend and wages as he can get, so that he take pains with all indifferently as well of the parish as foreigners, as well of poor and of rich, but the discretion of the governors would be looked to that he do." As the only lodging for the masters was one room each at each end of the school, there was clearly no room for boarders, who were not contemplated. The Rules set out the curriculum of instruction in full, and the humble character of the school is conspicuously shown by the fact that only five forms are contemplated, whereas in the great schools of the time VI, VII, or VIII were provided for. Very little change had taken place since the days of the earliest Winchester and Eton curriculums in 1525 and 1530. The pseudo-Cato's *Moralia*, or two-lined adages of conduct in Latin hexameters, were prescribed in the first or lowest form, Erasmus' *Dialogues with Æsop's Fables* and Manenius' *Lines on the Four Virtues*, written about 1490, in the second form. In the third form Terence, Cicero's *Letters*, Ovid's *Tristia*. Only in the fourth form did they begin Cæsar's *Commentaries*, Cicero, *De Natura Deorum*, and Livy. In Greek Demosthenes and Isocrates, for rhetoric still was regarded as one of the principal methods and aims of education, and Heliodorus, Latin verses and themes. Hesiod is the only Greek poet, chosen because of his gnomic character. Disputations were still the means of inculcating grammar, the boys propounding to each other questions and answers. Half holidays were, as in the fourteenth century, rigidly excluded except on Thursdays. "Their play shall be to drive a top, toss a hand-ball, to run or shoot and none other." Archery shooting at the butts was still prescribed by law. Every parent on the admission of his son had to promise to allow him at all times works of devotion and piety for the great solace and encouragement of scholars occupied in learning in the same parish. To give effect to this intention the Queen willed

and granted that there should be and therefore erected a grammar school consisting of a master and usher in the parish to be called the Free Grammar School of John Lyon. She incorporated a body of six governors, headed by Gilbert Gerard, Esquire, the attorney-general, to take care of the possessions, revenues, and goods of the school, and gave them license in mortmain to take and hold lands to a value not exceeding £100 a year. As if to show the absurdity of the modern theory that a Free School (*q v*) did not mean one free from ecclesiastical jurisdiction, the charter provided that if the governors failed to elect a new master on a vacancy, the Archbishop of Canterbury should appoint, and if governors made statutes, they should do it under the advice and consent of the Archbishop. The Bishop of London also had some visitatorial powers.

The phrase in the charter, *de novo erigere*, "to erect anew," has been thought to show the existence of a school at Harrow before Lyon's foundation. But probably the words simply mean to erect a new school. But there is, as usual in Tudor foundations, some evidence of a school in Harrow before. In 1567, Richard, son of William Gerard, one of the governors named in the charter of 1572, admitted a scholar of Caius College, Cambridge, was described as having been at Harrow School for four years, *ie* from 1563. But this may only have been the unendowed school of thirty boys maintained by Lyon. But a letter of the Roper family speaks of the destitute children of a keeper of Enfield Chase and Hyde Park being sent to Harrow School by Queen Mary, 1554-1558; but this again may be Lyon's unendowed school. A lease of some of the school property in 1596 speaks of "the newe school or church house of the parish," which shows that the school was then kept in it, and it may have been so kept previously to Lyon's day. That there was no school there in the fourteenth century seems to be shown by two extracts from the rules of the Rutny manor. In 1384 the court directed the seizure of the goods of "John Intowne, a bond-tenant (*ie* a serf), for that he against the will of the lord, the rector, delivered his son Wilham into remote parts to learn the liberal arts." In 1356 the bailiff of the manor answered for a horse taken as a distress from the same John Intowne, because he placed William his son, a bond-tenant of the lord, to school without the license of the lord. That was the way in which the Rector of Harrow in those days manifested the love of the Church for learning and advanced education, under the very nose of the Archbishop of Canterbury, to whom Harrow belonged and where he not infrequently resided.

Though the charter of 1572 thus purposed to found and erect the school and its governing body, neither had a more than nominal existence. It was not till 1575 that Lyon made his first endowment of land at Harrow after

the deaths of himself and his wife. He also made further additions, and in 1590 he issued the Statutes for the government of the school. Five articles defining the relation between the masters and the parents and children followed the statutes.

Still the school was not established. Lyon died Oct 11, 1592, and his brass, with his portrait and that of his wife, may be seen in Harrow Church. She died only in August, 1608. Soon after the governors began building, but in 1610 a chancery suit in the interest of the road repair stopped proceedings. The school, which had more than double the stipulated sum, was only opened in 1615, a year after Charterhouse. The number of free boys was fixed at forty, ten more than Lyon had maintained in his lifetime. What number of foreigners then came, if any, we do not know. There is no evidence that the school was anything more than a small parish school such as Lyon intended until after the Restoration. Indeed, in 1668 the master went off, apparently to Lincoln Grammar School, without notice as to promotion. In 1669 William Horne, an Eton scholar and fellow of King's College, Cambridge, and undermaster under his father at Eton, was appointed master of Harrow. From that time dates the development of Harrow as a great public school on the same lines as Eton, and to its succession of Etonian masters Harrow owes its real creation, as Eton did to its succession of Winchester masters. Horne was allowed, contrary to the statutes, to marry, and was assisted to rent a house in the village in which to take boarders. A letter among the Verney papers shows that by 1650 there were "six score" or 120 boys there and several boarding houses, besides the headmaster's, kept by "Dames" as at Eton. The charge was £22 a year in the headmaster's, and £14 a year in the other houses, the parish supplying sheets, towels, pewter plates, a porringer and spoon. The archery prize of a silver arrow, shot for among the boys, dressed in gorgeous costume, which became as a social function a great attraction to the school, was instituted at this time. Horne died in 1685. After a short five years of William Bolton, who had been usher at Charterhouse, came another Etonian and King's man, Thomas Brian, who held office till his death in 1730. With the powerful assistance of James Brydges, the magnificent Duke of Chandos, who had built his palace of Canons at Stanmere in the parish, Harrow became, like Westminster, though in a much less degree, an aristocratic school for the Whigs, Eton and Winchester having fallen under Tory influence. The first eminent Harrovian, a ward of the Duke's, George Brydges Rodney, who won the great naval victory over the French in the West Indies, was a pupil of Brian's, who in 1721 numbered 144 boys. His son-in-law and successor, Cox, however, drank, and let the school down to fifty. He was removed in 1746, and again a Whig Etonian,

Thomas Thackeray, the grandfather of the novelist, restored prosperity. Samuel Parr and Sir William Jones, of oriental fame, were among his pupils, Parr being head of the school at fourteen. He was afterwards second master there. But it was under Robert Sumner, another Etonian, that Harrow owned its first great statesman in Richard Brinsley Sheridan, the indicter of Warren Hastings. The number went up to 232. From this time the free boys began to fall. In 1780 there were only eight. Under Benjamin Heath was the first Harrow prime minister, the ill-fated Spencer Perceval. From 1785 to 1805 the school under the mastership of Joseph Drury again achieved considerable success, under Drury were five future prime ministers of England, Lord Byron, and many other members of aristocratic families. The appointment of Dr. Charles Butler (1805-1829) led to a second revolt, in which Byron took part, but the boys were soon won over by the new headmaster. As the school increased in numbers and popularity in the country generally, the local connections grew weaker, the governors were no longer resident, as was required by Lyon's Statutes, the poor were not being educated according to the bequest, and such poor boys of the locality who did attend fared ill at the hands of the aristocratic "foreigners." An appeal was made in 1809 to Chancery to enforce the statutes, but without avail. Harrow did not escape the general demoralization which seems to have prevailed in the large English schools at the beginning of the nineteenth century, there was a lack of discipline, a general viciousness and brutality, to control which required a very strong headmaster and a complete change of attitude. But some reforms were made, although classics continued to be the main part of the curriculum. Butler, himself a senior wrangler, introduced a little natural and experimental philosophy and Euclid, while under Drury English essays and verse had already been encouraged, in 1829 the first school magazine, *Harrovian*, appeared, and between 1829 and 1836 French was compulsory. The fifteen years following Butler's administration, despite the ability and scholarship of the headmasters, were years of rapid decline, partly as a result of the financial panic which then took place, partly through a distrust of the Public Schools. In 1844 Charles J. Vaughan (*qv*), a young man of twenty-eight, a Rugbeian and the favorite pupil of Thomas Arnold (*qv*), became headmaster, and at once there began a brilliant period in the history of the school. The numbers rose from 69 in 1844 to 315 in 1847, the moral tone of the school was raised, the monitorial system was improved, and a staff of earnest, capable teachers was brought together. The residents of Harrow again raised their objections that the school was not fulfilling the intentions of the founder. Vaughan skillfully placated them by establishing an English

form in 1853, in which modern subjects suitable to the needs of the sons of farmers and tradespeople were taught. To "secure the boys from interference or annoyance from the Public School," the boys were "to regard themselves as entirely separate in all respects from those at the Public School as at present existing." Out of this arrangement there developed the Lower School of John Lyon. On the retirement of Vaughan in 1859, Dr. H. Montague Butler became headmaster, and established the school on its present basis. The Tercentenary Festival was held in 1871, with the passing of the Public Schools Act in 1868 new statutes were drawn up for the government of the school, benefactions continued to pour in, new buildings sprang up, and land was bought around the school to secure the seclusion and retreat which the suburban growth of London was making less possible. The curriculum was no longer monopolized by the classical studies, music and school songs became an important feature of the school under Mr. John Farmer, whose influence spread to many other schools, and in 1882 the broader relations of the school with the world were emphasized by the founding of a mission among the poor in Notting Hill, London. Under Bishop Welldon, Dr. Wood, and the present headmaster, Rev. Lionel Ford, Harrow continues to maintain the best tradition of the great Public Schools and to exercise an influence through its distinguished alumni in church and state, in the army, in professional and commercial life.

As at present organized, the school is divided into classical and modern sides, the latter intended for preparation for the army, civil service, or business. No boys are admitted under twelve years of age. The number of boys is about 600, the majority being on the classical side. There are seventeen boarding houses. Athletics play an important part at Harrow, as at most English schools, cricket is perhaps the most popular game, interest centering as it does on the annual match with Eton. Other sports are local football games, swimming, squash and rackets, a rifle corps was established in the days of Dr. Vaughan.

A F L AND I L K

See ATHLETICS, EDUCATIONAL, PUBLIC SCHOOLS

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**HART, JOHN SEELEY** (1810-1877).—Normal and high school principal and educational author, was born at Stockbridge, Mass., on Jan. 28, 1810. He was educated in the academy at Wilkes-Barre, Pa., and at Princeton, graduating in 1830. He subsequently took a course in the Princeton Theological

## HARTFORD SEMINARY

**Seminary** He was instructor at Princeton, 1832-1836; principal of the Edgehill School, 1836-1841, principal of the Central High School at Philadelphia, 1842-1858, principal of the New Jersey State Normal School at Trenton, 1863-1871, and professor at Princeton, 1872-1874. He established the *Pennsylvania Common School Journal* in 1844, edited *Sartain's Magazine* from 1849 to 1852, and in 1859 he founded the *Sunday School Times*. While principal of the Central High School he organized Saturday classes for teachers. Besides his *In the Classroom*, and a half dozen textbooks on the teaching of English grammar, language, and literature, he was the author of a number of essays on educational subjects. W S M.

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## HARTFORD THEOLOGICAL SEMINARY, HARTFORD, CONN

— Founded in 1834 by the Pastoral Union of Connecticut as the Theological Institute of Connecticut at East Windsor Hill, moved to Hartford in 1865, and present title adopted in 1885. Students, men and women, who already hold college degrees are admitted. A knowledge of Greek is necessary for pursuit of the regular course, which extends over three years. Specialization is encouraged in one of five groups: Old Testament, New Testament, History, Systematics, and Practices. Courses in psychology and pedagogy are given in the Hartford School of Religious Pedagogy, and courses in comparative religions in the Hartford School of Missions, both of which institutions are affiliated with the seminary. The seminary confers the degrees of Ph D, S T M, B Sac Mus, and B D, on completion of the necessary courses and requirements, and the degree of S T D, *honoris causa*. There are twenty-seven members on the teaching staff.

**HARTLEY, DAVID** (1705-1757) — Physician and philosopher, educated at Cambridge. His chief work, *Observations on Man*, was published in two volumes in 1749. Hartley was the first to apply systematically the doctrine of the association of ideas, which he got from Locke and Gay. Sense impressions leave copies of themselves in the form of simple ideas of sensation,—the elements of which the mental life is compounded. By association these get the power to call up other ideas, and by connection with ideas of pleasure and pain, which constitute desire and aversion, they become also the starting point of actions. Action is due in the beginning to a mechanical overflow from sensory into motor channels. Hartley's medical interest led him also to formulate a physiological doctrine to which he attached great importance. This is the theory, suggested by Newton's *Principia*, of a physical

## HARTLEY UNIVERSITY COLLEGES

cause of all mental facts in vibrations of the infinitesimal medullary particles. He does not press, however, the question of the precise relation between mind and body, but is content to postulate a correlation. His theory of association is practically independent of the vibration theory, which last was usually neglected by his followers. Hartley's treatment of education is incidental. The only application of the association doctrine which comes in very close contact with its methods in detail is his discussion of the development of language through hearing, speaking, reading, and writing. In a general way, however, Hartley has a high sense of the value of education, which is the great remedy for the needs of the time, and whose method is to be determined by tracing back the process through which associations have arisen. Since affections and passions are only aggregates of simple ideas, and the objects which excite them are due to association, moral education is amenable to the association doctrine. All motives go back in the end to personal pleasures and pains, but since desire can be shifted by a perfect fusion from the sensation to its antecedent, Hartley proclaims vigorously the possibility of "disinterested" motives, which morality and religion demand. These represent the end of all training, and Hartley advocates greater attention in education to sacred learning, and less to the "lewd poets". His doctrine of determinism also exalts the importance of education by basing development on the influence of environment, and the absence of any definite instinctive bias in his psychology goes to make training practically all-powerful. "With proper incentives and restraints few children would miscarry." "It is evident that children may be formed and moulded as we please." "If two beings whose affections and passions are at present in different proportions be exposed for an indefinite time to the same impressions and associations, they will at last become perfectly similar and even equals." The application of this as a means of social reform and reconstruction is, however, of later date. Hartley himself conceives that the traditional results of association are largely to be followed. The value of physical education also has some recognition, especially in one of his medical tracts. This also has a moral value in aiding to restrain desires. A K R.

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**HARTLEY UNIVERSITY COLLEGES, SOUTHAMPTON, ENGLAND.** — An institution founded in 1852 under the will of Mr Henry R. Hartley to afford facilities for a

liberal and professional education to the inhabitants of Southampton and the neighboring countries. Attention was at first paid only to preparation for army and civil service examinations, in 1871 a science and art department was opened and preparation was given for the examinations of the Science and Art Department, South Kensington. In 1896 work of a university character was begun, and in 1902 the institution was recognized as a university college and received grants from the Treasury. At the present day classes are conducted in arts and sciences, medicine and dentistry, engineering, education in the day training department recognized by the Board of Education. Evening classes are held in technical, commercial, industrial, and scientific subjects, and facilities are afforded for students who were unable to attend a secondary school to attend a course of evening work to qualify for entrance into the day classes. Hartley College does not grant degrees but students may be prepared for degrees, in other universities. Public lectures are conducted by the institution. Support is given by the Treasury and several local county and municipal authorities in and around Southampton. A proposal is now on foot to secure a university charter for the college. In 1910 the teaching staff consisted of twenty-eight teachers and the student enrollment was 230 in day and 500 in evening classes.

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**HARTLIB, SAMUEL** (?1600–1670) — The best known educationist of his time in England. He was the son of a Polish merchant by his third wife, who is supposed to have been an English lady. He came over to England from Germany (probably from Elbing) in 1628, and engaged in educational and other social plans. Hartlib, in a remarkable appeal to the House of Commons (about 1660), says that he had tried “to serve his generation,” and amongst other things “by erecting a little Academy for the education of the Gentry of the Nation, to advance Piety, Learning, Morality and other exercises of industry not usual then in common schools.” Evelyn (*qv*) states that he had relieved Hartlib’s necessities, and evidently the latter was too lavish for his means in helping on educational and social plans. Yet in 1646 a pension of £100 a year was conferred upon him by Parliament, and afterwards this was raised to £300 a year.

In 1647 Hartlib wrote his *Considerations tending to the Happy Accomplishment of England’s Reformation in Church and State*, in which he urges that it is the duty of the magistrates “to see schools opened, provided with teachers, endowed with maintenance, regulated with constitutions, and to have instructors and

overseers to the observance of good order in this business.” Without such reforms of schools “no other work of Reformation,” says Hartlib, “will ever be effectual.” His grading of schools was similar to that of Comenius (*qv*) and to that of Dury (*qv*). A further scheme in which the three joined, and about which Dury also wrote, was the establishment of an “Office of Address,” to be established in London and to deal with both bodily and spiritual matters. It was to be useful to the poor, by helping them to employment and by distinguishing the industrious from the idle. This is, apparently, the first suggestion of a government bureau of labor. Next, the office was to be the medium of communication in “matters of the mind.” The warden of the office was to keep all kinds of registers, inventories, catalogues, and lists containing the peculiar objects whereof he should furnish information for address to such as shall desire it, or to whom it might be advantageous for public good to send information. In religion the office was to help to rectify mistakes and prevent the increase of divisions and disorders about disputed opinions or religious practice. This was the especial mission of Dury, with whom Hartlib worked in close conference. In education, the Director of the Office of Address was to advance learning, in accordance with Lord Bacon’s plea, and to “help to perfect Mr. Comenius’s undertakings, chiefly on the Method of Teaching Languages, Sciences and of [founding] ordinary schools for all ages and qualities of scholars.” Lastly the Office of Address was to encourage the dissemination of information about inventions, so as to increase their public serviceableness. Communications were thus to be established throughout the workers and thinkers of this country and also with the *savants* abroad. The important functions which he thought the State could perform in intellectual progress may be further seen in his *Description of the Famous Kingdom of Macaria, showing its excellent Government, wherein the Inhabitants live in great Prosperity Health and Happiness; the king obeyed, the Nobles honoured and all good men respected, Vice punished and Virtue rewarded. An example to other Nations. In a Dialogue between a Scholar and a Traveller*, 1641 [15 pp]. To Hartlib’s annoyance, *Macaria* was satirized in John Sadler’s *Olbia* in 1660, where reference to “education of the children, in Sciences, Arts and Manufactures” is brought in, after the manner of Hartlib.

Besides writing on education, Hartlib was a center of a most remarkable educational group. John Milton (*qv*) wrote the *Tractate* in response to Hartlib’s suggestion. So Dury was stimulated by him. Other friends were John Hall (*qv*), John Webster (*qv*), George Snell (*qv*), and Hezekiah Woodward (*qv*). As belonging to Hartlib’s group, united in the desire to promote the advancement of learning

under Baconian influence, were also John Pell, in his *Idea of the Mathematics*, Sir William Petty (*q.v.*), Abraham Cowley (*q.v.*), and John Evelyn (*q.v.*) Hartlib was also in close touch with progressive leaders abroad. He was apparently one of the leaders in the proposed invitation to John Amos Comenius (*q.v.*) to come over to England and to have Chelsea College assigned for his educational purposes

In 1650 Hartlib wrote a notable tractate, *London's Charity enlarged, Stilling the Orphan's Cry*, in which he suggested to Parliament that it should grant £1000 toward work for the employment of the poor and for the education of poor children. He describes the laws and officers necessary for the control of children in a work-house

On the theoretical side of education, Hartlib published the following interesting collection of tractates: *A True and Readie Way to Learn the Latine Tongue, Attested by three excellently Learned and Approved Authors of Thre Nations, Eilhardus Lubinus, a German, Mr. Richard Carew of Anthony, in Cornwall, the French Lord of Montaigne, Presented to the Impartial both Public and Private Considerations of those that seek the Advancement of Learning in those Natons*. By Samuel Hartlib, Esq., 1654. Other educational works in the publication of which Hartlib took part are (1) *Comatuum Comenianorum præludia ex Bibliotheca S. H. Oronæ*, 1637 (The Address to the Reader, 2 pp., in Latin, is by Hartlib.) (2) *Reverendi et clarissimi viri Johannis Amos Comenii, Pansophiæ Prodromus*, etc. London, 1639 (8 pp. in Latin. To Reader by Hartlib.) (3) *A reformation of Schooles, designed in two excellent Treatises. The first whereof summarily sheweth the great necessity of a general Reformation of common learning. What grounds of hope there are for such a Reformation. How it may be brought to pass. The second answers certain objections ordinarily made against such undertakings, and describes the severall Parts and Titles of Works which are shortly to follow. Written many years agoe in Latine by that Reverend, Godly, learned and famous Divine Mr. John Amos Comenius. Now translated into English and published by Samuel Hartlib, for the generall good of this Nation*. 1642. (4) *A Continuation of Mr John Amos Comenius School Endeavours. Or a Summary Delineation of Dr Cyprian Kinner Silesian his Thoughts concerning Education. Or the Way and Method of Teaching. Translated out of the Original Latine transmitted to Sam Hartlib, and by him published, etc.* 1648. (See KINNER, CYPRIAN.) (5) *An Essay for Advancement of Husbandry-Learning; or propositions for the erecting a Colledge of Husbandry: and in order thereunto for the taking in of Pupills or Apprentices, etc.* 1651. (This invites contributions to be sent into Samuel Hartlib for the object named.)

Hartlib's name is also associated with the publication of many other collections, together

with original contributions on such subjects as husbandry, "Luciferous and fructiferous" experiments, planting of fruit-trees, setting out of land, silk-worms, bees; chemical, medicinal and chururgical addresses, an invention of engines of motion, "a common writing."

F. W.

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#### HARTSHORN MEMORIAL COLLEGE, RICHMOND, VA. —

An institution for the education of colored young women, established in 1884. Normal preparatory and normal, college preparatory and college, industrial, and music departments are maintained. The college course leads to the degree of A. B. The majority of the students are in the normal departments.

**HARVARD, JOHN (1607-1638)** — The first donor to Harvard College. The facts as to Harvard's life have become fairly well known in recent years. He was the son of a butcher, Robert Harvard, and was born in November, 1607, in High Street, Southwark, close to London Bridge. He was christened on Nov. 29, 1607. His father died of the plague in 1625. His mother, Katherine Rogers, married twice again, first to John Elletson or Ellison (who died in June, 1626), and then to Richard Yearwood (or Yarwood), Member of Parliament for Southwark. She outlived them all, and inherited money from each. She died in 1637, having made her will in 1635 in favor of her sons John and Thomas. John, who survived his brother, entered at Emmanuel College, Cambridge, on Dec. 19, 1627, and graduated in 1631, proceeding as Master of Arts in 1635. He married in 1637 Ann Sadler, the daughter of a Sussex clergyman, and, his mother being dead, sailed for New England, where Cambridge and Emmanuel men had preceded him. He became a townsman of Charlestown, Mass., on Aug. 6, 1637. "His house was on the site now marking the southerly corner of Main Street and the Alley leading up to the Town Hall" (J. Winsor, *Memorial History of Boston*, I, 395; III, XXII). On Nov. 2 he took "the Freeman's oath" and he and his wife became church members four days

later. Though he, apparently, was not ordained, he acted as assistant to the Rev Z. Symmes, and preached. On Apr. 26, 1638, he became a member of a law-drafting committee. This possibly was a committee appointed to deal with the question of Gorges and the Charter, which had reached an acute stage in April, 1638. Harvard was, for that age, a wealthy man as well as a scholar, and seems to have won at once respect and position in the new settlement. But his brief course was nearly run, and he died of consumption on Sept. 14, 1638, childless. By a nuncupative will he left half of his estate (subsequently valued £779, 17s. 2d) and his excellent library of 320 volumes to the proposed school or college at Newton (*i.e.* Cambridge). The matter was not left in abeyance, and the college was built forthwith. In December, 1638-1639, it was ordered by the General Assembly that "the Colledge agreed upon formerly to be built at Cambridge shall be called Harvard College." J. E. G. de M.

See HARVARD UNIVERSITY, MASSACHUSETTS, STATE OF, COLONIAL PERIOD IN AMERICAN EDUCATION

#### References: —

See under Harvard University.

**HARVARD UNIVERSITY, CAMBRIDGE, MASS.** — The oldest educational institution in the United States. Established by vote of the General Court of the Colony of Massachusetts Bay, Oct. 28, 1636, and made possible through a legacy in 1638 from John Harvard, the college was given the name of Harvard in 1639, and held its first commencement in 1642. The name Cambridge was adopted for the town which was to be the seat of the college because many of the leading men of the colony were graduates of the University of Cambridge, John Harvard himself having been a Master of Arts of Emmanuel College, Cambridge.

*New England's First Fruits*, a tract published in 1643, contained the following paragraph. "After God had carried us safe to *New-England*, and wee had builded our houses, provided necessaries for our livehood, reared convenient places for Gods worship, and settled the Civill Government: One of the next things we longed for, and looked after was to advance *Learning*, and perpetuate it to Posterity, dreading to leave an illiterate Ministry to the Churches, when our present Ministers shall lie in the Dust. And as wee were thinking and consulting how to effect this great Work, it pleased God to stir up the heart of one Mr. *Harvard* (a godly Gentleman and a lover of Learning, there living amongst us) to give the one halfe of his Estate (it being in all about 1700 l.) towards the erecting of a Colledge, and all his Library after him another gave 300 l. others after them cast in more, and the publique hand of the State added the rest: the Colledge

was by common consent, appointed to be at *Cambridge*, (a place very pleasant and accomodate) and is called (according to the name of the first founder) Harvard Colledge."

The bequest of Mr. Harvard was the first of the private gifts for education which have distinguished American history from that day to this, while the act of the colony in 1636 marks the beginning of state aid to higher institutions of learning in America.

In 1642 an act was passed "establishing the Overseers of Harvard College", and in 1650 "the charter of the President and Fellows of Harvard College" made the college a corporation, to consist of a president, five fellows, and a treasurer, in whom should vest the property of the institution, and by whom, under the general control of the Overseers, its affairs were to be directed. These acts have been supplemented by a long series of legislative enactments, and in 1780 were explicitly confirmed, with important reaffirmation of ancient rights and privileges, in a section of the Constitution of Massachusetts entitled "The University." Upon this foundation still rests the legal existence and organization of Harvard University.

Most of the presidents of Harvard in the seventeenth and eighteenth centuries were drawn from the prominent ministers of the neighboring churches, but two (John Rogers, 1682-1684, and John Leverett, 1708-1724) were laymen. The most distinguished of the early presidents were Increase Mather (1685-1701) and Edward Holyoke (1737-1769).

In the struggle in the colony between the Congregational clergy and the more liberal elements the college early tended toward the liberal side, and a crisis occurred about 1700. Cotton Mather (1663-1728), a leader on the conservative side, failed to be elected to the presidency, which his father had held, and it became in many ways evident that the orthodox Calvinistic party could no longer rely upon Harvard College. Mather accordingly interested himself in the college already established in Connecticut, and in 1718 was influential in securing for that new enterprise a generous gift from Elihu Yale, a merchant of London. Later in the eighteenth century another noteworthy epoch in the history of the college was made by the events of 1735-1745. At that time the president, the professor of divinity, and the other instructors took ground against the religious revival known as the "Great Awakening," and vigorously opposed the tenets and utterances of George Whitefield, the eloquent English evangelist, whose work had deeply stirred New England. The theological development in the direction of liberal views was completed in 1805, when, after a bitter controversy, Rev. Henry Ware, an avowed Unitarian, was elected to the Hollis professorship of divinity. The result of his election was the definite withdrawal of the Calvinistic party from the support of the college.

and the foundation of Andover Theological Seminary in 1808 and Amherst College in 1821. For more than half a century from the date of Ware's election, Harvard was a distinctively Unitarian college, controlled by the Massachusetts aristocracy whose capital was Boston.

In the seventeenth and eighteenth centuries Harvard received some financial aid from the State, but its support was mainly due to a continuous stream of private gifts from donors both in England and in the American colonies. The largest gift of the seventeenth century was a bequest of £1000 from Sir Matthew Holworthy. Among many large benefactions of the eighteenth century the most important were those of Thomas Hollis, a Baptist and the leading layman of the English nonconformists. Besides sending numerous gifts of money and books, he founded in 1721 the Hollis professorship of divinity, which is thus the oldest professorship in North America.

At the Revolution the college cordially sympathized with the American cause, and the names of nearly all the most prominent Massachusetts patriots are to be found on its list of graduates. In 1776, after the evacuation of Boston by the British, the honorary degree of LL.D. was conferred on George Washington, whose headquarters were then in Cambridge.

The endowment of the college at the opening of the Revolutionary War amounted to less than £17,000, together with certain rents of real estate. The corporation proceeded to invest substantially the whole of this property in Continental and Massachusetts certificates of public debt, so that the very life of the college hung on the success of the American arms. The result of their courageous and patriotic policy was that in 1793, after the close of the war, the endowment of the college was estimated at upwards of \$182,000, invested in good securities. The nineteenth century saw a steady enlargement of this endowment from alumni and friends of the college, gradually swelling into the great annual gifts of the present day.

In the nineteenth century, down to the Civil War, the influence of Harvard College was extended beyond Massachusetts, sometimes as many as a fifth part of its students being drawn in those years from the South and the Middle States. It was intimately involved in the active intellectual life of New England, and a large proportion of the great literary figures of the time were graduates of Harvard (Longfellow, a graduate of Bowdoin, was professor here, 1836-1854, and spent his life in Cambridge), most of the New England poets and historians, and nearly all the liberal theologians and transcendental philosophers, were Harvard men. The most noteworthy of the presidents were John Thornton Kirkland (1810-1828), Josiah Quincy (1829-1845), and James Walker (1853-1860). In this period the resources of

the university were increased, professional schools of medicine, law, divinity, and science built up, and the distinction of the college maintained by the names of such professors as Jared Sparks, Edward Everett (both of them afterward for short terms presidents of the college), Joseph Story, George Ticknor, H. W. Longfellow, J. R. Lowell, Benjamin Peirce, Louis Agassiz, Asa Gray, and O. W. Holmes, and of many eminent men among the alumni.

In these years a number of dormitories and other buildings were added to the equipment of the university and the endowment increased from \$242,000 in 1800 to \$2,250,000 in 1869. The list of the college faculty grew from fifteen members in 1810 to twenty-four in 1869. In 1803-04 the freshman class in the college numbered 57, and the total number of students in the university was 233 (besides a fair number of medical students), in 1868-69, the corresponding figures were 128 and (including the professional schools) 1043.

In respect to educational organization, the curriculum during the Puritan and provincial periods down to 1800 was gradually freed from the distinctively theological cast which it bore to some extent nearly to the end of the eighteenth century, and in 1790 had come to consist of Latin, Greek, mathematics (including astronomy), English composition, philosophy (metaphysical, moral, and political), theology, natural philosophy, and (the only option) either Hebrew or French. With the one exception noted, it remained a prescribed course of study for all alike, and was well fitted to introduce students to the branches of knowledge at that day essential to a liberally educated man (See COLLEGE, AMERICAN, the section on the administration of the curriculum).

In the earlier part of the nineteenth century the general intellectual activity of the time, united with the influence of several professors who had studied at German universities, caused many changes in the discipline and course of study of Harvard College. The efforts of George Ticknor (professor 1817-1835) and others led to tentative progress in the direction of an elective system of studies; and chemistry, geology, history, political economy, and other modern studies were brought in.

At the same time pregnant changes took place in the government of the university. Until 1800 the fellows of the corporation had been largely ministers, after that date it became customary to elect but one clerical fellow. (Since 1884 no clergyman has been a member of the corporation.) The distinction of the position was thereby decidedly enhanced. At one time Joseph Story and Lemuel Shaw, two of the greatest jurists that this country has produced, and Nathaniel Bowditch, the foremost American mathematician of his day, made three out of the five fellows. In 1843 the Board of Overseers was opened to ministers not of the Congregational denomination, and







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a still more important step was taken when the Commonwealth relinquished its representation in the overseers. From the beginning the Governor and other high public officers, including the council and later the whole state senate, had had seats on this board, but in 1865 the right of election was wholly transferred to the alumni of the college, and since that time the state has had no share in the administration of Harvard. This was the culminating event of a long struggle in which the orthodox party of Massachusetts, allied with certain political interests, had sought to wrest from the Boston Unitarians an effective share in the control of Harvard. But the result was not a partisan victory, it came about through the relaxation of the rancor of ancient controversies under the engrossing tasks and opportunities of a new period of national life, and it brought to the university no restriction of scope. By permitting the introduction into the overseers of persons not resident in Massachusetts, and in other ways, under what proved to be more democratic influences, the new organization led to an increase in size and power far beyond expectation.

Since the Civil War Harvard has shared in the growth upon which the whole North and West of the United States then entered. Its history in this period is the history of the administration of Charles William Eliot (born 1834, president 1869-1909). President Eliot was able by his foresight, breadth of interest, and skill in organization and administration, by his single-minded devotion to high aims, and by the dignity of his personal character, to use the new forces of the time, command innumerable gifts aggregating a great sum of money, and hold the enthusiastic loyalty of a rapidly increasing and able staff. In the forty years of his presidency he was able to see Harvard widely extend the borders of its work, quadruple in number of students, and establish its position as a great national university, influential throughout America and honored beyond the seas. His efforts were especially devoted to the complete application of the elective principle in undergraduate studies, the maintenance of strict standards of examinations for entrance and graduation, the inclusion of all branches of knowledge and the arts in the opportunities offered to students, the requirement of a college degree for admission to the professional schools, and the insistence on the highest scientific ideals in all the graduate and professional departments. His administration deliberately followed the principle of freedom as a moral force in the methods of student discipline and in the regulation of the undergraduate curriculum, and was conspicuous for firmness, generosity, and justice in the treatment of the faculties and officers of instruction.

The present president is Abbott Lawrence Lowell, at the time of his election professor of

government in the university. The chief progressive policies of his administration thus far have been the introduction of a system by which undergraduates are compelled to adopt a definite aim in their choice of elective studies, the strengthening of the purpose to keep professional and technical work out of the undergraduate course of study, and a more careful fostering of the solidarity of undergraduate life.

In the government of Harvard the Corporation, a self-perpetuating body composed of the president, five fellows, and the treasurer, is charged with the executive control of both the financial and the educational administration. The Board of Overseers, consisting of thirty members elected by the alumni together with the president and treasurer of the university, possesses undefined but extensive powers. The consent of the overseers is requisite for the election of the members of the corporation and of professors, and for the appointment of all major officers of instruction and government. To the overseers are referred all important constitutional acts of the corporation and the several faculties, and they have the duty of inspecting every part of the university through numerous special committees, and of making recommendations to the proper administrative authorities.

The president is a member of all the faculties as well as of the governing boards, and in practice always attends their meetings. Professors and other higher officers are appointed by the corporation and overseers on the nomination of the president, after informal consultation with the professors of the department. In the medical faculty alone the board of full professors formally nominates to professorships. For the professional schools the several deans have, as a rule, complete responsibility for organization and educational work, with the control of the budget; but Harvard College and the Graduate School of Arts and Sciences are under the immediate direction of the president, the deans being mainly concerned with the supervision and discipline of the students.

The faculties are four: Arts and Sciences, Divinity, Law, and Medicine, each consisting of all those officers giving instruction in that faculty who are appointed for a term of more than one year. Instructors who are members of a faculty, as well as all professors, have a vote, and, save in the Faculty of Medicine, the higher grades of instructors possess no privileges not enjoyed by the younger men in the faculty. It is characteristic of Harvard that the heads of departments in the Faculty of Arts and Sciences have no authority of control, but are merely chairmen, who are frequently changed. This permits the younger men to fill these positions, and is believed to be of advantage to the university by enabling the assistant professors and instructors to exert a stronger influence for progress in educational methods. The faculties hold frequent meetings, — the Faculty of Arts

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and Sciences often meeting once a week, — and are active legislative bodies. The discipline of students and other administrative duties are devolved in the larger faculties upon administrative boards; and the Faculty of Arts and Sciences is divided into departmental committees, to which are intrusted important powers of detailed administration.

Harvard College is the heart of the university. With it is intimately associated the Graduate School of Arts and Sciences. By an anomaly among the professional schools, the Graduate School of Applied Science and (until 1912) the Graduate School of Business Administration are also under the Faculty of Arts and Sciences. There is no division into an undergraduate and graduate faculty of arts and sciences; and the courses of study in Harvard College and the Graduate School of Arts and Sciences are not sharply distinguished.

Entrance to Harvard College is by examination only, and many candidates are annually rejected. By the new system of requirements, adopted in 1911, the adequacy of each candidate's program of preparatory studies is separately investigated, and, if the program is found satisfactory, the result of his education is tested by four examinations: (1) in English, (2) in Latin or (for a candidate for S B) a modern language, (3) in mathematics or physics or chemistry, and (4) in that one which a candidate may choose out of a list of seven specified subjects. This plan, which is intended to bring Harvard into ready contact with the better high schools of all parts of the country, is at present maintained parallel to the old system, under which every subject studied in the preparatory course is tested by examination. Of the total number entering in the ten years 1901–1910, 44 per cent came from public schools, 56 per cent from private and endowed schools. Of the eighty-three candidates admitted under the new plan in 1911, 84 per cent came from public schools, 16 per cent

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from private and endowed schools. The degrees of A B and S B are given in Harvard College, the chief difference being that candidates for A B are required to pass an entrance examination in Latin.

Harvard has not favored the plan of interweaving the college and professional courses into a "combined course" for the two degrees, but has insisted that a student shall have substantially completed his work for a college degree before entering the professional school. A considerable number of students, however, complete all the requirements for the bachelor's degree in three or three and one half years.

The degrees of A B and S B and all other ordinary degrees are given only for resident work, except in so far as work in another institution is counted for advanced standing. In order to provide for students in the Summer School and in the extension courses, the degree of Associate in Arts was established in 1910. It calls for the same number of courses to be regularly attended as for a bachelor's degree, but requires neither entrance examinations nor technical "residence."

Since 1886 attendance at religious services has not been required of students. In the university chapel morning prayers are held daily, with a regular service on Sunday morning. The religious services are directed by a board of five preachers of various denominations, under the chairmanship of a resident professor who is in the relation of a college pastor. Each preacher gives several weeks of continuous service at the college, conducting the services and consulting with students. The work of the chapel is supplemented by the usual voluntary associations of students, — undenominational, Episcopal, and Roman Catholic.

The various departments of the university, with the date of establishment and the number of students and of members of the faculty in 1911–1912, are shown in the following table.

	DATE	STUDENTS	NUMBER IN FACULTY NOT INCLUDING THE PRESIDENT
I Faculty of Arts and Sciences			179
Harvard College	1636	2262	
Graduate School of Arts and Sciences	1872	454	
Graduate School of Applied Science	1847, re- organized		
	1906	123	
Graduate School of Business Administration	1908	79	
II Divinity School	1819	48	8
III Law School	1817	808	10
IV Faculty of Medicine			64
Medical School	1782	275	
(transferred to Boston 1810)			
Dental School	1867	154	
Total		4203	
V Affiliated Students —			
Extension Students		11 <sup>1</sup>	
Summer School of Arts and Sciences (1911)	1871	787	
Summer School of Medicine (1911)	1889	267	
Summer School of Dental Medicine (1911)	1911	11	

<sup>1</sup> In addition to students (521) taking courses given by Harvard instructors in the Boston "Extension Courses."

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The total number of members of faculties, omitting names counted twice, was 248 in 1911-1912. In addition, over 450 officers holding annual appointments were members of the teaching staff.

For admission to candidacy for a professional degree a prior degree from a recognized college or technical institution is regularly required, except in the Dental School, for which, however, entrance requirements with examinations are strictly enforced.

Among the more notable recent developments in professional instruction is the transformation of the School of Applied Science (formerly called the Lawrence Scientific School) from an undergraduate technical school, parallel to the college, into a graduate school, resting on a previous college course and including the following departments, in each of which an appropriate professional degree is conferred: engineering (civil, mechanical, and electrical), mining, metallurgy, architecture, landscape architecture, forestry, applied physics, applied chemistry, applied zoology, and applied geology.

Recently established (1908) is also the Graduate School of Business Administration, designed through courses in accounting, commercial law, economic resources, industrial organization, banking and finance, transportation, and insurance to fit college graduates for administrative positions in the business world.

The Divinity School, originally Unitarian, is now an undenominational school of theology, and its faculty includes professors of three different denominations. With it has now become associated Andover Theological Seminary (Congregational), in consequence of the removal of the latter to Cambridge in 1908 and its formal affiliation with the university. The courses of the Faculty of Divinity and of the Andover faculty are so planned as to form one systematic body of instruction.

The clinical facilities of the Medical School have hitherto been provided at the Massachusetts General Hospital, the Boston City Hospital, and ten other hospitals and dispensaries in and near Boston. These facilities are now to receive an important increase by the erection, already begun, of the Peter Bent Brigham Hospital on land adjoining the property of the Medical School. This great hospital, which has a large endowment, is to be conducted, and its chief officers have been selected, by a joint arrangement between its trustees and the Medical School.

The chief scientific establishments of the university, besides the various laboratories, are the following: Mineralogical Museum (1793), Botanic Garden (1807), Astronomical Observatory (1843), Museum of Comparative Zoology (1859), Gray Herbarium (1864), Peabody Museum of American Archaeology and Ethnology (1866), Bussey Institution (agriculture) (1871), Arnold Arboretum (1872), Harvard Forest at Petersham, Mass. (1907).

## HARVARD UNIVERSITY

The University Library includes the main collection in Gore Hall and the libraries of the various departments, of which the library of the Law School (in 1911, 126,000 volumes, 14,250 pamphlets) and of the Museum of Comparative Zoology are the most important. The Divinity Library has now been united with the library of Andover Seminary to form the Andover-Harvard Theological Library of upwards of 100,000 volumes, without doubt the best equipment for the work of theological scholars to be found in this country. The University Library contained, July 1, 1911, 1,587,734 volumes and pamphlets, and its age, careful selection, and many valuable accessions by special gift give it a distinction far beyond its size.

Affiliated with the university are Radcliffe College (for women, established under an earlier name in 1879), Andover Theological Seminary (1808), already mentioned, and the School for Social Workers (1904). Extension teaching to persons mainly engaged in other occupations is carried on not only in the Summer School, but also through a share in the winter courses given in Boston under a committee representing Harvard, Tufts, the Massachusetts Institute of Technology, Boston College, Boston University, the Boston Museum of Fine Arts, Wellesley, and Simmons.

The grounds used for academic purposes (not including investments in real estate) cover about five hundred acres in Cambridge and Boston, together with the Engineering Camp property of seven hundred acres at Squam Lake, New Hampshire, the Harvard Forest of two thousand acres at Petersham, Mass., and the Observatory at Arequipa, Peru. The value of the buildings is estimated at upwards of \$12,000,000. The total income-bearing endowment of the university, July 1, 1911, was about \$24,300,000. The annual net income from all sources in 1910-1911 was upwards of \$2,400,000, made up approximately as follows: income from investments, \$1,140,000; fees and rents from students, \$955,000; miscellaneous income, \$58,500; gifts for immediate use (excluding gifts for buildings), \$268,000. The expenditure was approximately as follows for administration, \$103,000; educational purposes, \$1,368,000; scientific research and other activities, \$526,000; aids to students, \$184,000; repairs and care of the buildings and grounds, \$166,000. The gifts and bequests to the university, large and small, from countless benefactors, have averaged for the ten years 1901-1911 over \$1,740,000 annually.

Harvard University draws its students from every part of the United States, but a little less than one half of the whole number usually come from the neighboring population of the Massachusetts cities and towns. In the College 56 per cent of the students were from Massachusetts, 4 per cent from the other

New England states, and 40 per cent from outside of New England. A large proportion of the students both in Harvard College and in the graduate schools support themselves in part by their own work during their course. The scholarships and other beneficiary aid granted annually to students in Harvard College amount to upwards of \$65,000. In the professional and other graduate schools upwards of \$90,000 is annually available for this purpose. All aid is given specifically from endowments or from university income, never in the form of remission of the charge for tuition.

In Harvard College student life on all its sides and undergraduate athletic organization are highly developed. The most important athletic contests are those with Yale; next to these in student interest come games and races with Dartmouth and Cornell. The more conspicuous student clubs are local organizations, not connected with the fraternities of other colleges; and but few of the society buildings provide chambers for students' lodgings. The social organization of the undergraduates in the college is wholly distinct from the life of the graduate and professional students.

The following inscription, set high over the stage in Sanders Theater, well states the ideals which have guided the history of Harvard.—

HIC IN SILVESTRIBUS  
ET INVULSIS LOCIS  
ANGLI DOMO PROFUGI  
ANNO POST CHRISTVM NATVM (C) D. C. XXXVI  
POST • COLONIAM HVC DEVOTAM VI  
SAPIENTIAM RITE ANTE • OMNIA COLENDAM  
SCHOLIAM PUBLICE CONSIDERVNT  
CONDITAM CHRISTO ET ECCLESIAE • DICAVERVNT  
QVAF AVCTA IOHANNIS • HARVARD MYNIFICENTIA  
A LITTERARVM FAVORIBVS CVM NOSTRATIBVS TVM EXTERNIS  
IDENTIDEM ADIVTA  
ALVMNORVM DE NIQVE FIDEI • COMMISSA  
AR EXIGVIS PERDVCA INITIIS AD MAIORA • REVVM • INCREMENTA  
PRAPSIDVM SOCIORVM INSPECTORVM SENATVS AC ADEMICI  
CONSILII • ET • PRYDENTIA • ET • CVRA  
OPTVMAS ARTES VIRTUTES • PVBLICAS • PRIVATAS  
COLVIT • COLIT  
QVI AVTEM DOCTI VVPERINT FVLGEVNT QVASI SPLENDOR FIRMAMENTI  
ET QVI AD IVSTITIAM ERVDVNT • MVLTOS  
QVASI STELLAE IN PERPEVAS AETERNITATES

J H R

See the various topics under COLLEGE,  
AMERICAN, UNIVERSITIES

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**HASBROUCH, ABRAHAM BRUYN** (1791-1879) — Statesman and college president; was graduated from Yale College in 1810. He was active in political life and was president of Rutgers College from 1840 to 1850. He published a number of historical essays.

W S M.

See RUTGERS COLLEGE

**HASKELL, DANIEL** (1784-1848). — Geographer and college president; was graduated from Yale College in 1802. He was for many years teacher and principal of elementary and secondary schools, and was president of the University of Vermont from 1821 to 1824. His publications include *Gazetteer of the United States* (1843) and *Geographical Dictionary* (1844).

W S M

**HASSLER, FERDINAND RUDOLPH** (1770-1843) — Textbook author and first superintendent of the United States coast survey, was educated in Switzerland. He was for some years instructor of mathematics in the United States Military Academy, and afterwards professor in Union College. He organized the United States Coast Survey, and was its first superintendent. His works include textbooks on arithmetic, astronomy, geometry, and trigonometry, besides numerous publications on scientific subjects.

W S M

**HASTINGS COLLEGE, HASTINGS, NEB.** — A coeducational institution opened in 1882 under the control of the Synod of Nebraska of the Presbyterian Church. Academic, collegiate, normal, music, and oratory departments are maintained. The entrance requirements are equivalent to about fifteen points of high school work. The three courses of the college, classical, scientific, and philosophical, lead respectively to the degrees of A B, B S, and Ph B. The faculty numbers fourteen members.

**HATCH ACT.** — See AGRICULTURAL EDUCATION

**HAUN, JOHN ERNEST CHRISTIAN** (1748-1801) — Educator who carried through a reform of the school system of Gotha (*qv*) at the end of the eighteenth century, when the schools had fallen into decay. He was appointed to the teachers' training school at Gotha by Ernest the Wise (*qv*) in 1780, and three years later became inspector of country schools. In spite of much opposition on the part of the clergy and nobles who protected the incompetent teachers of the time and feared a possible increase in taxation, Haun succeeded in securing a better class of teachers, a milder form of discipline, and sounder educational methods. Haun was the author of *The common-school method or practical instruction for inspectors and teachers of every*

## HAURANNE

*kind of elementary school, also for private schools.* (Erfurt, 1801.)

See GOTHA, SCHOOL REFORM IN.

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**HAURANNE, DUVERGIER DE.** — See SAINT CYRAN.

**HAUY, VALENTIN.** — See BLIND, EDUCATION OF THE

**HAVANA, UNIVERSITY OF** — See CUBA, EDUCATION IN

**HAVEN, JOSEPH** (1816-1874). — Educational writer, graduated at Amherst College in 1835. Subsequently he studied at the Union and Auburn Theological Seminaries. He was professor in Amherst College (1850-1858), Chicago Theological Seminary (1858-1870), and the University of Chicago (1871-1874). He was the author of *Mental Philosophy* (1857), *Moral Philosophy* (1859), and *History of Philosophy* (1876) W S M

**HAVERFORD COLLEGE, HAVERFORD, PA** — The successor of Haverford School, established in the spring of 1830. The school was founded in order to provide a "guarded education" for the sons of members of the Society of Friends. A by-law in the charter provides that the twenty-seven trustees of the self-perpetuating Board of Managers shall be members of the Society of Friends. This board consists of a president, a treasurer, and a secretary, and twenty-four trustees elected annually in three classes of eight members, each class to serve three years. In 1856 the school was changed to a college, and was authorized by the legislature to grant degrees; but previously to this time the course had been as extended as in most colleges. It was still hampered with a preparatory department, which was not abolished until 1861.

The college maintains the usual undergraduate courses, admission to which is by examination only. Degrees conferred are A B, B S, and M A for one year's graduate study in residence. Fraternities are prohibited. Although the income of Haverford College is exceeded by that of about 115 colleges and universities in the United States, only eight of these pay higher salaries to professors; and the least rich of these eight has an income six times larger than Haverford. Only five American colleges have a smaller proportion of teachers to students (1 to 6.5). To the smallness of this ratio and to the unusual excellence of the instructing staff a large measure of Haverford's efficiency is due. The enrollment in 1910-1911 was 150 students. The faculty consists of twenty-four members. C. G

## HAWAII

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Haverford College Alumni Association, *History of Haverford College for First Sixty Years of its Existence*. (Philadelphia, 1892)

**HAWAII, TERRITORY OF** — A group of eight islands in the Pacific Ocean, located 2100 miles southwest of San Francisco. There are some fifteen islands, large and small, but only eight are inhabited. These eight islands have a combined area of 6449 square miles, or about the size of Connecticut and Rhode Island combined, and about twice the size of Porto Rico. The total population in 1910 was 191,909, or about thirty to the square mile. This was composed of Japanese, 79,520, Chinese, 21,666, Portuguese, 22,701, Hawaiian, 26,108, Part Hawaiian, 11,912, Americans and Europeans, 14,409; Porto Ricans, 4896. The native race is slowly dying out, having decreased from about 250,000 in 1800 to 142,000 in 1822, 49,044 in 1872, and to 26,108 in 1910. Schools are maintained on only five of the islands, the other three being small and having very few inhabitants. The territory is organized into four counties, viz. Hawaii (the largest island), Maui, Oahu (including the city of Honolulu), and Kauai (including the island of Molokai).

**Historical** — The Islands were known by the Spaniards for about a century previous to their formal discovery and the introduction of civilization by Captain Cook in 1778. Near the close of the eighteenth century they were united, by conquest, under one king, Kamehameha, and continued as a united kingdom until the revolution and abolition of the monarchy on Jan. 16, 1893. A provisional government and a constitutional convention prepared the way for the proclamation of a republic on July 4, 1894. The new republic applied for admission to the American Union, and a treaty of union was prepared, but later withdrawn by President Cleveland. When the Spanish War broke out, the republic of Hawaii was annexed by a joint resolution of the United States Congress, passed July 7, 1898, and on June 14, 1900 the congressional act organizing the territory of Hawaii went into effect. Since that time Hawaii has been governed by its own territorial legislature, and by a governor appointed by the President of the United States, and as a territory.

The educational history of the archipelago extends over a period of about ninety years. Soon after their arrival in 1821 the members of the first company of missionaries interested themselves in educational matters, the first spelling book having been printed in 1822. This may be regarded as the first step toward popular education in these Islands, but in the beginning it was an education of adults rather than of children. Between the years 1823 and 1827 a peculiar system of schools sprang up and spread rapidly over the Islands, and

flourished for about ten years. The chiefs and their immediate attendants were the first pupils. From 1830 to 1840 the American missionaries maintained model schools at each of their stations. From this time the attendance of adults fell off rapidly, and the principal attention was thereafter given to the education of children. In 1831 the missionaries established Lahamalahana Seminary, on the island of Maui, chiefly as a training school for native teachers and preachers. Industrial training was from the first a prominent feature of the curriculum. A printing press and book bindery were attached to the school, numerous textbooks were published, and in 1834 the first newspaper was issued. The school has since been incorporated as a part of the public school system.

The history of the public schools of Hawaii extends over a period of about seventy years, the first school law having been enacted in 1841 by the king and chiefs in council. In 1843 a Department of Public Instruction was organized, and the official at the head was given the rank of Minister of the Crown. This position was filled by Hon. W. Richards, and, at his death in 1847, he was succeeded by Rev. R. Armstrong, the father of General S. C. Armstrong, of Hampton fame. In 1855 the department was remodeled and placed under a Board of Education, whose president exercised the same powers and was charged with the same duties as those formerly belonging to the Minister of Public Instruction. In 1896 the administration of the public schools was again raised to the rank of an executive department, to be presided over by a minister and a Board of Commissioners, it being provided that the Minister of Foreign Affairs should be *ex officio* Minister of Public Instruction. The act of Congress organizing the territorial form of government provided for a Superintendent of Public Instruction instead of an *ex officio* minister, but otherwise made little change. Some additional school laws have been enacted by the territorial legislature, but the form of organization remains very much as it was outlined in the revised school law of 1896. In 1909 a School Fund Commission was created, to investigate and report on methods of raising school funds. The report was made, and the recommendations enacted into law in 1911. A salary schedule, a school budget, and a committee on school estimates were provided for, and the school appropriations made a first charge on the treasury.

**Present School System** — At the head of the school system of the islands is a board of six school commissioners and a Territorial Superintendent of Public Instruction, all of whom are appointed by the governor of the Islands. No person in holy orders or a minister of religion is eligible for appointment, and not more than two women shall serve on the board at any one time. The commissioners

serve without pay, while the salary of the Superintendent of Public Instruction is fixed at \$6000 per year. The Superintendent and three commissioners, or four commissioners in his absence, form a quorum for the transaction of business. This body, which has the functions of a State Board of Education, has general charge of the school affairs of the Islands, appoints and removes subordinate officers, fixes all salaries, and adopts rules and regulations, not inconsistent with law, for the government of teachers and pupils, and its officers and agents, and for the proper carrying out of the general scheme of education for the territory. It is responsible for the conduct of all educational affairs, which are under its entire charge and control. It may establish schools for secular instruction, at such places and for such terms as in its discretion may seem advisable and which the funds at its disposal will permit. It regulates the course of study to be followed, and may classify the schools as it deems proper. The schools established may include normal schools, high schools, kindergartens, schools for technical instruction, boarding schools, and evening schools, as well as day schools. Classes for such instruction may be established in any school. All school property is in its name and possession. Teachers' conventions or institutes may be called or permitted, and the schools may be closed to enable teachers to attend them.

The Superintendent of Public Instruction, when present, acts as president of the board, signs all warrants and official acts or documents, and presents a biennial report covering the work of the schools to the governor of the territory. A Secretary, together with such assistants and office help as may be necessary, is appointed by the commissioners to look after the business affairs of the department. He acts both as a secretary and a business manager, keeps a record of all proceedings, conducts all correspondence, keeps a record of all financial transactions, and is responsible for all records and documents of the department. He acts under the direction of the board, and holds office at its pleasure.

For the purposes of supervision and inspection the Islands are divided into three inspection or supervisory districts, and a traveling deputy superintendent, known officially as a Traveling Normal Inspector, is appointed for each. Visits are made by these officials to each school about three times each year. They also hold meetings of the teachers for the purpose of giving advice and promoting the interests of education; make inspections of grounds, buildings, and equipment; and serve as a means of communication between the Superintendent of Public Instruction and the teachers and the people. The islands of Oahu and Kauai comprise the first inspection district; the Islands of Maui and Molokai



## HAWAII

the second district, and the large island of Hawaii the third district. Each of these islands is in turn divided into one or more school districts, for each of which an agent is appointed by the Board of Commissioners, to serve under the Traveling Inspectors and to act as a kind of supervising principal for a group of schools. For each school having more than one teacher one of the number is designated as principal. The distribution of schools at the close of the year 1910 was as follows —

ISLAND	PUBLIC SCHOOLS			PRIVATE SCHOOLS		
	Districts	Schools	Teachers	Districts	Schools	Teachers
Hawaii	9	58	153	4	9	32
Mau	4	33	79	3	12	41
Molokai	1	9	9	1	1	3
Oahu	5	36	193	2	30	189
Kauai	5	17	55	2	3	4

All private schools are subject to the supervision of the public educational authorities. Private schools can only be established by permission, based on a written petition setting forth the names of the pupils and parents, the name or names of the teacher or teachers, and the approval of the parents. If the teachers possess the necessary qualifications and are approved by the public school authorities, a permit is issued authorizing such a private school.

**Educational Conditions** — The system of public instruction in the Hawaiian Islands resembles somewhat the county school systems of some of the Southern states, in that the schools of the Islands are managed as a unit, and by one board of education. The result is that there is a uniform system of education throughout the Islands. The course of instruction, the standards for teachers, and the salary schedule are uniform for the same kind of work throughout the Islands. The schools are maintained by appropriations and the proceeds of general taxation, and all salaries and other expenses are paid by warrants on the treasury. No differences exist among teachers on the basis of race, sex, color, nationality, politics, or religion. The sole basis and medium of instruction in all public and private schools is the English language. Tuition is free in all public schools. Free textbooks are furnished to those too poor to provide them. Attendance from six to fifteen years is compulsory. Private schools may be selected by parents, if they prefer, but all children of school age must attend some school taught in the English language. A system of truant officers, or school police, enforce the compulsory education law in the country districts as well as in Honolulu. All teachers and children must be medically examined and be free from disease.

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Both the total population and the school population are very mixed. For 1910 the statistics as to teachers and children in the public and private schools were as follows —

NATIONALITIES	PER CENT OF PUPILS		NO. OF TEACHERS	
	Public	Private	Public	Private
Hawaiian	16.01	3.25	72	11
Part Hawaiian	10.28	4.56	142	22
American	1.83	2.18	180	168
British	41	34	35	16
German	61	45	7	2
Portuguese	14.70	4.51	33	11
Scandinavian	20	07	7	2
Japanese	22.04	2.47	—	5
Chinese	8.43	2.82	8	12
Koreans	58	09	—	3
Porto Ricans	1.30	49	—	—
Other Foreigners	1.99	39	5	14
Totals	78.38	21.62	489	269

It will be seen from the above that five nationalities — Hawaiian, part Hawaiian, Portuguese, Japanese, and Chinese — represent over 90 per cent of the total school enrollment in the Islands.

The course of study as outlined for the schools of the territory covers the usual eight grades, and is much like that to be found in American schools. Nature study, illustrative work, manual work, calisthenics, and music run through from the first grade, sewing and carpentry are taught under the head of manual work, and agriculture has recently been introduced as a phase of nature study. Domestic science is taught in a number of schools. Public high schools are maintained at Hilo, on the island of Hawaii, and at Honolulu, on the island of Oahu.

**Teachers and Training** — The territory employed 489 teachers in 1910, and 269 were employed in private schools, in addition. The statistical table given above shows the cosmopolitan nature of the teaching force, as well as of the pupils in the schools. About 21 per cent of the public school teachers and about 30 per cent of the private school teachers are men.

Examinations for teachers' certificates are held at least once each year, usually during the summer vacation. Grammar grade and primary grade certificates are granted to those who pass. The examinations for the primary certificate are only open to those who have had one year of professional training, one year of teaching experience, or who are graduates of a high school, and the examinations for the grammar grade certificate are only open to those who hold primary certificates. Holders of a university degree, a normal school diploma, a life certificate, or of life grammar grade certificates issued in the states, may be granted a grammar grade certificate without examination. Life diplomas for the territory are also granted.

For the purpose of developing a teaching force from among those born and reared on the Islands, a territorial normal school has gradually been developed. It is located at Honolulu. It began, about twenty years ago, as an afternoon class to help those teachers who cared to attend. In 1895 it received government recognition, and a training school was developed. In 1905 a normal school building was completed and occupied, and the school now offers courses of instruction for those coming direct from the grammar schools, who constitute about 80 per cent of the enrollment, and also a two-years' course for graduates of the high schools. The school is accredited by the California State Board of Education as of equivalent rank to the California normal schools. A large proportion of the teachers are still drawn from the mainland, though the native trained teachers are said to possess superior adaptability.

**Other Institutions** — Besides the high school and the Territorial Normal School at Honolulu, island of Oahu, and the high school at Hilo, island of Hawaii, the territory maintains or assists in maintaining the Boys' Industrial School and the Girls' Industrial School, both located on the island of Oahu, and the Lahamaluna School, located on the island of Maui. The two industrial schools are reformatory in their work. The curriculum of the boys' school is largely agricultural and manual, while that of the girls' school is largely along the line of domestic work. The Lahamaluna School, whose history dates back to 1831, is a school for natives who wish to combine industrial training with general instruction. There are five classes in the school, covering about the five grades from fifth to ninth inclusive. Bookkeeping, military drill, printing, blacksmithing, carpentry, and agriculture are prominent in the work of the school. The total enrollment in 1910 was one hundred and five, made up of sixty-four Hawaiians, thirty part Hawaiians, six Japanese, four Chinese, and one Portuguese.

The United States Department of Agriculture has maintained an experimental station in Honolulu since soon after annexation, and in 1907 the Hawaiian College of Agriculture and Mechanical Arts was established. This institution is substantially the same in character as institutions of a like kind on the mainland. It is supported in large part by territorial appropriations, but also receives from the United States the same annual appropriation (\$50,000) as is given the agricultural colleges of the different states, and an additional appropriation of \$30,000 for the agricultural experiment station.

**Private Schools** — The Islands have a number of private schools, some of which are of considerable importance. The Kamehameha Schools at Honolulu are worthy of especial note. This institution was established under

the provisions of the will of a Mrs. Bishop, a Hawaiian lady of high rank, who left the bulk of her large property in the hands of trustees to endow a school for the education of children, wholly or in part of native blood. There is a large boarding school for girls, and a boys' school combining manual and technical instruction with the ordinary school branches. The school also maintains a preparatory department. The institution is well provided with workshops and appliances, and ranks as a secondary manual training school. Oahu College is another institution worthy of especial mention. Founded by American missionaries in 1841, chartered as a public institution in 1849, and rechartered as a college, as well as a preparatory school, in 1853, the institution has grown with time and has accumulated a considerable endowment. A large number of the other private schools are under Catholic Church control. E P C.

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**HAWLEY, GIDEON** (1785–1870) — First state superintendent of public instruction in New York, studied at Ballston Academy and graduated from Union College in 1809, where he served as a tutor for a few years. He organized the common school system of New York and was the first state superintendent of public instruction (1812–1821). He was secretary of the Regents of the State of New York from 1814 to 1841 and a member of the Board of Regents from 1842 to 1870. He was also active in the movement for the organization of normal schools in New York. Besides numerous articles in educational journals, he was the author of *Truth and Knowledge* (1850).

W S M

See NEW YORK, STATE OF

**HAWTREY, EDWARD CRAVEN** (1789–1862) — One of the greatest headmasters and later provost of Eton College (*qv*). It was under his influence that reforms and innovations were introduced which gave Eton a prominent position in scholarship. Hawtreys was born at Burnham, near Eton, of a family that for generations had been connected with the college. After being himself educated there and at King's College, Cambridge, where he became fellow, he acted as private tutor for three years. In 1814 he was appointed assistant master at Eton by Dr. Keate (*qv*). He at once began to exercise an excellent influence on the pupils who came into contact with him by his high standard of scholarship and culture (in addition to the classics and Hebrew, he was a master in German, French, and Italian) and encouraged a wide range of reading. In 1834 he became headmaster and in-

augurated a series of much needed reforms in organization, equipment, and curriculum. He divided up the large classes which had prevailed, secured a special room for the sixth form, of which he took personal charge, introduced examinations and a competitive basis in class-work, provided better dormitories and improved the living conditions generally, closed the old Christopher Inn which had long been the center of excesses, and secured the abolition of Montem (1847). Much of his influence with boys was due to the introduction of a new spirit of sympathy; instead of the harsh discipline meted out by Dr Keate, the boys were treated as gentlemen. In the first six years he had to meet with much opposition from the then provost, Dr Goodall, but in his successor, Dr Hodgson, he found a sympathiser and collaborator in many of his reforms. Under Hawtreys mathematics and modern languages were encouraged, better textbooks and methods of instruction were introduced, athletics and theatricals were promoted, and everything was done to provide interests to replace idleness and waste of time which merely led to bullying, brutality, and license. In 1852 Hawtreys became provost and supported the improvements of his successor in the headmastership. Hawtreys was a man of remarkable culture and literary and artistic taste, a lover of books, he collected a large library and encouraged the collection of a school library. His influence on Eton was as great as that of Arnold on Rugby, and, if it did not spread so generally on English education, this was due as much to the unique position of Eton as to the fact that Arnold was himself a teacher of so many teachers and that the Rugby spirit was published to the world in *Tom Brown's School Days*.

See ETON COLLEGE.

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(London, 1896)

**HAYNE, THOMAS** (1582–1645) — Second undermaster at Merchant Taylors' School, 1605, and then usher of Christ's Hospital, 1608. He was a Leicestershire man, B.A., Lincoln College, Oxford, 1605. He gave £400 to buy lands or houses in or near Leicester to provide a rent of £24 forever for the maintenance of a schoolmaster at his native place, Thrusington in Leicestershire, to teach ten poor children, and for the maintenance of two poor scholars in Lincoln College to come from the Free School at Leicester or from the school at Milton, the schoolmaster to have £12 yearly and the two scholars £6 yearly. Hayne was regarded as a scholar, "beloved of learned men and particularly respected by Selden." His two educational books are: (1) *Linguarum cognatio, seu*

*de Linguis in genere et de variarum Linguarum Harmonia Dissertatio*, 1639 (2) *Grammatices Latinae Compendium* (1640) written in Latin, while the most necessary rules are expressed in English opposite to the Latin, that the one may facilitate and give light to the other. Hayne deserves recognition for his simplification of Lily's Grammar, but his book is now perhaps most valuable for its history of Latin Grammar in England up to his time, contained in the "Address to the Judicious Reader." This is to be found reprinted in Foster Watson's *English Grammar Schools*, pp 253–254 F. W.

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**HAYNE, HAYNES, or HAINES, W** (d. c. 1631) — Headmaster of the Merchant Taylors' School from 1599 to 1624, of great prominence as a schoolmaster, who published (1) *Certaine Epistles of Tully verbally Translated, Together with a Short Treatise, containing an order of instructing youth in Grammar, and with all the use and benefit of verbal translations*, 1611. (2) *Haynes' Phrases, a very useful book to enable young scholars to make and speak eloquent Latin* 2d ed. 1653 (3) *Latines Rules construed*, 1653. This book marks a stage in the progress from the Latin Grammar in Latin to the Latin Grammar in English. F. W.

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**HAZELWOOD SYSTEM** — See HILL, THOMAS WRIGHT.

**HEADACHE** — A common complaint among school children. Usually it is not an ailment, but a symptom, — of eyestrain, decaying teeth, nervous fatigue, or the like, or it may be of impending acute disease. Some have maintained that there is a special form of headache due to the conditions of school life, *cephalalgie scolaire*. Under certain conditions this may fairly be maintained, for in certain schools where hygiene is ignored the congestion from prolonged sitting, the stooping posture, the strain upon the eyes and brain combined with the dry, overheated, stagnant, and impure air, are likely to produce headache, and while the headache is merely a symptom of perhaps general physical *malaise* it may fairly be attributed directly to the school. The studies by Key of Sweden and Holst and Magelssen in Christiania in Norway indicate that in only a very small percentage of cases is the headache of pupils caused by the school work. Apart from acute or chronic disease perhaps the most common causes of headache are the dry over-

## HEADMASTER

heated air of the schoolroom, decayed teeth, astigmatism, and indigestion among the children.

When children complain of headache they should be treated sympathetically by the teacher and usually the physician or nurse should be called or the child should be sent home. Continued recurrence of headache in a pupil should lead the teacher to make a careful search for the cause, and the discovery of the real cause is often of the first importance for the educator. The correction of a sense defect or a slight change of regimen will often accomplish wonders for the comfort and success of the pupil.

W. H. B.

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MAGELSEN, A. *Über das Kopfweh — hauptsächlich Migräne — an der Mittelschule*. *Internationales Archiv für Schulhygiene* 1905 Bd I, pp 285-300

**HEADMASTER** — A term used in England to denote the principal of a secondary school. Only in a few private secondary schools is the term used in America. The use of the word did not become general until the nineteenth century. Until then the distinction among members of a teaching staff was not that of headmaster and assistant master but between master and usher. Other terms were pedagogue, *ludmagister*, master, High Master (still in use at St. Paul's School, London, and the Manchester Grammar School), Chief School Master (Wellingborough), or *Archidascalus* (Westminster Statutes), while the usher was also known as undermaster, submaster, surmaster, *hypodascalus* (Westminster), or *ostiarus* (Manchester Grammar School). The term "head" alone was frequently used of the chief officers of colleges and universities as early as the fifteenth century, and sometimes also of the principals of schools.

The term is also applied popularly to principals of elementary schools, but the official designation in government regulations is "Head Teacher."

## HEALTH INSPECTION OF SCHOOLS

— See MEDICAL INSPECTION.

**HEALTH, INSTRUCTION IN.** — See HYGIENE, PERSONAL.

**HEARING** — The common term for the processes of auditory sensation or perception. See PITCH, CORD; EAR, MUSIC; TONE.

**HEARING OF SCHOOL CHILDREN.** — See EAR.

**HEARING, TESTS OF.** — See EAR.

**HEAT-SPOTS** — Points on the skin which are especially susceptible to stimulation from warm objects.

See COLD-SPOTS; PRESSURE-SPOTS; PAIN-SPOTS.

## HEATING OF SCHOOL BUILDINGS

### HEATING OF SCHOOL BUILDINGS —

It is not the function of a schoolman to decide between those features of heating systems wherein technical engineering knowledge is involved. School boards should employ competent engineers to install the heating system in large buildings designed for school purposes. But it should be remembered that there are many conditions entering into successful heating appliances for schools not so vitally necessary in those designed for homes or commercial buildings. It is the duty of superintendents, principals, and teachers to advise in such matters and to understand in a practical way the most economical and effective use of any system installed. In general a schoolman has opportunity to know far better the practical results of any heating system designed for schools than the engineer. Hence, there are certain demands from the school point of view which all successful heating systems must fulfill. Besides, outside of the larger city schools most heating systems are installed without the guidance of competent engineers, and very frequently the principal or superintendent is the only advisor in such matters.

**Standards in Heating Schools** — The peculiar demands in large schools on heating systems may be stated as follows: (1) The heat should be generated in some central heating plant, either in the building or outside of it. (2) It must be delivered in the schoolroom in such manner as to be equally distributed. (3) It should be automatically regulated so as to prevent in the temperature of the room a variation of more than one or two degrees. By the use of thermostats this is now possible, and no heating system for schools is complete without an adequate supply of thermostats. No special discussion of these is needed here, for they are safely and effectively installed only by engineers of experience and skill. It may be well to say, however, that all janitors as well as principals of schools should thoroughly understand the principle upon which they operate in order to know when they are properly adjusted. (4) Heating systems should be planned to meet, without undue strain or effort, the lowest temperatures of the locality. This is a very important precaution, and it is false economy on the part of boards of education to neglect it. (5) Due account should be taken of the disturbing effect of strong winds during the winter season. This modifying influence of winds on the effectiveness of heating systems has not received the amount of consideration it deserves at the hands of either the engineer or the school superintendent. In the bleaker or more wind-swept areas of the country strong winds are frequently fatal to the effectiveness of what would otherwise be an adequate heating system. (6) Heating apparatus should be constructed and located with scrupulous regard for the safety and sanitary demands of the school. All stoves, furnaces, chimneys, firerooms, coal

bins, or oil tanks should be so located and so constructed as to make it practically impossible for fires to start from these, or for dust, smoke, or odors to escape into the building. If steam is used as the thermal medium, the boiler capacity should be ample, so that a perfectly safe low pressure system can be used and yet furnish promptly and regularly an adequate amount of heat. If necessity demands a high pressure system, a registered engineer must be employed, and every precaution in the way of safety devices should be used. (7) There should be connected with each heating plant, especially in cold climates, some efficient system of introducing moisture into the air. While, strictly speaking, this is not a part of a heating system, it is so intimately connected with the effectiveness of the system, as well as the sanitary side of school life, that it deserves a great deal more thought than it has hitherto received in this country. (8) The location of a heating system with reference to the even distribution of the heat in the rooms is often a consideration of prime importance. With steam or hot water as the medium, the difficulty here suggested is more easily overcome, but with hot air furnaces the success or failure of the whole plant may depend on relative location. (9) Heating systems ought not to be divorced from ventilating systems, and hence the installation of the former should always have due regard to the quality of the air in the schoolroom as well as its temperature. Direct radiation systems therefore should never be used in schoolrooms save in the way of an auxiliary. In the northern latitudes it is sometimes necessary, to avoid expense, to use auxiliary direct radiation to secure adequate heat. (10) It is a matter of great economy in the milder climates of the country to be able to secure from a heating system a quick response with the use of a minimum amount of fuel. For it frequently happens that a little heat is needed for an hour or two in the morning, and none for the rest of the school day. Here the greater economy of a hot air furnace over hot water or steam in such climates is very clear. (11) Other things equal, it is always better to draw the air to be forced through the heating coils, from the south side of buildings, because experimental tests show in general a decided difference in temperature between the air on the north and south sides of the building. Suppose the air on the north is at the freezing point, on the south side the thermometer would show 37° F. This would mean the saving of practically one seventh of the fuel, for this five-degree difference in temperature means practically one seventh of the amount of heat necessary to bring a freezing temperature to that required in the schoolroom.

**Systems of Heating.** — *Stoves* — Having stated these general, but fundamental, considerations, some detailed suggestions deserve attention. The old-time box stove has not gone from the country schools, and is yet frequently

found in village schools, notwithstanding the fact that the jacketed stove has been much advertised and has proved both economical and far more sanitary. There are many varieties of jacketed stoves on the market, but the essential features are the same in all. There are four main reasons why the ordinary stoves in all country schools should give place to jacketed stoves or hot air furnaces. (1) A jacketed stove materially aids in ventilation (*q.v.*) (2) By its use more equable heat can be maintained. (3) Better distribution of heat to all parts of the room can be secured. (4) Such stoves can be more advantageously located in schoolrooms than ordinary stoves.

It is of course clear that the aid to ventilation mentioned above is only operative during cold weather. Many of these stoves have evaporating devices which are especially helpful in severe weather, in preventing the air from becoming too dry to breathe healthfully, and also, through this added moisture, in reducing the degree of temperature required for comfort. A temperature of 65° F. with proper humidity is as satisfying in cold weather as 70° F. when the air is abnormally dry.

**Hot Air Furnace** — The hot air furnace or heater is simply a modification of the jacketed stove, or perhaps, speaking chronologically, a jacketed stove is a modification of the hot air furnace. The essentials of this furnace are: (1) A large fire box, and combustion chamber so carefully made as to permit no possible escape of gas, smoke, or soot save through the smoke chimney. (2) The fire pot and combustion chamber are surrounded with a jacket of brick, cement, or some good nonconducting material with sufficient space between it and the heated furnace for an easy circulation of air. (3) The fresh air duct opens directly underneath the fire pot and into the air space around it, so that as the air about the radiating surface is heated and moves upward, cool air from without will take its place. (4) This warmed air passes by means of the force of a fan or simply by the force of gravity, first to a centrally located chamber from which the ducts leading to the various rooms radiate. One branch of these ducts is also connected with a cold air chamber. By means of dampers, managed by a thermostat placed in a classroom, the temperature of the room can be kept approximately at the degree required. There are some serious defects connected with hot air furnace heating that should be considered carefully. (1) Unless they are constructed and set with the greatest care, there is always some danger from gas escaping from the fire box or combustion chamber into the air to be delivered into the schoolroom. The danger is especially glaring if the furnace is too small to furnish sufficient heat without very heavy firing. For it is evident that such fires would tend to warp, crack, or displace the radiating parts of the fire box or combustion chamber, thereby offering an opportunity for the es-

cape of gas or smoke. Besides, if overheated, such furnaces permit the passage of carbon monoxide directly through the metal plates. (2) There is danger from overheating the air in furnaces, and rendering it dry, harsh, and "lifeless." Again, the only safeguard for this defect is to have a furnace of such dimensions that it will never be necessary to overheat the air in order to introduce sufficient heat into the schoolroom. Much warm air, instead of little hot air, is the correction to apply here. The amount of humidity needed can be supplied in a number of ways, but this topic cannot be discussed adequately here. (3) It is a difficult matter to properly apportion the ducts leading to the various rooms, so that, under the force of gravity or the uniform pressure of a fan, each room will get the amount of heat and fresh air needed. There have been more serious blunders made in this regard than perhaps in any other connected with the installation of heating plants. Long pipes, with short turns, no sheathing to prevent radiation and far too constricted to deliver a sufficient quantity of air without much friction, have been conspicuous causes for the failure of many expensive furnace installations. No part of a heating or ventilating system needs the advice of an expert engineer more than the construction, location, and the proportioning of the ducts designed to carry the heated air to the schoolroom. This is especially true in connection with furnace heating. (4) It is more fluctuating than hot water, or steam heating.

There are some advantages in furnace heating that are worthy of note. (1) It is more economical in mild weather when artificial heat is needed for only a fraction of the school day. (2) It requires less time to get results, for it heats quickly and is more direct than hot water or steam. (3) It is cheaper to install than hot water or steam and, if properly proportioned to its load, it is far less expensive to keep in repair. (4) It does not require attention in cold weather during holidays as hot water or steam does. (5) It is of simple construction and does not require expert knowledge to handle, as does steam or hot water heaters.

*Steam Heating* — Steam heating can be used for direct radiation, indirect radiation, or a combination of both. The advantages of this system for schools may be stated briefly as follows. (1) It furnishes a steady, continuous heat of comparatively low temperature, and hence does not "scorch" the air or reduce the humidity so strikingly as a furnace may. (2) The boiler room can be installed either in the school building proper or in a detached building even at some distance without serious loss in delivering the heat to the various rooms. (3) The radiators can be grouped into one unit or various units and readily proportioned to meet demands. (4) It can be utilized to introduce warmed fresh air into the schoolroom with or without a system of ducts from the basement.

For example, many devices have been developed to install coils beneath windows or along outside walls, and, through an opening below, to allow the fresh, cold air to circulate about the coils and pass directly into the room. Where they are connected with some mechanical system of ventilation they can be grouped into chambers in connection with the ducts directly below the rooms they serve, and in this way the heat units demanded can be easily computed and applied. (5) It is more efficient in cold climates for the reason that it can be used in any combination desired, and can be expanded as exigencies demand. This of course is true only if adequate boiler capacity is installed.

There are some disadvantages in steam heating, and among these the following may be mentioned. (1) It is expensive in installation, and, if not handled by experienced mechanics, it is an expensive system to keep in repair. (2) It is not well suited to mild climates, for it is slow to heat and slow to cool. Hence it is wasteful and not sufficiently responsive for those climates where a little heat is needed in the morning and none for the rest of the day, or where a slight, steady heat is needed all the day. (3) There is always some danger in steam boilers, especially in high pressure boilers. They need constant attention, and demand a skilled mechanic to manage them economically and safely. (4) In cold climates during the winter months, fires must be kept going day and night and during holidays as well, in order to prevent the pipes from bursting. (5) It seems difficult to adjust steam radiators so as to prevent the pounding noises occasioned by the water from condensed steam coming into conflict with circulating steam. This difficulty has been much reduced in the past few years, but it is not yet perfected.

On the whole steam heating seems to be the most satisfactory for cold climates, and is being largely used in the more temperate regions. The business of the installation of a steam heating system demands technical knowledge, and boards of education will always save money by employing an expert engineer who knows school demands, as well as the technique of his profession.

*Hot Water System* — The system of heating by hot water has not been used extensively in the schools of this country, though under favorable climatic conditions it is in certain respects well adapted for this purpose. In England it is more often used, and in that climate, save in extreme weather, has been found satisfactory. The advantages of a hot water system may be stated as follows. (1) It can be used, especially when supplied with a pump to facilitate circulation, in mild weather, without overheating and undue use of fuel. (2) It does not require such constant attendance as a steam heater, nor does it demand the technical ability to supervise. It is safer than steam, and

is not subject to such rapid fluctuations as other systems (3) It is ordinarily noiseless, and furnishes an acceptable quality of heat (4) It can be delivered a long distance from a central heating source at comparatively slight loss in temperature, and for this reason it often lends itself to great economy of fuel and service by the use of one central heating station for several buildings This point is worth considering because of the probable future tendency to group a number of school buildings together in suburban districts, where playgrounds, fresh clean air, and surcease from noise are possible

On the other hand, it has some distinct disadvantages (1) It seems to require more care to prevent leaks, especially when direct radiation is used in tall buildings and demands exacting attention in cold weather to prevent the pipes from bursting (2) It is generally less quickly effective than other systems, and, unless a large amount of radiating surface is furnished, it will not satisfy the demands for heat in very cold weather (3) It requires a greater superficial area or radiating surface to afford the same amount of heat than a steam heating system, and hence, where space must be economized either in basements or schoolrooms, this is a distinct disadvantage (4) Most engineers claim that it requires "more careful installation, and nicer calculation of the sizes of piping" than is required for steam heating

Owing to the fact that the amount of humidity associated with the air has a direct influence on the temperature demanded for comfort in schoolrooms, those in charge of modern school buildings, especially in the larger cities, have found it not only more wholesome to wash the air of dust and soot, but a matter of economy during cold weather because of the added moisture thereby introduced

It will be readily admitted by all that colds and bronchial affections are much more generally common in winter than summer This is not because disease germs are specially rampant in winter, but because the protection afforded by the mucous secretions of the air passages is reduced by the more rapid dissipation of this moisture by the dry air breathed in winter (See COLDS) The spaces between the molecules of cold air are restricted and hence the possible amount of water vapor occupying them is much smaller than that possible in the case of warm and hence expanded air When cold air is heated to the temperature required for the schoolroom, necessarily the percentage of saturation is greatly reduced Such air when breathed readily and quickly absorbs a great amount of moisture from the air passages Warm dry air is greedy, so to speak, for water vapor, and will also quickly absorb moisture from the skin and render the body harsh and dry But as a result of this evaporation the temperature of the body is lowered, for it is a principle of physics that a

body losing moisture through evaporation is thereby lowered in temperature To counteract the feeling of chill thus produced an abnormally high temperature must be maintained If, however, after the cold air has been heated it be driven through sprays of water, or be made to impinge on or pass through water-soaked screens of coarse cloth or porous material, it will acquire a higher percentage of saturation, and when passed into the schoolroom will not absorb an undue amount of moisture from the bodies of the children Hence the chill mentioned above will not be produced, and a lower temperature will satisfy Some estimates show that at least 10 per cent of the cost of fuel will thus be saved in very cold weather, and in addition better hygienic conditions will be furnished Many devices and appliances have been designed to secure this humidity and at the same time wash the air of dust and soot One of the latest and most promising methods devised for this purpose consists in what is called an air washing and cooling fan By this method "the air is forced through several successive layers of close-meshed wire screen, over which and through which water flows rapidly and in large quantities," and by the use of other means not necessary to specify here, the fan serves a triple purpose of an propeller, air washer, and humidifier

F B D

See ARCHITECTURE, SCHOOL; VENTILATION

#### Reference --

See under ARCHITECTURE, SCHOOL.

**HEBDOMADAL COUNCIL** -- One of the governing bodies of Oxford University consisting of the Chancellor, the Vice Chancellor, the proctors, six heads of colleges or halls, six university professors, and six members of Convocation of not less than five years' standing The Hebdomadal Council has the power of initiating University legislation and of framing statutes which may be accepted, rejected, or amended by Congregation and accepted or rejected by Convocation The name of the council is derived from the fact that its meetings are held weekly

See OXFORD UNIVERSITY

**HEBREW** -- See ORIENTAL LANGUAGES AND LITERATURE

**HEBREW EDUCATION** -- See JEWISH EDUCATION

**HEBREW, TEACHING OF IN REFORMATION SCHOOLS** -- See ORIENTAL LANGUAGE AND LITERATURE

**HEBREW UNION COLLEGE, CINCINNATI, O** -- A theological seminary established in 1875 for the training of rabbis and teachers in the principles of Reform Judaism. A preparatory department of high school grade and

a 'Teachers' Institute are also maintained. The entrance requirements to the collegiate department are the same as those for the University of Cincinnati. The degree of Rabbi is conferred on candidates who fulfill the requirements and possess a degree equivalent to the A.B. of the University of Cincinnati. The College also confers the degree of Doctor of Divinity. There is a faculty of eight members.

#### HECKER, JOHANN JULIUS (1707-1768)

— A German educator, the father of the "Realschule," was born at Weiden on the river Ruhr, in what is now the Rhine province. His father and grandfather were schoolmasters, and he was educated in his father's school up to his fourteenth year, when he entered the gymnasium of the neighboring city of Essen. The rector of this school was a pupil of A. H. Francke (*q.v.*). In 1726 Hecker went to the University of Halle and, for a short time at least, came himself under the influence of Francke. He studied not only theology and philosophy, but attended also lectures on medicine and natural science. In 1729 he was appointed teacher of the "Paedagogium" in Halle, one of the schools founded by Francke, where for six years he taught all sorts of subjects, from Hebrew and the classics to chemistry, anatomy, and physiology. He also published a textbook of anatomy, one of physiology, and an introduction to botany. In 1735 he was called as pastor and school inspector to the military orphanage at Potsdam, where he attracted the attention of King Frederick William I. In 1739 he became the pastor of the new "Dreifaltigkeitskirche" (Trinity Church) in Berlin, a position in which he remained until his death. He first improved the elementary schools belonging to his parish, procuring the necessary means for this work through a school lottery, the shares of which were bought by people in different parts of Germany. In 1747 he opened a new kind of school, which was destined for the education of boys who were to be prepared for practical life. This school, which he called "Ökonomisch-mathematische Realschule" (now the Kaiser-Wilhelms-Realgymnasium), must be regarded as the mother institution of the whole system of modern (as distinguished from purely classical) secondary schools (Realgymnasien and Oberrealschulen) in Germany. He also did much for the training of teachers of the rural schools. The "General-Landschul-Reglement," the first general school law of Prussia, issued by Frederick II in 1763, was to a great extent Hecker's work.

F M

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RANKE, F. J. J. *Hecker, Gründer der Königl. Realschule* (Berlin, 1861)

#### HEDDING COLLEGE, ABINGDON, ILL.

— A coeducational institution founded in 1856

under the auspices of the Central Illinois Conference of the Methodist Episcopal Church. Academic, collegiate, music, and oratory departments are maintained. The entrance requirements are equivalent approximately to 15 points of high school work. The college grants the degrees of A.B., B.S., and Ph.D. The faculty consists of thirteen professors.

**HEDGE, LEVI** (1766-1844) — Educational writer and college professor, was graduated at Harvard College in 1792. He was tutor and professor in the college from 1810 to 1830. Author of *System of Logic* (1818), *Mental Philosophy* (1827), and other educational works.

W S M

**HEDGE-SCHOOLS** — A term applied originally to those schools which sprang up in Ireland as a result of the Penal Laws (1704-1728) by which no Catholic was allowed to give or receive education or to go abroad for purposes of study on penalty of a fine of £100, while children so educated could not inherit property in Ireland or England. A result of these measures was that secret schools arose in which priests and others taught as much as was possible under the circumstances. "On the high-ways and on the hillside, in ditches and behind hedges, in the precarious shelter of the ruined walls of some ancient abbey, or under the roof of a peasant's cabin, the priests set up schools and taught the children of their race" (McCarthy, p. 13). In this way the national cause and national existence was kept alive. The term, however, soon came to denote any kind of a poor school, and so Thackeray calls Paddy Byrne, Goldsmith's teacher, "a hedge-schoolmaster." In Germany the identical term *Heck-* or *Heckenschule* in Hesse is the equivalent of *Winkelschule* (*q.v.*). In medieval France unlicensed schools were known as *Écoles buissonnières*.

See IRELAND, EDUCATION IN

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**HEDONISM** (ἡδονή, pleasure) — A term used to denote theories that make pleasure either the end, or the standard of intentional or conscious activity, moral behavior included. The ancient and the modern theories grouped under that name are, however, more widely different from each other than their common name would indicate. Ancient hedonism is associated with Epicureanism. Its chief motivation was revolt, on the one hand, against the moral theories which made virtue consist in fitting into the existing social order by performing the duties appropriate to the status in which a person found himself, and, on the other hand, against the theories which gave morals a purely rationalistic cast, basis, and aim. As against the first, Epicurean hedonism taught the advisabil-



ity of abstinence, as far as possible, from civic life, and the cultivation of voluntary associations based on congeniality and friendship. As against the second, it emphasized the importance of the feelings, and of cultivating the various types of enjoyment naturally accessible to the individual. Contrary to the usual belief, it taught not surrender to appetite, but moderation of desire, on the ground that excessive desire was fatal to happiness. Ancient, like modern, hedonism was naturalistic in tone, but here again the motive was different, ancient hedonism being convinced that supernaturalism tended to fear of death and of the intervention of the gods, and hence was detrimental to a life of serenity and contentment.

Modern hedonism, in its influential forms, has been associated with an empirical philosophy and with utilitarianism. Its chief object has been to set up a concrete standard for measuring the worth of acts, their consequences in the way of pleasures and pains produced. Its interest was not in outlining an agreeable mode of life, remote from strife and disturbance, but the discovery of a scientific mode of estimating right and wrong methods of action. Of the conscious search for pleasure it has made little, generally holding, in fact, that happiness is best attained when not consciously aimed at—the so-called hedonistic paradox. In its most important representatives—as Bentham and the Mills—it has been more interested in the development of methods for judging the effects of legislation and administration, civil and penal, by tracing their effect among the pleasures produced and the pains entailed upon the masses affected by them, than in elaborating a code for right action in private life.

As a moral system, hedonism has had little direct influence upon educational theory or practice. Matters of pleasure and pain are, however, so closely connected with the motivation of conduct that it would not be difficult to trace an implicit hedonism in the use made of rewards promised and punishments threatened as motives to studious behavior. Asceticism, moreover, is a kind of inverted hedonism, involving the notion that man is so naturally prone to pleasure-seeking that the agreeable must be shunned as a temptation to evil. Ascetic notions underlie many educational ideas and procedures, especially those that cluster about the notion that there is something disciplinary and moralizing in tasks and exercises in the degree in which they are disagreeable (see **FORMAL DISCIPLINE**).

J. D.

See **UTILITARIANISM**.

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See also Baldwin, J. M. *Dictionary of Philosophy and Psychology*, Vol. III, pt. II, pp. 899–901, for articles in current magazines

**HEGEL, GEORG WILHELM FRIEDRICH** (1770–1831) — Born at Stuttgart and died at Berlin. He was the son of a secretary in the revenue office of the kingdom of Württemberg, and received a good education extending over eighteen years. With the purpose of pursuing theological studies, he attended the University of Tübingen (1788–1793), but, finding the prescribed theological and philosophical courses both dull and unfruitful, he devoted most of his time to classical and historical literature. His university certificate stated him to be of good ability, but of middling industry and knowledge, and especially deficient in philosophy. Six years (1793–1801) were passed as a private tutor, first in Bern and later in Frankfurt.

His career as a university teacher began in Jena (1801–1806) as *Privat-docent*. Later he became professor extraordinary. His first important book, *Die Phänomenologie des Geistes*, which he characterized as his “voyage of discovery,” was written here. The Battle of Jena interrupted the work of the university, and Hegel spent a year at Bamberg as a newspaper editor. Being appointed by Niehammer as professor of philosophy and rector of the new gymnasium at Nuremberg, a school of nearly 200 boys, he passed eight years (1808–1816) as a successful secondary teacher and headmaster. Hegel believed that classical studies formed the only sure basis for later intellectual work and development. At the same time he readily seized every opportunity for widening the curriculum and developing varied interests in the pupils. Military drill was introduced, and a school library and museum were started, to which parents and friends made gifts from time to time. In 1811 he married Marie von Tücher. One of his two sons, Karl, afterwards became professor of history at Erlangen. In addition to his work in the gymnasium, he wrote and published his greatest book, *Wissenschaft der Logik* (1812–1813, 1816).

His university career was resumed when he accepted the chair of philosophy at Heidelberg in 1816, declining calls at the same time to those of Berlin and Erlangen. He remained here two years, writing the *Encyclopädie der philosophischen Wissenschaften im Grundrisse* (1817). In 1818 he accepted the second invitation to the chair of philosophy at Berlin, made famous by Fichte (*q v*). His reputation was steadily growing, and he gathered round him a band of optimistic students and disciples. The *Grund-*

*Enzyklopädie der Philosophie des Rechts* appeared in 1820. His time at Berlin was given chiefly to teaching. His lectures on aesthetics, philosophy of religion, philosophy of history, and history of philosophy were published posthumously from his notes and those made by his students. In 1830 he was elected rector of the university. He died suddenly from cholera in 1831. "His philosophy may well be called the Prussian state philosophy during the years 1820 to 1840. It was the philosophical system officially acknowledged by the Ministry of Education" (Paulsen).

*Hegel's Philosophy* occupies a distinctive place in modern thought. The great German idealistic movement which, beginning with Kant, was developed in different ways by Fichte and Schelling reached its culmination and most complete presentment in the writings of Hegel. These philosophers all held that the universe becomes intelligible only as we adopt a spiritual interpretation. Benefiting as it were by the efforts of Fichte and Schelling to overcome the apparent dualism in Kant, Hegel became an evolutionist as well as an idealist in philosophy. The two worlds of nature and spirit are necessary to each other. The true meaning of life can be found only in the idea of progress or development. The essential condition of real progress is freedom. The solution of the problem becomes his doctrine of progress by antagonism — the necessity of two opposites and of a third which ever unites them on a higher level. This reconciliation of opposites is his key to evolution, — the only method of recognizing unity amid diversity. This position was reached only as the result of his development. He came to see that life is a process, that spirit must pass through many stages before it realizes itself, and that it is necessary to distinguish the stages of development from those of attainment. To attain self-realization, the Divine Unity must manifest itself in and through the many. And the many ultimately arrive at true freedom by learning to relinquish a lower form of freedom for the sake of a higher. One must learn to lose one's life in order to find it again at a higher level.

*The educational views of Hegel* follow directly from his philosophical theories. He wrote no separate treatise on education, but his views appear in passages in his philosophical writings, chiefly in the *Philosophy of Right*, where the sociological aspects of education are presented. The school addresses delivered while at Nuremberg also throw light on his theory and practice of teaching.

According to his idealistic view of evolution, the human stage is the most critical in the process. If man is to rise to a higher level of life, he must reconcile nature and spirit as fighting in himself for supremacy. The need of education appears related to this struggle, and arises from the fact that the child is but dimly aware of this necessity and ignorant of the true means of

progress. In the child nature is stronger than spirit, the life of the senses more developed than the life of thought. Until he has maturity for self-direction, the family or the state in its institutions must provide the necessary nurture, training, and discipline. Education is the joint business of the family and the community working together for a common end. Parents have charge of the early education of the child until he reaches school age, when he comes under the influence of the community acting through its civil servants, the teachers in public schools. In the cooperation of the family with the school the common aim to be kept in view is morality. The moral man alone is free, and freedom is the essential quality of spirit. A liberal education frees the mind from the bonds of nature so that it may identify itself with the universal, and thus attain the higher level of spiritual life.

In the first stage of this education the child takes small part. The demand is from without, and he obeys, "but through instruction and education his own inner powers are awakened and he becomes conscious that knowledge, morality, and religion belong to his own nature." At this point of awakening, or "new birth," usually occurring at the secondary school age, the educational process becomes critical. What Hegel calls the "centrifugal force of the soul" now comes into play. The desire for "self-estrangement" is natural and necessary, but the step must take place under the teacher's guidance. The pupil must be taken right out of himself and his natural surroundings and interests in order to live the life of imagination and thought, — to apprehend the universal. The classical histories and literatures offer the best means to this end. Greek and Latin (as dead languages) shut the door upon the everyday self, and the teaching of them should be directed to making the pupil share in the thoughts, feelings, and actions of the ancients. By learning to live apart from himself, he realizes in part the nature and value of moral relationships and the meaning of the State. At the end of the return journey from this self-estrangement, the pupil finds himself again, but now in relation to universal life. This defense of the classical curriculum is far more philosophical than the argument from formal discipline which had for some time been advanced by German teachers. Hegel naturally laid much stress on the importance of moral training and discipline. He urged the necessity of firm discipline and a moral atmosphere in the school. Punishment is the right of the transgressor, and must not be withheld. Both direct and indirect moral instruction are necessary. The former he himself gave in connection with lessons in religion and philosophy (set forth in the *Propädeutik*), the latter through the ordinary school subjects.

Hegel's influence on education was very great during the latter part of his life and for some time after his death. His disciple and biographer, Rosenkranz (*qv*), devoted extended

efforts to setting forth his educational views, and many of his students tried to work out the educational implications of his philosophy. Froebel's pedagogy obviously owed much to Hegelian influence. In more recent years there has appeared a revival of his influence in the educational thought of America and England

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**HEGIUS, ALEXANDER** (?1433-1498) —

An early humanist schoolmaster who contributed largely to the humanistic revival in northern Europe. He was born in Westphalia, and taught at Wessel and Emmerich before he came to the scene of his greatest activity, Deventer (*qv*), in 1465, where he became headmaster of the school attached to the Church of St. Lebuin. The school flourished so greatly under his charge that at his death it numbered about 2000 pupils. He associated with himself Sinthus, who probably influenced Erasmus (*qv*), and several members of the Brethren of the Common Life (*qv*). He himself appears to have taught the upper classes. Erasmus says that "from Hegius and Sinthus the school drew some savour of the true letters." And in a letter Hegius says, "All learning is futile which is acquired at the expense of piety." At the age of forty Hegius studied Greek under Rudolph Agricola (*qv*). The humanistic spirit was introduced into the school, and many of the northern humanists, *e.g.* Buschius, Murmellius, and others came under its influence. Hegius wrote several dialogues, which were published in 1503. They are catechisms on different topics, *e.g.* *De scientia quod eo scitur*, *De rhetorica*, *De moribus*. In the *De utilitate Græci* he insists on the value of a study of Greek for all departments of learning, "for to the Greeks we are indebted for everything."

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**HEIDELBERG, THE RUPRECHT-CARL UNIVERSITY OF.** — The University of Heidel-

berg, in the Grand Duchy of Baden, is the oldest university and to this day one of the most renowned institutions of higher learning in the German Empire. It was founded upon the model of the University of Paris by the Elector Rupert I of the Palatinate in 1386, the Papal Bull of Urban II being dated Oct. 23 of the previous year. At this time Prague, established in 1348, and Vienna, established in 1365, were the only universities in German-speaking territory. The work of organization fell largely to the first Rector of the university, the Dutchman Marsilius von Inghen. Although students flocked to the four faculties of the new institution in considerable numbers at the very start, the university did not reach the period of its greatest renown until the latter half of the sixteenth and the beginning of the seventeenth century, during which time it was the center of Humanism and Reform in Germany — this in contradistinction to the Catholic tendencies that had been strongly emphasized in the earlier days. This era of prosperity, however, was soon followed by one of stagnation, as the result of the Thirty Years' War and the devastation of the Palatinate by the French in 1689 and 1693, the university being compelled to close its doors from 1631 to 1652 and again from 1693 to 1700. A number of the fugitive professors continued their lectures at Frankfort from 1694 to 1698 and at Weinheim for two years subsequent. During the eighteenth century the institution was in the hands of the Catholic counter-Reformation, and was on the verge of extinction as a result of the severe blows dealt the town during the revolutionary upheavals at the close of the century. Not until Heidelberg with the Palatinate on the right bank of the Rhine was incorporated with Baden in 1803, did the university regain its former prestige, the elector Charles Frederick being responsible for a thorough reorganization of the seat of learning. The university to-day consists of five faculties, viz. theology (Protestant), law, medicine, philosophy, and pure science, the last mentioned having been made independent of the faculty of philosophy in 1890. A faculty of political science, established in 1803, was incorporated with the faculty of philosophy nineteen years later. The first psychiatric clinic associated with a university was organized at Heidelberg in 1827, and one of the first university botanical gardens was laid out in connection with the faculty of medicine as early as 1593. The university also possesses an institute for cancer research (1906) under the directorship of Professor Czerny. A radiological institute was founded in 1909, and in the same year the Heidelberg Academy of Science was established. Among the eminent teachers who have been connected with the university may be mentioned Hermann Helmholtz in physiology, Bunsen in chemistry, Kirchhoff in physics, Hegel and Kuno Fischer in philosophy, Boeckh

in classical philology, Schlosser, Gervinus, von Treitschke, and Winkelmann in history, and Windscheid and Mittermaier in jurisprudence. The administration of the university is in the hands of a prorektor, the reigning Grand Duke of Baden holding the office of Rector.

The library of the University of Heidelberg has had an interesting history, going back to the earliest days of the institution. It increased steadily in importance until the beginning of the seventeenth century, when it was generally regarded as one of the leading collections of the world. After the capture of Heidelberg by Tilly during the Thirty Years' War (1622), the most valuable portion of the library, the famous *Bibliotheca Palatina*, which included no less than 3527 manuscripts, was presented by Maximilian I of Bavaria to the Pope and removed to Rome, and a little later a somewhat similar fate overtook the newly gathered collection. Several of the manuscripts transferred to Rome in 1623 were restored in 1814, and later all of the old German manuscripts were returned. The present library, which moved into a new building in 1905, is only about a century old; it contains about 400,000 bound volumes, 200,000 dissertations and pamphlets, over 3000 papyri, 3200 documents, and 4000 codices, including the famous *Manesse Liederhandschrift* from the beginning of the fourteenth century. The latter is the richest collection of the kind in existence, consisting of 428 folio leaves, and containing over 7000 stanzas, chiefly South German lyric poems, by 141 authors, and 137 full-page illustrations.

In attendance Heidelberg is exceeded by ten German universities, its total enrollment in the winter semester of 1909-1910 being 2089 (194 women), this number including 155 auditors (52 women). Of the matriculated students almost half are found in the faculties of philosophy and pure science, viz. 954, medicine with 513 coming next, then law with 405, and finally theology with only 62. In the summer semester of 1910 the University of Heidelberg enrolled 2552 students.

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**HEIDELBERG UNIVERSITY, TIFFIN, OHIO**—A coeducational institution founded in 1850 by the Ohio Synod of the Reformed Church. It maintains an academy, college, and departments of pedagogy, commerce, music, art, and elocution. The entrance requirements are fifteen units. The degrees of A.B., B.S., Ph.D., and B.L. are conferred on

the completion of appropriate courses. There is a faculty of twenty-eight members.

#### HEIGHT AND WEIGHT OF SCHOOL CHILDREN.—See GROWTH.

**HEINICKE, SAMUEL** (1727-1790) — The pioneer of the German system of deaf-mute instruction; was born of a well-to-do peasant family in Nautschütz, near Weissenfels, Saxony. He attended only a village school, but at an early age showed a great love of books, which he had to satisfy in secret against his father's wishes. At the age of twenty-three he ran away from home to escape a marriage into which his father wanted to force him, and enlisted in the electoral body guard at Dresden. There he found time to pursue his studies in Latin and French, and later on even to give private lessons. In 1754 a deaf and dumb boy was brought to him, and he attempted to teach him to speak, using the method given by Amman (*qv*) in his book *Surdus loquens* (*The Deaf Speaking*). Wishing to devote himself entirely to teaching, he asked for his discharge from the army, but the outbreak of the Seven Years' War prevented the granting of his request. Having been taken prisoner by the Prussians in the battle of Pirna, he succeeded in making his escape and went to the University of Jena, where he enrolled as a student in 1757. Soon after, however, a Prussian recruiting party passed through Jena, and Heinicke, to avoid recapture by them, fled to Hamburg, where he became the secretary of the Danish ambassador Count Schimmelmann. Through the count's influence he obtained a position as a teacher and organist in the village of Eppendorf, near Hamburg (1769). There he renewed his interest in the training of deaf and dumb children, and acquired such fame that he was recalled to Saxony, where, in 1778, he opened the first German institution for deaf-mutes. In contrast with the Abbé de l'Épée, whose school for deaf-mutes, the first in the world, had been established in Paris in 1760, Heinicke instructed his pupils not in the gesture language, but in lip-reading and speaking. (See **DEAF, EDUCATION OF THE**, II, p. 257.) His object was to restore the deaf-mutes to society by making them use and understand the common spoken language.

In 1780 he published a book *Über die Denk- art der Taubstummen* (*On the Mode of Thinking of Deaf Mutes*), in which he made a violent attack on the Abbé de l'Épée. From this arose a rather bitter controversy on the merits of the different methods of deaf-and-dumb training, which he carried on for the rest of his life.

Heinicke's ideas on general education show that, apart from his special vocation, he possessed remarkable pedagogic insight. In some respects he even anticipated Pestalozzi. He called upon the clergy to take the initiative in the improve-

ment of the rural schools. He advocated a phonetic method of teaching reading, and insisted on giving children clear sense perceptions before abstractions. His vigorous insistence on the oral teaching of deaf-mutes has caused this method to prevail in Germany and most of the other countries of Europe.

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**HELMSTEDT, UNIVERSITY OF, GERMANY** — The last of the important universities which were due to the influences of the Reformation. Opened originally in 1571 as a *Padagogium Illustre* at Gandersheim by Duke Julius of the House of Brunswick-Wolfenbüttel, it was removed to Helmstedt in 1574, and an imperial charter was obtained in 1576 raising the institution to the status of a university. The university was organized on plans drawn up by a disciple of Melancthon with faculties of theology and philosophy. Students had to subscribe to the Augsburg Confession. For some time the university met with great success, especially in its theological faculty. In the eighteenth century there were professorships in the humanities, Hebrew, mathematics, natural science, logic and metaphysics, law, politics, and history. From 1779 to 1810 an important philological-pedagogical institute was maintained at the university, organized by Frederick August Wiedeburg. In connection with this seminar, teaching practice was obtained in the *Padagogium*. The university was closed in 1809, probably through the rapid rise of its neighbor, the University of Göttingen (q v).

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**HELPS, SIR ARTHUR** (1813–1875) — Clerk to the English Privy Council and adviser to Queen Victoria, at whose request he prepared the Prince Consort's speeches for the press. He was a prolific writer on a variety of topics, among them *Conquerors of the New World* (1848) and *Spanish Conquest in America* (1855–1861). His *Friends in Council* (1847–1859), a collection of essays and dialogues, contains an essay on Education which "has told us more truth about education in a few pages than one sometimes meets with in a complete treatise" (Quick). Government provision of education is commended if it does

not interfere with private schools. The end of education is happiness or contentment of the individual. Helps considers education under four heads: (1) religious, which he recognizes must be sectarian, but should not exclude tolerance and open-mindedness, (2) intellectual, which should be a training in mental power through emphasis on accuracy, attention, logic, and method, and many-sided pursuits as a general basis in an age of increasing specialization; (3) moral, in which the child shall be trained to moral independence by good examples; (4) physical, including ventilation and food, clothing, and bodily freedom. The education of women should be like that of men for the improvement of mental power, without any fear that similar education would lead to similar results in the two sexes.

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**HELSINGFORS UNIVERSITY** — See FINLAND, EDUCATION IN

**HELVETIUS, CLAUD ADRIEN** (1715–1771) — Son of John Claud Adrien Helvetius, and descended from a famous family of physicians. He showed small aptitude for study in early life, but was fond of reading, and, in course of an apprenticeship in finance, amused himself by writing verse and cultivating social graces. Into mathematics and poetry he made numerous excursions, without, however, achieving marked distinction, while in philosophy his famous work, *De l'Esprit* (1758), consumed the greater part of seven years of work.

His reputation as a thinker rests on the work above referred to, which created a great furore when it appeared, though its merits do not warrant the attention it received. The chief points which he set himself to illustrate and enforce are these: (1) all the mental faculties are reducible to physical sensation, sentience, or feeling, (2) self-love, or self-interest, is the motive of all judgment, action, and affection, there is no such thing as liberty of choice or abstract right, custom (i.e. practical advantage) explains all our particular ideas of justice and moral worth, (3) the differences of personality or character among men depend on the inequalities of intellectual attainment due to education, and inasmuch as all are equally susceptible of education, we owe all we are to that cause, (4) all talent, therefore, all taste, imagination, and genius, are only particularly successful forms of the chances which enable some to gratify their instincts by means of education more easily than others. A work entitled *De l'Homme, de ses Facultés intellectuelles et de son Éducation*, was discovered after his death among his pa-

pers and published in 1772. It forms a sort of supplement to *De l'Esprit*.

Diderot (*qv*) had no difficulty in refuting these positions, which, as one critic has said, were all contradicted by the actual practice and life of their author. On two points his posthumous essay touched directly on education, namely in Sections I and X, where he expatiates, in a paradoxical way, on the potency of education and on the necessity of making all education, including that of the church, subject to the civil power. His doctrines, however, have not stood the test of experience and criticism, indeed, they are now thoroughly discredited. Legislation, upon which Helvetius relied to act the benevolent rôle of securing all the moral and educational goods for the people which they needed to make them contented and happy, has not proved the panacea he expected it would. Besides, he here argues in contravention of his fundamental theory that self-love is the motive of welfare. "The substance of what he proposes is better than the grounds on which his proposals rest" (Ueberweg). H D

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**HENDERSON COLLEGE, ARKADELPHIA, ARK**—A coeducational institution established in 1890 under the auspices of the Methodist Episcopal Church, South. Academic, collegiate, music, and art departments are maintained. Fourteen units of high school work are required for entrance to the college courses which lead to the degree of A B. There is a faculty of seventeen instructors.

**HENDRIC COLLEGE, CONWAY, ARK**

A coeducational institution opened under its present title in 1889 under the auspices of the Methodist Episcopal Church, South. An academy is maintained in addition to the college. The requirements for admission to the college are fourteen units of high school work. The college offers two groups of studies, classical and Latin-scientific, both leading to the A B degree. There is a faculty of eleven members. The college has a productive endowment of \$300,000, and a plant valued at \$100,000.

**HENKLE, WILLIAM DOWNS (1828-1881)**

—Superintendent of public schools, received his school training in the Springfield (Ohio) High School and Wittenberg College. He was principal of secondary schools in Ohio (1848-1854), superintendent of schools at Richmond and Salem, Ohio (1854-1864), and State Superintendent of Public Instruction in Ohio (1864-1871). Author of a series of mathematical textbooks. W. S. M.

**HENRY VI, KING OF ENGLAND (1421-1471)**—Henry VI, far more than Edward VI, deserves to be remembered as the founder of English schools and as an eminent promoter, though by no means creator, of English education. Like his successor, the boy-king suffered personally from overeducation. On June 1, 1428, his education, which since 1424 had been in the hands of Dame Alice Boteler, was transferred from the lady to Richard Earl of Warwick and Albemarle. "Whereas," says a writ of Privy seal in French, "it is expedient that in our youth we should be taught and indoctrinated in *bons meures lettrure langage e norture et courtoisie et autres vertus et enseignements*," which articles in English annexed translate as "nurture, lettrure (*i.e.* grammar), language and other manere of connyng," and, above all, "*de nous faire traire a vertues et eschuer vices*, to draw us to vertues and to eschewing of vices." Therefore the earl was given power "if we estrange ourselves from learning or do wrong to reasonably chastise us as other princes of our realm and of other realms are accustomed to be chastised." He must have found the young king a difficult pupil to flog, as four years later, on Nov. 29, 1432, when the king was eleven years old, the earl laid before the Council a series of articles. In one he said that the King "is grown in stature of his person and also in conceit and knowleche of heigh and royal autoritee and estat, the which naturally causen him, and from day to day as he groweth shall causen him more and more to grucche [grudge] with chastising and to lothe it." So he asked, not to leave off chastising him, but for the support of the Council in doing it, and in appeasing any indignation the King might feel against him for doing it, with power to remove those whom he knew "at part and in prive not hering ye said Erle" who had "stured" him "from his lernyng." He obtained a promise that the whole Council would tell the King that it was their advice that he was chastised for his "defaultes," so that "for awe thereof he forbere ye more to do mys and entended ye more busly to vertue and to lernyng." The Council agreed. That Henry did not resent the Spartan training which Warwick thought necessary is shown by his making his quondam tutor and chastiser Duke of Warwick, the first duke in England not of royal blood. His experience of the Palace School, being brought up with the young nobles, an arrangement almost certainly made in imitation of the Casa Giocosa established by Gonzaga, the Marquis of Mantua, for his son and his nobles' children under Vittorino da Feltre in 1423, was no doubt largely responsible for Henry's foundation of Eton College (*qv*) within view of his birthplace and favorite residence at Windsor Castle, and its including, besides the original twenty-five, afterwards seventy scholars, twenty sons of noblemen. Eton, though by no means the first or the last of Henry's educational

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foundations, was the greatest and that to which he gave most personal attention. One of the earliest fellows of Eton, John Blakman, records how he took special care in the selection of the fellows, and how he always noticed the boys when they came for leave out to any of the court at Windsor, giving them a "tip" or "small present of money" and telling them to be good boys. His father, Henry V, had designed to endow a college at Oxford greater than all the existing colleges, for the "Seven Liberal Sciences" out of the Alien Priorities (*qv*), suppressed because of their supplying sinews to French houses during the Hundred Years' War. Henry, or rather the Duke of Bedford, the Regent of France in his name, had already established a university at Caen in 1432, at first only for civil and canon law, which was not allowed at Paris, but extended after the English were expelled from Paris to theology and medicine, in the hope of keeping the subjects of the English King away from Paris. In 1441 another university was established for Henry's southern dominions at Bordeaux. The royal college of St Nicholas, commonly called King's College at Cambridge, was provided by Henry's own act on Feb. 12, 1441, and built with his own money at Cambridge for a rector and twelve fellows, to be later enlarged to a provost and seventy fellows and brought into organic connection with Eton in 1443. In 1446 he founded a second college at Cambridge, called St. Bernard's, for a provost and four fellows, changed in the following year into the Queen's College of St. Margaret and St. Bernard, with his wife Margaret of Anjou as petitioner, patroness and foundress, now called Queens' College because refounded and enlarged in 1475 by Elizabeth, queen of Henry's "traitor" Edward IV. The College of God's House at Cambridge was absorbed into Christ's College, founded in 1440 on a petition to Henry, to provide learned masters for grammar schools, the first secondary training college created *ad hoc* was perhaps inspired by him. But the great Oxford College of this epoch, Magdalen, owes its origin to Henry, and it was founded in 1448 by William of Waynflete, whom he had taken from the headmastership of Winchester to be provost and organizer of Eton, and then made Chancellor of the Kingdom and Bishop of Winchester. Waynflete improved on the example of Henry and of Wykeham by attaching to his college not merely one school, now known as Magdalen College School, at Oxford, but another at his native place, Waynflete in Lincolnshire. Another college at Oxford, Oriel, founded a century earlier, received augmentation from Henry in the shape of scholarships for boys of Eton and also in the attachment of similar scholarships of the new school founded by him in London, in St. Anthony's Hospital in Threadneedle Street, that "alien priory" being converted into a

## HENRY, JOSEPH

secular hospital, and new endowments for the school planted in it being given in 1441. Henry's example was followed by the foundation of ten colleges and schools at Newport Salop, by Thomas Draper in 1442, by Archbishop Kemp in Wye College, Kent (now an Agricultural College) in 1447, by augmentation of Fotheringhay College, Northamptonshire, by Richard Duke of York in 1440, by the college of chantry at Towcester, Northamptonshire, by Archdeacon Sponne Sept. 4, 1447. There were also founded the gild grammar school at Deddington in 1445, the chantry grammar school at Wokingham, Berks, by Adam de Moleyns, Dean of Salisbury, in the same year, the chantry grammar school of Robert Gryn timer, notable for being "half-free," at Newland, Gloucestershire, in 1446, the gild school at Clare, Suffolk, by Richard, Duke of York, in the same year, the double chantry schools, of grammar and song, at Alnwick by the Earl of Northumberland, and his brother William of Alnwick, Bishop of Lincoln, in 1445; the chantry school at Great Baddow, Essex, in 1449, the gild school at Chipping Norton in 1451. The troubles that then ensued, arising from Henry's melancholic insanity and the Wars of the Roses, cut short the progress of education and the foundation of colleges and schools for twenty years. But even so the educational record of Henry VI's reign eclipses that of any other reigns but those of Edward III and Henry VIII, and Henry's own personal share in it was greater than that of any English king.

A F L

See ALIEN PRIORIES; CAMBRIDGE UNIVERSITY; ENDOWMENTS; ETON COLLEGE

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**HENRY VIII, KING OF ENGLAND (1491-1547) and EARLY TUDOR EDUCATION** — See MONASTIC EDUCATION, REFORMATION AND EDUCATION, also GRAMMAR SCHOOLS

**HENRY, JOSEPH (1799-1878)** — First secretary of the Smithsonian Institution (*qv*). He was self-educated, and for several years private tutor in the family of Stephen van Rensselaer (*qv*). He was instructor in mathematics at the Albany Academy (1826-1832); professor at Princeton University (1832-1867); and first secretary of the Smithsonian Institution (1867-1878). He was one of the founders of the American Association for the Advancement of Science (*qv*), and made extensive researches in the field of electrical science. His published works include *Philosophy of Education* (1856), *Lectures on Physics* (1844), and two volumes of scientific papers published by the Smithsonian Institution after his death (Washington, 1880).

W S M.

See SMITHSONIAN INSTITUTION

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**HENRY KENDALL COLLEGE, TULSA, OKLA** — A coeducational institution established originally at Muskogee, Indian Territory, in 1894. It was moved to its present location in 1907, and is under the auspices of the Presbyterian Synod of Oklahoma. Academic, collegiate, music, art, and expression departments are maintained. The entrance requirements are sixteen units. Classical and scientific courses are offered, leading respectively to the A.B. and B.S. degrees, and preparation is given for the study of medicine, law, and teaching, as well as the ministry and mission work. There is a faculty of twelve members.

**HERACLITUS** (c. 535–475 B.C.) — Known as “the weeping philosopher,” in contrast with Democritus, “the laughing philosopher.” He was a pupil of Xenophanes, and, like him, was interested in the physical explanation of the universe. His fundamental teachings were that fire is the primordial element, that all material things are in a continual flux and reflux of becoming and perishing, and that the harmony and unity of nature consist in its multiplicity and diversity. His teaching was materialistic and pantheistic, and anticipated many of the conclusions of modern science and philosophy. He is regarded as the founder of metaphysics, and has been held in especial reverence by the Stoics and Hegelians. His school numbered many disciples, the chief of whom was Cratylus, the teacher of Plato. Of his work *On Nature* only a few fragments remain. W. R.

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**HERBART, JOHANN FRIEDRICH** (1776–1841) — German educator and philosopher; born at Oldenburg, May 4, 1776. His father was a councillor, his mother an extraordinary woman who learned Greek with her son under his tutor in order to supervise his studies the more effectively. The boy Herbart was precocious and ambitious in his learning, devoted to mathematics, and talented in music. At eleven he began logic, and at twelve metaphysics, while the gymnasium of his native town, which he entered after he had already attacked these subjects under his tutor, provided him with additional opportunities for the study of his beloved philosophy and of physical science. From the gymnasium Herbart proceeded as a student to the University of Jena, there to fall under the spell of the

fresh and dominating thought of the idealist philosopher Fichte (q.v.).

The influence of Fichte upon Herbart was profound, but it was not long before the pupil departed from his master on the principles of idealism and freedom. Herbart came quickly to the conclusion that man is not free in the sense of possessing a principle independent of circumstances and environment, and reverted also to the doctrine of Kant, that behind and underlying the world of appearances there is a plurality of real things-in-themselves that are independent of the operations of mind upon them. Herbart thus became the founder of modern philosophical Realism, as contrasted with the Idealism which denied the existence of things-in-themselves independent of any form of consciousness. Broader and deeper grew Herbart's devotion to philosophy, but it soon became complicated with another interest, education. In 1796 Herbart left Jena to be tutor to the sons of the governor of Interlaken, a duty which he appears to have fulfilled with rare conscientiousness and skill. It was his own experience, coupled with his philosophical thought, that already suggested to him, first, the enormous importance of cultivating a many-sided interest, secondly the value of the *Odyssey* as the point of contact in the early fellowship between pupil and teacher, and thirdly the idea of a method that should combine education and instruction without the subordination of either motive to the other.

In 1799 Herbart paid a visit to Pestalozzi (q.v.) at Burgdorf, but in the same year decided to abandon his post as tutor, which various events had combined to render untenable, and to devote himself anew to philosophy with a view to teaching it in a university. At this time, too, he had thoughts of the reformation of schools, and wrote *Ideas for an Educational Curriculum for Higher Schools* and a criticism upon Pestalozzi's *How Gertrude teaches her Children*, and *Idea of an ABC of Sense-Perception*. The emphasis of Herbart at this time was especially upon the use of mathematical forms to correct the undisciplined observations of the eye.

In 1802 Herbart departed to Gottingen, where he received his degree of doctor and began to teach education and philosophy. Those were troublous times in Germany, but Herbart remained faithful to the intellectual life, and put forth work after work of so finished and original a quality that in 1809 he was paid the high compliment of a call to the chair of Königsberg, previously rendered so illustrious by Kant. At Königsberg Herbart developed his psychological theories and transferred his educational efforts from the speculative to the practical stage by the foundation of a pedagogical seminary. This institution developed into a training college and school in which the mathematical instruction was given by Herbart in person; but its activities were



unfortunately interrupted by the departure of its founder for Göttingen in 1833, owing to the hostility of the Prussian government of the day to democratic ideas and academic freedom. At Göttingen he continued to lecture and write on education and philosophy to within two days of his death.

**Herbart's Educational Views** — Herbart was convinced that, although many elements are spoken of as entering into the end or aim of education, yet its one and whole work may be summed up under the concept *morality*. Since the days of Kant, it was recognized that the first thought which this concept suggests is the good will. Herbart reacted against the current idea that this good will has only to express itself spontaneously in the pupil. On the contrary, he maintained, the good will may and must be cultivated in the child by the teacher. Morality is for the teacher a natural event, which has its causes like other natural events. This appeared to Herbart to rule out of court the idea of a transcendental freedom of the will which makes it independent of the causes acting upon it. "Not the gentlest breath of transcendental freedom must be allowed to blow through ever so small a chink into the teacher's domain." Herbart perceives that, if this be so, another ground than that which is generally accepted, that is to say, a ground other than either utility or external command, must be found for morality. He finds it in æsthetic necessity. We have an original, absolutely independent æsthetic judgment, self-evident, and of peculiar nature, which gives us the sense of duty. Education will attempt to properly exercise this judgment, and therefore cultivate the good will by a revelation of the whole known world and every known age. Full knowledge is thus the ground of virtue. Instruction will guide the two courses of knowledge and sympathy to the highest ground of their union.

**General Principles** — Herbart as a student of philosophy and history was thoroughly acquainted with the educational works of Locke and Rousseau. He regarded the ideas of Rousseau as theoretical and doctrinaire; those of Locke as worldly. Rousseau would educate a natural man, Locke a conventional man; but it would be as difficult to train a natural man as it would be for the natural man to live in actual society when trained, while the conventional education of Locke would involve too easy an acceptance of the life of the man of the world. "Conventional education seeks to prolong existing evils; 'natural' education means to repeat if possible from the beginning the succession of evils already overcome." The principal method of conventional education is intercourse by conversation and travel, of natural education experience; but the emphasis which Herbart believed to be the most important was on instruction.

Herbart was the first to perceive that education was thoroughly worthy to be a science of itself, and not a mere department of philosophy. Education had suffered, as medicine had suffered, by government as a remote and tributary province. It needed the eye of science and a psychology in which the total possibilities of human activity might be sketched out *a priori*. Nevertheless the individual can only be discovered by the educator, not deduced. The fundamental necessities in pedagogy are education through instruction, involving discipline (*Zucht*) as a part of itself and not as an external force, and science and mental force.

**Herbart's Use of the *Odyssey*** — Education through instruction, with morality as its aim, involves the presentation to boys of such men as they themselves would like to be. Yet this presentation should not be made sporadically, but in the midst of a long series of other means of education. It must not be spun out of the teacher's imagination, which is not ideal or poetic. The only place in literature where the ideal vehicle for the education of boys is to be found is the classical age of childhood among the Greeks. Here the *Odyssey* stands first; and again and again Herbart recurs to the *Odyssey*, which he actually used in this manner, at first as a tutor, and afterwards in the training college at Königsberg, as the fittest starting-point for school education. The *Odyssey* elevates the pupil without depressing the teacher, and assists the boy in his task of recapitulating the great development of humanity.

**Many-sidedness and the Method of Instruction** — Herbart perceived that the concentration which is the essential method of the cultivated man may become so exclusive as to falsify every other impression except that which is habitual. To avoid this danger, the educated mind should be many-sided. But can this be, without the destruction of the personality of the individual? Herbart was convinced that this opposition is overcome in the act of reflective thought, since the object reflected upon depends upon personal choice, while the power of reflecting comes largely through seeing many sides of a situation. Reflective thought is welcomed by the teacher; it is in fact his main reliance. The necessary steps in producing it in the pupil are according to Herbart's own analysis four — clearness, association, system, and method. The followers of Herbart have adopted these steps, now modified into five, as the formal basis which may ordinarily be used in the subdivision of a lesson period (*the formal steps of method*). According to this plan, the teacher at first assists the pupil to clearly distinguish his ideas, after which he presents the new material, which is subsequently associated and applied. Herbart did not distinguish the formal steps of method

with the precision and finality that have been claimed by his followers; on the contrary, the steps were to him the factors in the process of thinking rather than the logical subdivisions of a lesson period. The formal steps are useful, however, in many lessons whose primary object is to impart theoretical information; while the analysis at present most in favor is into preparation, presentation, association, generalization, and application.

*Interest.* — The place of interest in education had never been satisfactorily determined before Herbart, and his analysis, while not final, is still probably the best we have. Interest is the one emotion which assists rather than retards the operations of reason. It normally involves the process of observation, expectation, demand, and action. In general it depends upon knowledge and sympathy; that is to say, knowledge of the manifold, of its law, and its æsthetic relations, and sympathy with humanity, society, and the relation of both to the Highest Being.

Herbart perceived that the idea of many-sidedness, unless limited in some way, might lead the teacher to encourage a pupil merely to dabble in many external things. In order to prevent the loss of unity that would result from such a method, he preferred to recommend to the teacher the cultivation of an internal many-sidedness only, that is to say, a many-sidedness of interest. Interest is like desire, will, and the moral judgment in being opposed to indifference; but it differs from these faculties in that it does not control its object, but depends upon it. Interest can be controlled by the educator, because it depends on its object, which the teacher can determine at least in part. Through interest the teacher can control the allied processes of observation, expectancy, demand, and action. The teacher will not hesitate to control the interests of children.

*Instruction.* — Experience gives knowledge, intercourse gives sympathy; and to attempt to dispense with these factors in education would be to give up daylight for candlelight. But experience and intercourse are not in the power of the teacher, besides, they are often wearisome. Instruction is in his power, and need never be tedious. It penetrates more deeply into the mind than either experience or intercourse; and concentrates all the objects of human interest in the bosom of the young. To the pupil experience and intercourse should flow more fully from his teacher than from the life around him. "Instruction must universally point out, connect, teach, philosophize. In matters appertaining to sympathy it should be observing, continuous, elevating, active in the sphere of reality." Herbart was convinced that "filling the mind" is the first duty of the teacher, because it is the content of the mind that regulates behavior. In order to create a satisfactory mental con-

tent, instruction when analyzed should be found to have covered the fields of empiricism, sympathy with mankind, speculation, taste, sympathy with society, and religion.

*Character.* — The seat of character is the will, regarded not in its occasional moods of caprice, but in its firmer and more uniform operations. There is a difference between the will of a child previous to reflection and the will of a man after reflection. The former kind of will is more easily educated, while it still remains for the latter to give the ultimate settlement and sanction. It is characteristic of the will that it reappears as the same, as if it had a memory. Self-contemplation further develops and establishes this unity, and creates what is called principle. But principle can never fully include the objective parts of character, and consequently every character is more or less subject to inward conflict.

None the less, the foundation of the moral life is in "a sober, clear, firm, and determinate judgment." It is this alone which can be trusted to control action. For human activity depends in the first instance on the circle of human desires, which are indeed partly sensuous, but partly determined by intellectual interests. We cannot desire what we are utterly ignorant of. Great moral significance is therefore attached to the circle of ideas. "The circle of thought contains the store of that which by degrees can mount by the steps of interest to desire, and then by means of action to volition." By this route even moral training brings us back to the method of instruction. "Instruction will form the circle of thought, and the circle of thought the character." A firmly established circle of thought is essential to moral strength of character, and is generally preferable to an extreme mobility which tends toward the frivolous and the new. In a normal boy the strength of character which is a resultant of fixed ideas is not of a kind to oppose too strong a resistance to the ~~plant~~ power of education. The essential principle of Herbart's theory of education is the dependence of the character upon knowledge. "Great moral energy is the result of broad views, and of whole unbroken masses of thought."

*Discipline.* — "Direct action on the youthful mind with a view to form is discipline." Herbart viewed discipline as continuous treatment which does not ordinarily resort to rewards and punishments, but which does so only occasionally and then for emphasis. It must not be monotonous; it must cooperate in the formation of the circle of thought. It must involve mental as well as physical activity, for both are healthy; above all, it must involve the habit of work of every kind. Discipline will gradually disappear after the cruder forms of government have already been abandoned in relation to the child. It vanishes as the youth comes to the stage where he takes

over the control of his own education; while the work of instruction still goes forward to its goal in the formation of character

**Herbart's Philosophy and Psychology.** — In philosophy Herbart began as a disciple of Fichte, by whom he was greatly fascinated, but his independent and critical spirit soon caused him to abandon the extreme idealistic position and to return to the original theory of Kant. He accepted and developed the Kantian dualism between the real and the rational. Ultimate reality consisted for him in a number of reals which give rise to the world of appearances by their self-preservation against one another. The soul is metaphysically one such real, without parts or faculties, but its reactions for self-preservation give rise to the appearance of presentations which become clarified as ideas. The ideas act as forces, the mind itself is a series of masses of them, each mass rising or falling from the threshold of consciousness according to its groupings and consequent trains of association. It is characteristic of the psychology of Herbart that the unit of mental activity is the idea, so that will, desire, interest, and feeling are all of them grounded in some sort of intellectual activity. In this way the psychology of Herbart supports in the most logical manner his emphasis upon instruction and upon the importance of the circle of thought for the formation of character. The ideas, as it were, are at strife with one another for the possession of the foreground of consciousness. They resist one another, and in this act of resistance each is changed into an effort to present itself. When hindrances are removed, the ideas will present themselves. The implication of this theory of mental activity for education is the supreme significance of the formation of right, strong, unimpeded groups of ideas. For the ideas are regarded as combining with one another, or attacking one another, according to mechanical laws that are subject to mathematical determination, after the parallel of the laws that govern the interaction of molecules according to the atomic theory of chemistry.

Because of his elimination of innate faculties from psychology, his use of mathematical processes, his insistence upon the need of empirical studies of psychological fact, and his thoroughgoing associationism, with its necessary emphasis upon "apperception" (*qv*) and interest, Herbart is regarded as one of the greatest psychologists of modern times. Because of his critical ability and the lucid conscientiousness of his logical deductions, and because he led a reaction against metaphysical idealism, in which he has been followed by such philosophers as Beneke and Lotze (*qqv.*), he is equally preeminent among modern metaphysicians.

**Herbart's Educational Works** — The principal educational works of Herbart are *Ideen*

*zu einem pädagogischen Lehrplan für höhere Studien* (1801), an essay on Pestalozzi's *Wie Gertrud ihre Kinder lehrt* (1802), a criticism of Pestalozzi's *Idee eines ABC der Anschauung* (1802), *Die ästhetische Darstellung der Welt als das Hauptgeschäft der Erziehung* (1804), *Standpunkt der Beurtheilung der Pestalozzischen Unterrichtsmethode* (1804), *Allgemeine Pädagogik* (1806), *Erziehung unter öffentlicher Mitwirkung* (1810), *Über die dunkle Seite der Pädagogik* (1812), *Das Verhältniss der Schule zum Leben* (1818), *Briefe über Anwendung der Psychologie auf die Pädagogik* (1831), *Das Verhältniss des Idealismus zur Pädagogik* (1831), *Umriss pädagogischer Vorlesungen* (1835), *Umriss der allgemeinen Pädagogik* (1841). Of these the most important are the *Allgemeine Pädagogik* and *Umriss pädagogischer Vorlesungen*. The principal works of Herbart are accessible in English translations, under the titles of *The Science of Education*, translated by H. M. and E. Felkin, *Outline of Pedagogical Doctrine*, A. F. Lange and C. De Garmo (New York, 1901), *Herbart's ABC of Sense-Perception and Introductory Works*, W. J. Eckoff (New York, 1896), *Application of Psychology to the Science of Education*, B. C. Mulliney (New York, 1898), *Letters and Lectures on Education*, Felkin. In addition Herbart's *Textbook of Psychology*, translated by M. K. Smith (New York, 1894), should be consulted for an understanding of the ultimate and fundamental principles of his theory, which is based, however, as much upon the results of his own experience as the logical implications of his philosophy and psychology. P. R. C.

See ABILITY, GENERAL AND SPECIAL, CONCENTRATION; CORRELATION; CULTURE EPOCHS, METHOD, GENERAL, STÖY, ZILLER, etc.

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**HERBART SOCIETY.** — The National Herbart Society for the Scientific Study of Education was organized at the Denver meeting of the N. E. A. in 1895 "to study and investigate and discuss important problems of education. Its members do not subscribe to the doctrine of any one leader, but seek for fair and thorough discussion." Professor De Garmo was the first president, and Professor C. A. McMurry the secretary, the council included President Butler, Chancellor Elmer E. Brown, Professors John Dewey, Frank McMurry, Wilbur S. Jackman, Levi Seeley, and C. C. Van Liew. Yearbooks are published, and discussed at the annual meetings. In 1902 the scope of its interest was broadened, and the society became the National Society for the Scientific Study of Education, which "contemplates a serious, continuous, intensive study of educational problems. It stands for no particular creed or propaganda. In aim and spirit and method it seeks to be scientific." The Yearbooks are published by the University of Chicago Press.

**HERBERT, EDWARD, LORD HERBERT OF CHERBURY (1583-1648).** — One of the most original thinkers of his time. His views on education are to be found in the *Autobiography* and in his *Dialogue between a Tutor and his Pupil*, which was first printed in 1768. On reaching school age, children should have an attendant to take care of their manners as the schoolmaster attends to their learning, and the two tutors should not interfere with each other. After the alphabet is learned, then should be studied the shortest and clearest grammars, e.g. books (such as Comenius's *Janua*), in which Latin and Greek are given in parallel columns. He expresses disapproval of the logic of wrangling, he approves the parts of logic which help to "deduce proofs from firm and undoubted principles, to distinguish between truth and falsehood, and to discover fallacies." The education of most worth consists in the training in goodness and virtue, learning and knowledge, as to which Herbert, like Locke afterwards, regards virtue as much before learning.

In the *Dialogue between a Tutor and his Pupil* the pupil has made himself acquainted with logic, geography, chronology, and history. The tutor enlarges on the usefulness of a knowledge of botany, i.e. especially of herbs, on diagnosis of diseases, on astrology and

astronomy. The tutor holds that amongst sciences, mathematics, divinity, and philosophy are the most important. Mathematics is the most "undoubted and certain" of the sciences.

F. W.

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**HERDER, JOHANN GOTTFRIED (1744-1803)** — One of the most eminent writers of the classical period of German literature; born at Morungen, near Königsberg. Receiving the rudiments of learning from his father, a poor sexton and schoolmaster, he entered the local Latin school, where the mechanical methods of teaching left him in a spirit of revolt which showed itself in his later ideas on education. In 1762 he went to the University of Königsberg, intending to study medicine, which, however, he soon deserted for theology and philosophy. He thus came under the influence of Kant, who led him to study Bacon, Locke, Hume, and Rousseau. To support himself he taught in a local school and showed such ability that he was appointed to the Cathedral School at Riga, where he gained an insight into the problems of education and school administration (1764-1769). On resigning his position he visited the most important educational institutions of France, England, and Germany, and in a diary which he kept he sketched the plan of an ideal school, not unlike the modern *Reformgymnasium* (see GERMANY, EDUCATION), and later realized by him to some extent in the Weimar gymnasium. For a time he acted as private tutor and went with his pupil to the University of Strassburg, where he met Goethe, through whose influence he subsequently obtained the position of chief pastor and superintendent of schools in the Duchy of Weimar (1776-1803).

Herder's influence on German thought and education was profound. Although not himself a creative poet, he brought about an appreciation of native, original poetry in the folk-songs of all races. He laid the foundations of comparative philology and of a comparative science of religion and mythology. In his greatest work, *Ideen zur Philosophie der Geschichte der Menschheit* (*Ideas for a Philosophy of the History of Humanity*) (1784-1791), he developed a magnificent conception of history as a continuous revelation of the divine spirit in humanity. (See Paulsen, *German Education, Past and Present*, p. 158.)

Herder was by nature eminently an educator. His occupation with science and literature was never looked upon by him as an end in itself, but always as a means of influencing other minds, and of social reconstruction through

education. He worked indefatigably for the improvement of the Weimar schools, instituting a seminary for the preparation of rural teachers, raising their salaries, and even writing some elementary textbooks. His chief educational work, however, was in the field of secondary education, and there he is prominent as one of the leaders of the movement known as "Neo-Humanism" (*q.v.*).

The standard edition of Herder's works is that by B. Suphan (Berlin, 1877) in thirty-two volumes. The thirtieth volume contains his pedagogical addresses and articles. Some of the most important of his works, besides those mentioned above, are his work on the *Origin of Language* (1772), his collection of popular poetry, *Stimmen der Völker in Liedern* (*Voices of the Peoples in Songs*, 1778-1779), his translation of the Spanish romances of the *Cid* (1805), and his treatise, *Vom Geiste der hebräischen Poesie* (*Spirit of Hebrew Poetry*, 1782-1783). F. M.

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**HEREDITY** — By heredity is commonly meant those characteristics which the child derives from his ancestors. It is evident, however, that these include many qualities that are transmitted through education. Hence the term has come to be restricted to characteristics that are derived from the original constitution of the germ cell from which the individual is developed. In so far as these qualities are similar to those of the ancestry, they are ascribed to heredity; in so far as they are different, they are denominated variations in heredity.

The extent of hereditary similarity between offspring and ancestry is plainly not revealed until the child has grown to maturity. What, therefore, is inherited is a tendency on the part of the germ cell to grow into the forms and functions of its progenitor. During the expansion of these tendencies they are in the higher species, and especially in man, so modified by environmental influences that it is difficult to determine how much of the adult equipment is derived from either source. (See **ACQUIRED CHARACTERISTICS**.) It is evident that education or circumstances cannot produce either genius or unusual talent; nor is it,

as a rule, responsible for physical or mental deficiencies, although these may result from disease, imperfect nutrition, accident, etc. On the other hand, there can be little doubt that the difference between efficiency and incompetence, or between morality and immorality, is in most cases due in whole or in part to training and to the relative suitability of the conditions of life to the inherited peculiarities of the individual. Thus while education cannot affect those fundamental characteristics on which our rating among our fellows depends, it can develop in most a fairly high degree of efficiency in some specialty. The responsibility of the agencies for education is, therefore, not lightened by the fact that there are hereditary differences which it cannot create nor overcome.

It is more easy to compare the functions of heredity and of education in equipping the individual, than it is to compare the actual amount derived from the two sources. In general, heredity gives us a set of powers which furnish a fairly adequate basis to maintain life in a variety of conditions. It gives capacities. Education, on the other hand, fits us to one or a few specific conditions. Heredity adapts to the permanent, education to the transitory. Heredity gives to each generation a capital of approximately the same amount, leaving to education to invest this fund in the enterprises suggested by the circumstances of the individual. It follows that there is a line of demarcation between heredity and education. Heredity gives such specific qualities as are a permanently useful equipment for the species, together with the capacity to learn others such as will be needed to adapt the individual to the peculiar circumstances of his own life. The acquired characters, on the other hand, are not to any extent inherited, since, constituting as they do adaptations to conditions likely to vary from age to age and from individual to individual, their inheritance would be apt to burden the offspring with many useless, if not positively injurious traits. Thus heredity gives us the power of speech, but education determines the language, the style, etc.

The higher species find life conditions far more varied than do the lower ones. They need, in consequence, greater adaptability, greater capacity to learn. To facilitate learning their heredity consists more largely in imperfect instincts or instinctive acts. These are such as require education in order to be brought to such a form as to function effectively. In man, as Professor James points out, there are more instincts than in any other animal, but they are also more imperfect. Such imperfect instincts, together with the equipment of activities which is instinctively utilized to satisfy them, and the array of other activities that can be utilized to perfect the mechanism by which they may be adequately met, constitute the so-called capacities of the individual. (See **ABILITY**.)

Heredity has been defined as made up of characteristics derived from the original constitution of the germ cell. It should be noted, however, that such simple forms of reproduction as the mere division, or fusion of the parent body, or budding, do not involve specific germ cells. In such cases the offspring is simply part of the body of the parent, separated to assume a form better adapted to the continuance of life and growth. In most respects it resembles the mature organism from whence it sprang. The phenomena of heredity become more complex and striking where there are special reproductive elements, germ cells, which begin life in forms quite distinct from those of the parent, but tend to grow like the latter. The specific nature of those qualities in the germ cell which cause it with growth to assume more and more the form of the adult has been a matter of much speculation and dispute, and to-day the theories on the subject may be regarded as little more than conjectures. The older idea was that of preformation, that is, that a miniature of the adult exists in the germ cell and could be revealed to the eye, if our microscopes were sufficiently powerful. This theory contains the evident truth that the structures of the adult are, at least, implicit in the constitution of the germ cell. On the other hand, we have the theory of epigenesis, according to which the structures of the adult are a result of the development and differentiation of the germ cell. This theory may be said to have been fairly well established by the investigations of Wolff (1759) upon the development of the chick. Granting the truth of the idea of epigenesis, the biologist is still confronted with the difficulty of accounting for the regularity with which a germ cell under normal conditions differentiates into an adult form that is in the main a reproduction of that of the parent. What is there in the germ cell that causes the adult form to be implicit or predetermined in it? According to one view, which will be recognized as akin to the preformationist theory, the multiplication and differentiation of the germ cell is simply the separation of quantitatively distinct units, each of which represents a specific structure in the adult form. These units are supposed to be found in the nucleus of the germ cell. Spencer calls them physiological units, Weismann determinants. The theory more commonly held to-day is that the differentiation of the structures of the adult form is a result of the various tensions set up among the multiplying cells, and that these spring from the physical and chemical or physiological properties of the nucleus. In these properties the whole of the adult organism is implicit, very much as the whole of the geometry is implicit in the definitions, axioms, and postulates with which the geometer starts. They constitute the plan along the lines of which growth must tend to proceed, if it goes on at all.

We have so far considered the problems that arise because of the deposition in a minute and apparently undifferentiated germ cell of all the potentialities later revealed in the growth of the individual. There remains the problem of the source of these hereditary qualities. In this connection we have to consider first the relation of the germ cells to the body cells of the parent, second, the results of the union in the germ cell of a male and a female element, the sperm cell and the ovum, and third, the laws that determine the character of the offspring.

Two theories exist as to the relation of the germ cell to the body cells of the parent. According to one, which is typified in Darwin's notion of pangenesis, all the cells in the body of the adult contribute minute particles which enter into the germ cell. The latter is therefore the creation of the differentiated body cells, a composite of their representatives. According to the other theory, the germ cells are isolated from the body cells, and are not influenced by the history of those. As the germ cell develops, there is a separation between certain cells which remain in a primitive undifferentiated form as germ cells, and body cells which take the forms apparent in the developed adult. Thus the new generation springs from cells similar to those that gave rise to the parent, and not from cells modified by a life history. There is, in the language of Weismann, continuity in the germ plasma, or at least in the germ cells.

The theory of pangenesis is not supported by the existence of any mechanism evident to the anatomist. It is a purely hypothetical explanation to account for the inheritance of acquired characters, *i.e.* such as are the effect of external agencies upon the body cells. Inasmuch as such inheritance is undoubtedly comparatively slight, and is not demonstrably existent at all, it would seem that pangenesis is an improbable explanation of a questionable fact. On the theory of the continuity of the germ cells, the acquired characters would be, for the most part, not inherited. Only such general effects of the environment as could reach the germ cells as well as those of the body, *e.g.* the effects of nutrition, drugs, etc., would be impressed upon the tissue from which the new generation takes its rise.

Reproduction in the higher organisms usually involves the union of the sexual elements, known as amphimixis. On the other hand, with animals as high up in the scale of life as the articulate, parthenogenesis, or the development of the ovum without fertilization, often occurs. Experiments on the sea urchin show that the ovum of this species may be stimulated by chemicals so that it will begin to evolve into an individual. If all reproduction were of this character, the problem of the source of heredity would be simple. On the other hand, amphimixis presents a variety of sources from

which the hereditary characteristics might spring. Among the earlier biologists some maintained that these traits all came from the female, the male element simply stimulating the ovum to develop, others held that all heredity came from the male, the ovum contributing merely nutriment and a favorable environment for development. Both views are now known to be erroneous. The hereditary characters may come from either parent or from both. They may come from grand-parents and include traits that have not appeared in the parents. They may even come from more remote ancestors. Such cases illustrate what is known as reversion. The reappearance of a trait long absent from the stock is called atavism. Degeneration is frequently a result of reversion or atavism. Where nearly all the characters of the offspring are derived from one or the other parent, the inheritance is said to be exclusive. The inheritance of special traits from either parent is called particulate. Particulate is opposed to blended inheritance, where a character in the offspring is a compound of characters derived from both parents. Eye color usually illustrates particulate inheritance. Stature more commonly is a case of blended inheritance.

The great variety of results thus displayed in the phenomena of hereditary transmission suggests the hypothesis of a complicated set of characters in the germ cells representing traits derived from a great number of ancestral sources. Weismann supposed that the process of determining which of these should make up the inheritance of any individual consists of a struggle between germinal units which he called germinal selection. The existence of such selection is not generally accepted by biologists. It is further evident that the formulation of laws of heredity that will enable one to forecast the character of the offspring of any sexual union must be exceedingly difficult. Such laws must cover the phenomena of reversion and atavism, of exclusive, blended, and particulate inheritance, as well as the liability to variation from any hereditary character.

So far only two laws of heredity have been worked out with anything approaching mathematical precision. These are Galton's law of filial regression and Mendel's laws of inheritance in hybrids. Galton's law of filial regression deals with the tendency of the children of unusual parents to approximate more nearly to the common type of the family or stock. Thus the average height of the children of a man and woman both very tall tends, if allowance be made for the difference in stature between the sexes, to be below that of either. This law is an illustration of the tendency toward reversion, and is explained by Galton as a result of the combination of ancestral influences in the heredity of the child. He holds that, in general, the hereditary characteristics are derived as follows: one half from the parents,

one fourth from the grandparents, one eighth from the great-grandparents, etc. It is evident that this rule does not enable any very reliable prediction regarding the qualities of any particular child, but only the average tendency among a lot of children. It explains the fact that children of people of exceptional ability are so frequently mediocre. The same rule should also apply to the children of parents mentally deficient, who should average a better mentality than their parents.

Mendel's laws of inheritance in hybrids enable a much more definite prediction of the character of the offspring than does the law of Galton. It is not known, however, how widely they apply. Where Mendelian heredity exists, the two parents differ in respect to a certain characteristic. Their offspring all resemble one parent in this quality. The trait of this parent is therefore called dominant, while the opposed trait of the other parent is called recessive. In the next generation the recessive trait will appear in one of every four. The descendants of this individual will, if there be no intermixture, possess the recessive trait. It breeds true, or is a pure recessive. Of the other three in this generation of offspring, one, a pure dominant, will breed true to the dominant trait, the other two, which may be called impure dominants, will produce offspring divided as before between dominants and recessives in the proportion of three to one. The recessives will always breed true. One of every three dominants will do likewise, while the other two will be impure dominants, and will have their offspring divided into one fourth pure dominants, one half impure dominants, and one fourth pure recessives. Mendel established and confirmed his laws by experiments on varieties of edible peas. Tall peas, when hybridized with dwarfish ones, give a breed in which the tallness is dominant and the dwarfish quality recessive. Gray mice bred with white mice give a stock in which grayness is dominant and albinism recessive. Mendelian heredity has been shown to exist in maize, rabbits, silkworms, poultry, etc. It has proved useful as a guide in the breeding of desirable types of plants and animals.

Other laws of heredity, such as that inbreeding strengthens the characteristic traits of a stock, whether these be desirable or the opposite, that it is apt to result in reversions, and also in diminishing fertility, size, and vigor, are as compared with Mendel's laws uncertain and not a safe basis for prediction.

As a final point, variations in heredity may be considered. In the offspring traits may appear which vary from any present in the ancestry. Sex undoubtedly may favor this variation. Moreover, it is likely that all living tissue, including the germ cell, has not only the tendency toward continuity or inheritance, but also that toward variation. Variations may be quantitative, "meristic," as variations

in size, proportion of parts, etc.; or qualitative, "substantive," as variations in color, etc. They may be continuous or discontinuous; that is, slight, or so revolutionary as to produce suddenly new types, sports. A variety that is thus varying is called by De Vries a mutating one. He holds that the evolution of species takes place by such extraordinary leaps rather than by slow accumulation of continuous variations under the influence of selection. In this way he avoids the objection urged against Darwin's view, namely, that slight chance variations are inadequate to gain any such advantage in the struggle for existence as to favor the survival of their possessors. His view is that evolution takes place by heterogenesis or mutation, rather than by the natural selection of slight chance variations.

Another way of avoiding this objection to Darwin's theory is to suppose that variations in heredity may not merely be those that occur by chance, and so, if slight, incapable without selection of accumulating into a modification of types, but also that they may in many cases naturally tend toward better adaptation, that is, be orthogenetic.

It is likely that the tendency toward orthogenetic variation may not be inconsiderable, and that it leads on to progress without selective influences. E. N. H.

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**HEREDITY, SOCIAL.** — In the reaction from the doctrine of the inheritance of acquired characteristics (*q.v.*), it became evident that culture is not transmitted physically or biologically, but through the perpetuation of social customs and institutions; and that the individual comes to a personal participation in the culture of the race only by means of contact with the abiding social environment. The phrase "social heredity" was coined to express this indirect method of transmitting the achievements and acquisitions of the past.

See EUGENICS, and the references there given.

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**HERGENROTHER, JOHANN BAPTIST** (1780–1835) — Bavarian educator and director of a normal school at Würzburg. Born at Bischofsheim of a poor artisan family, his ability attracted the notice of the pastor who prepared him for the University. He entered the University of Würzburg and studied theology. For a time he was curate near Würzburg until in 1818, through his eloquence and ability in imparting religious instruction, he was appointed Director of the normal school at Würzburg, attended by students of all denominations. Although himself a Catholic, he endeared himself to all by his broad-mindedness. His work shows almost entirely the influence of Pestalozzianism, as does also his *Erziehungslehre im Geiste des Christenthums* (*Theory of Education in the Spirit of Christianity*) in which he discusses educational theory, training, and method from the religious standpoint. In 1832 he was removed from his position for political reasons and became pastor at Bamberg.

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**HERIOT, GEORGE** (1563–1623) — Founder of the school bearing his name situated in Edinburgh, Scotland. A goldsmith by trade, he was appointed crown jeweler to King James VI of Scotland and I of Great Britain. On his death, he bequeathed the bulk of his fortune for erecting and maintaining a hospital and for the maintenance, relief, upbringing, and educating, as far as the means would allow, of so many poor, fatherless boys, freemen's sons of the city of Edinburgh. The management of the trust funds was placed in the hands of the city magistrates and the city ministers. Steps were taken soon after his death to carry out the testator's wishes, and in 1659 the hospital was opened with thirty boys. At first the boys were merely housed within the hospital buildings, receiving their education at the high school of the city, until they were fitted to proceed either to the university or to enter upon apprenticeship to a trade. Gradually the un-



struction began to be given by the members of the hospital staff, until in 1809 it was resolved that it was no longer necessary for any of the boys to be educated at the high school. From that date until 1886 the hospital existed as a school giving both board and education to a number of fatherless boys. In 1837 the income of the trust was more than sufficient to maintain the hospital school, and it was resolved to open and to maintain a free, elementary day school for the education of the children of the poor. Gradually, as funds were available, additional schools were built, until in 1872 thirteen schools had been established, providing free education for over 3500 children. The Education (Scotland) Act of 1872 transferred the duty of making such provision to the State. In 1886 the boarding system at the hospital was abandoned, and in its place each selected applicant for the benefit of the trust received free education and a maintenance allowance of £20 per annum. The hospital school has now developed into a large secondary school providing an education of a modern type to over 1200 boys, and carrying its pupils to the doors of the universities. The benefits of the trust are now open to girls as well as to boys. In 1886 the governors of the trust took over the management of the Watt Institution and School of Arts, an evening school for the technical instruction of the artisan, and the transferred school is now known as the Heriot-Watt College. This institution has developed into a technical college providing both day and evening instruction for its pupils.

A. D.

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**HEROIC EDUCATION** — The title given to a treatise on gentlemen's education written by a writer who only signs his initials — I. B. — in 1657. I. B. represents that a lady showed him the treatise when it was only a "confused heap, without method or embellishment," but that he recognized that it was "the product of some great and knowing spirit." He therefore edited it and published it with the title: *Heroick Education, Or Choice Maximes and Instructions, for the most sure and facile training up of youth, in the ways of eminent learning and virtues. A Treatise very necessary for all men; but most especially for such as undertake the charge, to govern the young Nobility and Gentry.* By I. B. Gent. F. W.

See GENTRY AND NOBLES, EDUCATION OF.

**HERON**. — One of the great teachers of the Alexandrian School, and the leading engineer of the Greeks. He was formerly thought to have lived in the first century B. C., but later

investigations have led to the belief that he flourished in the first century of the Christian era. He was interested chiefly in mensuration, and his formula for the area of a triangle in terms of its sides still appears in elementary textbooks. This formula is  $A = \sqrt{s(s-a)(s-b)(s-c)}$ , in which the sides are  $a$ ,  $b$ , and  $c$ , and the semiperimeter is  $s$ . Such a formula would not have been allowed by Euclid and his school, because it involves the product of four lines and could not therefore have represented a solid in three dimensions or a rectangle in two. In physics Heron showed great ingenuity, and he describes a large number of toys or models, some of which have since been utilized in a practical way. These include a steam engine and a force pump. He introduced into the schools more successfully than any of his predecessors the idea of applied mathematics, and it is possible that this may have had its influence in hastening the temporary decline of pure mathematics, even as a similar movement in America to-day may bring about such a result. It is more probable, however, that his attitude was that of the general spirit of the time, and that the hibernation of pure science was independent of his efforts. D. E. S.

**HERRAD** — Abbess of Odilienberg or Hohenburg (1167–1195), born of a noble family in Alsace. It is recorded of her that she promoted studies in the nunnery, and to this end wrote the *Hortus Deliciarum* (*Garden of Delights*), which, having found its way to the library at Strassburg, was there burnt in 1870. Extracts and copies of the illuminations which were in all probability the work of the abbess herself remain. The *Hortus Deliciarum* contained extracts from the Bible, church histories, church Fathers, philosophy, astronomy, geography, nature study, liberal arts, chronology, and poems and hymns to be sung by the nuns. The work was intended for the education of the novices. A few excerpts from pagan writings were also included. The illuminations cover a multitude of subjects to illustrate the text.

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**HERZEGOVINA**. — See BOSNIA AND HERZEGOVINA

**HESSE-CASSEL**. — See GERMANY, EDUCATION IN.

**HESSE, GRAND-DUCHY OF, EDUCATION IN** — See GERMANY, EDUCATION IN

**HESSUS, HELIUS EOBANUS** (1488–1540). — A German humanist, who was admitted to be

the best Latin poet of his time. He studied at the University of Erfurt, and became rector of the school of St. Severus. From 1517 to 1526 he was Professor of Poetry and Eloquence at the university, and was an important figure in the literary coterie at Erfurt. With Ulrich von Hutten he joined in the national movement which was associated with the Reformation, although he seemed to fear that the humanistic tendencies were being pushed on one side. For a short time, 1526-1533, he was rector of a school at Nuremberg. On his return to Erfurt he found that the university had practically ceased to exist before the rapid rise of Wittenberg. In 1536 he accepted a call to Marburg. Hesus was a prolific writer, and showed equal facility in all branches of verse. He translated the *Psalms*, *Ecclesiastes*, Theocritus' *Idylls* and Homer's *Iliad* into Latin, and in imitation of Ovid he wrote *Herodes*, or letters from holy women. He published collections of his writings as follows: *Operum Helii Eobani Hessi Farragines duæ*, and *Silvarum Libri IX* (containing the poetical description of Nuremberg, *Urbs Noriberger illustrata Carmine heroico*). Although recognized as a leader, Hesus never exercised much influence on contemporary movements. His life and letters were issued by his friend Camerarius in 1553.

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**HEURISTIC METHOD** — The inductive method of modern science when applied to the teaching of children is called the heuristic method. The term is current in English pedagogy, "inductive method" being more frequently used among American teachers. The command, "never tell a child anything that he can find out for himself," expresses the essential attitude of those who believe in the heuristic or inductive method. It aims to place the learner in the position of a discoverer of truth, so that facts and generalizations will emerge in proper order and relation in the child's mind. Its extreme application implies that each child will experiment and observe for himself, thus the teaching of physics and chemistry may be conducted by means of individual experimentation in the laboratory, demonstration by the instructor being completely eliminated. In its pure form the heuristic method is seldom used. A modified inductive method that avoids dogmatic teaching without incurring the waste of an extreme heuristic mode of procedure is current among all progressive teachers in the elementary schools, taking such names as "inductive teaching," "developmental instruction," "laboratory method," and "indirect method."

Such modifications of an extreme heuristic mode of teaching recognize two important pedagogical facts. (1) That the child learns best through his own activities, and (2) that the pupil may understand many facts without going through all of the detailed efforts and failures that have accompanied their original discovery. H. S.

See DIRECT METHOD; DEVELOPMENTAL METHODS, INDUCTIVE METHOD; INVENTIONAL GEOMETRY, SOCRATIC METHOD.

**HEWETT, EDWIN CRAWFORD** (1828-1905). — Normal school principal and educational writer, was graduated from the Bridgewater (Mass.) Normal School in 1852. He was an instructor in the Bridgewater Normal School, principal of a grammar school at Worcester, and for thirty-two years connected with the Illinois State Normal School, its principal from 1876 to 1900. He was active in the National Education Association; editor of the *Illinois Schoolmaster*, the author of a series of arithmetics, and of two books on education — *Pedagogy for Young Teachers* (1884) and *Elements of Psychology* (1889). W. S. M.

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**HEYNE, CHRISTIAN GOTTLÖB** (1729-1812). — One of the foremost classical scholars in Germany at the close of the eighteenth century, and a leader in the new humanistic movement of the period. The son of a poor weaver, Heyne underwent the greatest hardships to secure an education at school and at the University of Leipzig, where he came under the influence of Ernesti (*qv*) and Johann Friedrich Christ. For a time he managed to secure a livelihood as assistant librarian, and then as tutor, until in 1763. Though only known for editions of Tibullus and Epictetus, he was invited to succeed Gesner (*qv*) as Professor of Eloquence at the University of Göttingen. In this position he transformed the dry, formalistic study of the classics into a living, vital force, aiming at a true appreciation of the works of antiquity through a knowledge of history, antiquities, and archaeology. Regarding the classics as the only method of approach to the good, the true, and the beautiful, Heyne wished in that way to influence the culture of his time. His influence was widespread, and from his philological seminar, the entrance requirements to which were rigorous and in which the students received government grants, there came many future university and school teachers, imbued with a new attitude towards the classics. But Heyne also had direct contact with the schools, as inspector of the school at Ilfeld he drew up new regulations in 1770 which reorganized the curriculum on a basis of Greek, and in

1798 he performed a similar work for the gymnasium at Göttingen. Besides his editions of Tibullus and Epictetus, Heyne published editions of Vergil, Pliny, Apollodorus, Pindar, Conon, and Parthenius and Homer's *Iliad*; in addition he wrote treatises and essays on a great variety of subjects collected in six volumes as *Opuscula Academica*, and numerous reviews in the Göttingen *Gelehrte Anzeigen*, of which he was the first editor.

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**HICKOK, LAURENS PERSEUS** (1799-1888).—Educational writer and college professor; graduated from Union College in 1820. He was for many years professor in the Western Reserve College and the Auburn Theological Seminary. From 1852 to 1869 he was professor in Union College, acting as president during the collegiate year 1867-1868. His published works include *Rational Psychology* (1849), *Moral Philosophy* (1853), *Empirical Psychology* (1854), *Logic of Reason* (1875), and several books on theology. W. S. M.

**HIERONYMIANS.**—See BRETHREN OF THE COMMON LIFE.

**HIGBEE, ELNATHAN ELISHA** (1839-1889).—State Superintendent of Schools in Pennsylvania; was graduated from the University of Vermont in 1849 and the Theological Seminary at Mercersburg, Pa., in 1852. He was instructor in academies at Woodstock, Vt., and Emmitsburg, Md., and was later professor in Heidelberg College and the Theological Seminary at Mercersburg, Pa. He was state superintendent of public instruction in Pennsylvania from 1881 to 1889, during which time he was also editor of the *Pennsylvania School Journal*. He was the author of numerous educational essays. W. S. M.

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**HIGH SCHOOL.**—The term "high" as applied to a school, which in these modern days in England has become almost synonymous with a high-class secondary school for girls and in America with a public secondary school, is one really of very great antiquity, as applied to a "public" school or grammar school. Originally of course high schools were exclusively for boys and youths, or young men, for females were not so much rigidly excluded as not contemplated by any one as admissible or seeking admission to the "general" or "public" grammar school. The term "high" was in common

use in English for chief or principal, as in the word "High Street," which had no relation to steepness, or the Lord High Chancellor of England, *Summus cancellarius Anglie*, as distinguished from the Chancellor of the Exchequer, the King's chancellor, and not the chancellor of bishops or other inferior magnates. It was rendered in Latin indifferently by the words *summus* or *altus*, and possibly *generalis* and *magnus*. In connection with a school one of the earliest uses of it in England is an inquiry held at Winchester in October, 1373, in a suit between William of Wykeham, Bishop of Winchester, against the Master of the Hospital of St. Cross near the city for malversation of the revenues of the hospital. It was then given in evidence that among the hundred poor, who according to the foundation and ancient custom were every day entertained at dinner in the "Hundredmennehall" of the hospital were 13 poor scholars of the grammar school, sent by the master of the High Grammar School of the city (*magistrum summe scole grammatice civitatis Wyntonie*). The witnesses take this custom back in their own knowledge to 1313, and if it did not date to the actual foundation in 1130, it was at least not later than the secondary foundation or augmentation of the hospital in 1200. In a "Tarrage" or assessment of land in the city of Winchester, for the maintenance of its walls in the early part of the reign of Richard II, c. 1377, appears the item "From the High School" (*De alta scola*), 12d. and on the back is written "From the master of the High School" (*De magistro alte scole*), followed by a blank, apparently showing that he had not yet paid, and "From Sir John of the same place 6d." The Sir means that John was a priest and probably usher of the school, who paid half its assessment. This school was the old city grammar school which was the subject of a lawsuit reported in John of Salisbury's letters about 1155, and no doubt the same as that to which Alfred the Great is said, in Asser's *Life* of him to have sent, c. 893, his younger Ethelward to learn Latin. This school continued after the foundation of the rival grammar school of Winchester College in 1382. For in January, 1407, we find in the Hall book of the college that the master teacher of the High School was at supper at the high table (*Magister Informator alte scole ad cenam in alta mensa*), i. e. having supper with the Warden and Fellows. In 1488 we find the Bishop's official granting license to one Furnew to "teach and inform in grammar and literature in the school of Winchester, called in the vulgar tongue 'The High Schole,' and forbidding any one else to teach school in Winchester, the master and scholars of the Blessed Mary's College, founded by the Lord Wykeham, only excepted."

The ancient cathedral or city grammar school at Exeter was also called the High School. The High Master of the city school (*summus magistrum scole civitatis*) was empowered by the

statutes of Bishop Grandison on Nov. 18, 1332, completing the intended foundation of his predecessor Bishop Stapledon, the founder of Stapledon Hall, now Exeter College, at Oxford, to elect the twelve boys who were to be lodged and boarded in St. John's Hospital there under a tutor and to attend the city grammar school. In 1345 a new school and house for the master was built by Dean Richard de Braylegh. There is no specific evidence that it was called the high school until an entry in the Act Book of the chapter on Jan. 22, 1530, when the secundanes, clerks of the cathedral who served various altars while in training for the priesthood, had 6d a quarter deducted from their salaries "for the stipend of the master of the High School (*altarum scholarum*) for teaching them." From then until the year 1759, when the school came to an end, and especially after the year 1632, when the endowed Free Grammar School, which finally killed it, was established, it was also generally called the High School, the new school being called the Grammar School, or the Free School. This Free Grammar School was established by the city in opposition to the dean and chapter and the bishop, chiefly because the old High School charged tuition fees in the hall of the church of the dissolved St. John's Hospital, under a patent obtained from Charles I in 1632. But as late as 1662 a medical doctor, Robert Vilvaia, who established four exhibitions for Exeter boys at Exeter College, Oxford, directed that two of them should be given to boys from "the High School," and two out of the Free Grammar School. The last master of the High School was appointed in 1739, and on his death it ceased.

At Lincoln in 1388 we find the cathedral or city Grammar School, called the High School (*magnarum scholarum*), in an appointment of an usher or second master, in contradistinction to a new grammar school really established for the choristers, and in 1406 its superiority was recognized by the boys in the latter being obliged once a term to go down to the High School (*scolas generales*) and sit in it under the teaching and chastisement of its master.

In the nineteenth century there seems to have been a tendency to revive the title of high school, especially in Scotland, where the Edinburgh High School, a title appearing in town records of 1534, was accepted as the model. Thus the Glasgow Grammar School became the High School in 1834; the Sterling Grammar School became the High School in 1856; at Dundee an academy, grammar and another school were amalgamated into a high school in 1859. In England the title of the Nottingham Grammar School (f. 1513) was changed to High School in 1868, and in 1878 the Oxford High School for boys was founded.

In France the distinction was made between the High School, meaning the city or cathedral grammar school, and the lower schools in various parishes, the teaching in which was not

allowed to go beyond the parts of speech. Thus in 1324 and 1325 the rector of the schools of St. John-en-Vallée and the schoolmaster of St. Andrew's Chartres were inhibited from teaching beyond the *Donat* (Donatus' *ars minor*), except in the High School (*scolis magnarum Carnetensibus*), and in 1358 a master is admitted not as usual primarily to "the School of Chartres" but as master of the High School (*magnarum scholarum*). So at Paris in 1380 there were some twenty-one *petites écoles* under the Precentor of Notre Dame giving elementary instruction, as contrasted with the High School, the *grande école*, the Grammar School under the chancellor.

In Germany the term high school, *Hochschule* or *Hohe Schule*, was taken up at the period of the Renaissance to designate emphatically the enlarged schools with their wider humanistic curriculum, which became almost universities, alike in number of students and in subjects, and were solely or largely under the management of the town authorities instead of that of the Church. At Vienna we hear of Johann Spieshammer at the end of the fifteenth century at the age of eighteen lecturing at the High School on Lucian, Sallust, and Cicero. The proposal for a High School at Strassburg in 1501 was intended to restrict itself to classics. The High School at Nuremberg was established by Melancthon (*qv*) in 1526. The term received a sort of consecration from the famous school established by Sturm at Strassburg in 1536. From that time the term vied with *gymnasium* and the usual name for the highest form of classical school, the public school of England. (See HIGHER EDUCATION.)

It is not quite clear how the term came to be used in America for the same thing, when it had died or was dying out in England in the seventeenth century. It appears to be definitely established that the term was borrowed directly from the Edinburgh High School, where at the beginning of the last century Professor Pillans (*qv*) was experimenting with the monitorial system. At Boston the English Classical School became the English High School in 1824. The change may have been influenced by an article in the *North American Review* written by John Griscom (*qv*) on the work of the Edinburgh High School. Griscom also established a High School for Boys in New York, which was opened in 1825, although it was under consideration for one or two years before that date. The use of the term High School in Pennsylvania in colonial times does not seem to have any influence on its subsequent history. (See Brown, E. E., *Making of our Middle Schools*, pp. 303 ff., New York, 1905.) That it became acclimatized is certain, and it is quite certain that it was to the American use of the term that its revival in England was due when the new movement for the higher education of girls in schools similar to those of boys of the same class began in 1848 with the

Camden High School for girls, from whence it has been adapted all over England as the generic term for a girls' Public School. A F L

**HIGH SCHOOLS IN THE UNITED STATES. — History** — The first high school in the United States was established in Boston in May, 1821, as the Boys' Classical School, complementary to the Boys' Latin Grammar School. The term "high school" was not officially applied until 1824, and was not employed in the Massachusetts statutes until 1840. Meanwhile in 1826 a high school for girls was established in Boston. This school existed only for two years, not because of unpopularity, but the reverse. So large was the attendance that one school would not accommodate the applicants, and the upper grades of the common schools were expanded to meet the needs of the girls. The report of the committee in 1821 clearly indicates the situation which soon called for the establishment of this type of school all over the country —

"The mode of education now adopted, and the branches of knowledge that are taught at our English grammar schools are not sufficiently extensive nor otherwise calculated to bring the powers of the mind into operation nor to qualify a youth to fill usefully and respectably many of the stations, both public and private, in which he may be placed. A parent who wishes to give a child an education that shall fit him for active life, and shall serve as a foundation for eminence in his profession, whether men, artile or mechanical, is under the necessity of giving him a different education from any which our public schools can now furnish. Hence, many children are separated from their parents and sent to private academies in this vicinity, to acquire that instruction which cannot be obtained at the public seminaries."

The Latin grammar school was essentially a college preparatory school, and its curriculum was not suited to the common needs of life. The academy offered a curriculum of practical studies, but it was a private institution requiring considerable tuition fees, and it was, therefore, somewhat exclusive. A school was needed to provide three or four years of training beyond that given in the elementary schools, that should have a practical curriculum like that of the academy, and that should be free, like the Latin grammar school. (See GRAMMAR SCHOOL, ACADEMY) Previous to the founding of the Boys' Classical School, twenty-six academies had been incorporated in Massachusetts.

In 1827 the first state high school law was passed, again in Massachusetts. This required such a school in every town of over 500 families. However, for many years the academy (*qv*) still continued to be the dominant secondary school, even in Massachusetts. In 1840 there were 114 incorporated academies in the state, and only 18 high schools, though strict compliance with the law of 1827 would have given 44. From this time on the number of high schools increased very rapidly. By 1861 the State Board of Education claimed that there were 102 high schools in the state, teaching Latin and Greek. There were no doubt at least one hundred well entitled to this claim, though recent official attempts to

summarize the high school development in the United States credited no more than that number to the entire country, and only eleven to Massachusetts. By 1862 the system was well established in Massachusetts, although less than 70 per cent of the towns of the state met the legal requirement, even allowing the 102 schools claimed by the state board.

Meanwhile, the development of the high school had gone on elsewhere, though more tardily. In New York the conflict between the high school and the academy resulted even more favorably for the academy than in Massachusetts. While Governor Clinton during the decade 1817–1827 advocated the establishment of high schools in every county, under the monitorial system, and connected with the professional training of teachers, but few of these were founded. The friends of the academy were able to divert the appropriation of state funds to these institutions instead of to the high schools or the normal schools. The "Union Free Schools" Acts of 1853 and 1864 developed many high schools under local control out of the graded free school system.

After the Civil War period the number of high schools increased very rapidly. In 1880, according to the *Report of the United States Commissioner of Education*, there were 800, in 1890, 2526, in 1900, 6005, and in 1910, 10,213. In a little less than one third of these schools there are not more than three teachers; in more than one third, not more than six teachers, in about two thirds, not more than ten teachers. In some of the largest city schools there are as many as 125 teachers and 3000 pupils. The recognized standard high school course is now four years in length, but many schools have a one, two, or three years' course. (See the articles on the separate state systems for the development of their high schools.)

**State Systems** — The high school of the United States has, upon the whole, evolved from the free elementary school. Its development has followed that of its progenitor by approximately a quarter of a century, so that in many states it remains as yet almost entirely unsystematized, so far as the legal aspect is concerned. In a number of states, only the most general legal provision is made for the establishment and maintenance of such schools, while in a few of the Southern and in at least one of the Northern States, New Jersey, no special legal provision is made for them, such schools as exist being considered merely as the higher grades of the public schools. Most of the states have, however, made definite legal provision for these schools, and a large number, such as Maine, Massachusetts, New York, Indiana, Wisconsin, Minnesota, and California, have evolved comprehensive independent laws governing the establishment, maintenance, and management of such schools. But the legal provisions even of these states

differ widely among themselves, so that the laws governing this institution in the United States range from indefinite and badly defined codes in certain states to clear and specific legislation in others.

Nevertheless the high schools in the various states have a remarkable resemblance in external and internal management and control, as well as in their curricula. In general no greater differences exist internally between the high schools of Maine and those of California than may be found to exist between the different high schools of any given commonwealth. This similarity is due to a number of factors in American life and American educational practices. In the first place, the elementary schools, the feeders of the high schools, resemble one another even more closely than do the high schools. The colleges, the universities, and particularly the state universities, the institutions that largely receive the output of the high schools, also closely resemble one another.

The explanation of this close resemblance of the various types of schools in the American system of education is largely due to imitation brought about by the following facts and conditions: (1) most of the states of the Union are relatively new and their populations have been largely recruited from the other older states, (2) the Americans are a migrating people, and recognize no state boundaries in their shifting from place to place, (3) there is wide communication through travel, books, and periodicals, (4) national and state conventions of teachers, principals, and superintendents are held annually, — the state conventions usually employing outside instructors to present the work, (5) teachers are to a considerable extent recruited from the country at large rather than from the local community and state alone, (6) students frequently leave their own communities and state to prepare for their work of teaching. In addition the laws governing the establishment, maintenance, and support of all of these types of schools have been more or less influenced by the laws and practices of other states.

In no point, however, do the high schools of the Union so closely resemble each other as in their curricula. This is due to the fact that this institution has been, and is to-day, fundamentally a preparatory school to the colleges and universities, which by association and concerted action have set a more or less definite standard of requirement for entrance, and thus to a large degree have dictated a common curriculum for these schools. (See COLLEGE REQUIREMENTS FOR ADMISSION.)

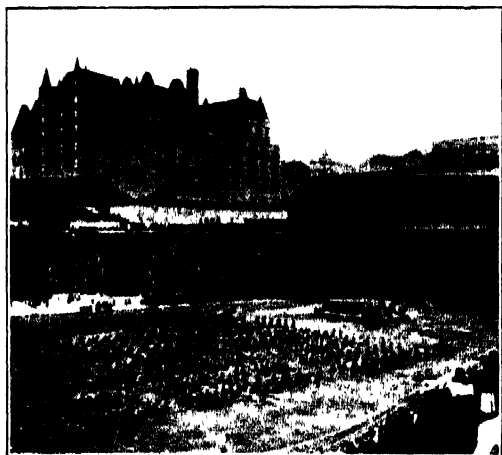
Ever since the rise of the high school in this country its ablest advocates have dreamed of it as the finishing college of the common people; but as yet the fruition of this dream has not been accomplished, — unless, indeed,

the college preparatory course can be considered the best preparation for social efficiency. This condition has been no more the fault of the college and the university than of those who have insisted upon a different curriculum, but who in the past have been unable to evolve one definite enough to be workable in any of the thousands of high schools of the country. However, the present widespread interest in vocational, industrial, technical, commercial, and economic training, and the growing interest in the refinement of the other common aspects of life, together with the practical experiments now going on, give a renewed promise for the future of this dream of a people's college. The American high school, then, in so far as it is efficient, owes this efficiency in large measure to the college and the university.

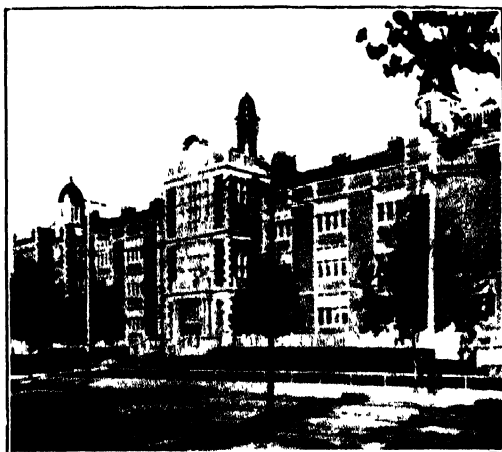
The systematizing of any series of schools of a given type means their unification, and this can be secured only through the operation of one or more of the four following instrumentalities: similar laws governing their establishment, maintenance, and support, like curricula, supervision and inspection, and teachers with similar ideals and training. The first of these will be discussed later.

*Inspection.* — With a few notable exceptions, the only state-wide supervision and inspection that American high schools have received in the past has been upon the motion and at the expense of the state universities, sometimes with, and sometimes without, legal warrant from the state. This inspection, to be sure, has been solely in their own interests, but it has nevertheless tended to systematize these schools not only within the state, but likewise within the country at large. (See ACCREDITED SCHOOLS; ACCREDITED TEACHERS.) As stated elsewhere, these same universities have also unified the curricula of these schools, and through their instrumentality as preparatory schools for high school teachers they have instilled into them similar ideals and have provided them, largely through imitation, with similar methods of procedure in instruction. A few states, however, such as Massachusetts, New York, New Jersey, Wisconsin, and Minnesota, provide in other ways for supervision and inspection. In both Wisconsin and Minnesota the responsibility for high school inspection rests only partly with the state university authorities. In New York, New Jersey, and Massachusetts it is independently conducted. It is worthy of note that all of these states mentioned above give direct financial aid to the least wealthy high school districts. State supervision or inspection, legal requirements governing curricula, and qualifications of teachers, all inevitably follow state financial aid to high schools.

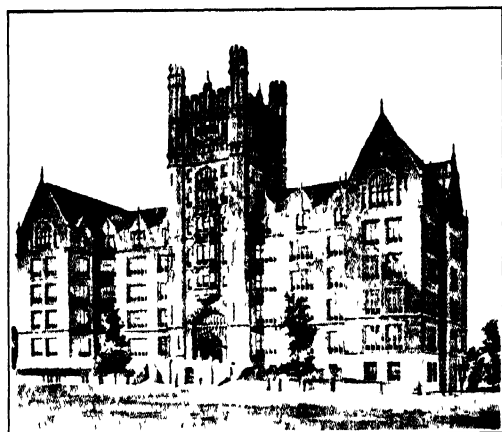
*Organization of Control.* — The most prevalent local political unit of organization for the establishment, maintenance, control, and



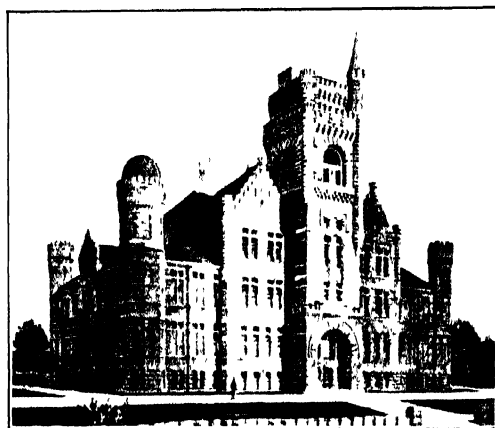
Tacoma, Wash., High School (with stadium).



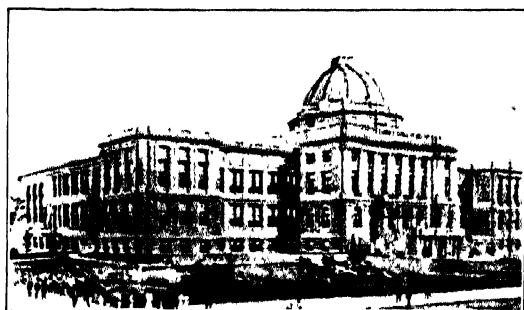
F. Louis Soldan High School, St. Louis



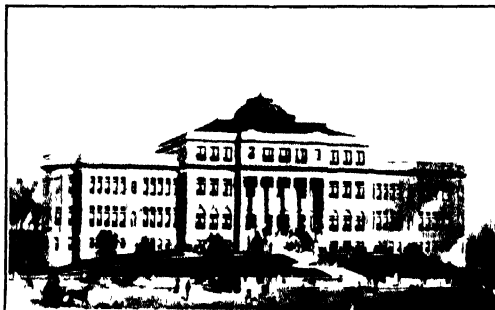
Morris High School, New York City



Sioux City, Iowa, High School.



Springfield, Ohio, High School.



Pueblo High School.

# TYPICAL HIGH SCHOOL BUILDINGS.





support of high schools in the United States is the district, which includes the city or parts of the city, the town or small city, the village, the rural district, or a union of such districts. This system prevails in all of the states in so far as it applies to the cities and larger towns, and in some states it is the only unit of organization for the establishment of such schools. In most instances the local board of school directors or school trustees, which also has charge of the local lower schools, controls these schools. (See CITY SCHOOL ADMINISTRATION.)

In the rural districts of many of the Eastern and Middle Western states the township unit of organization prevails both for elementary and for high school purposes. In certain of these states the district unit of organization prevails for elementary school purposes, while the township unit prevails for high school purposes. In most of them there are also union or joint township high schools in existence. The boards of education which are in control of these schools are elected by the people of the territorial districts maintaining them. In some of the Southern, Western, Rocky Mountain, and Pacific Coast states many county high schools exist, and in at least a few cases joint county high schools. These schools are always under the control either of the county boards of education, which have other duties relating to the elementary schools, or of special county or joint county high school boards. In a few states these boards are appointed by the county courts, in others by the county commissioners or supervisors, and in the remainder of the cases they are elected by the people.

#### E R S

**Rural High Schools.** — Since in general the towns and villages of the United States with populations to exceed 2500 are able to maintain reputable high schools, and since they have for years been doing so, the main problem of rural secondary education has to do mostly with that part of the population residing in the smaller villages and on the farms of the country. The units of organization for rural high school purposes vary widely in the different sections of the country as well as in some of the states themselves, the smallest of these units being the district. These district high schools, in so far as they may be classed as rural, have largely grown out of the elementary schools through the gradual addition of high school subjects and high school grades. This is particularly true in such states as have had the district unit of organization and control in matters of education. In every state where the unit of control is such, and where the law has failed to define the public school as a strictly elementary school, rural high schools have grown up as district schools. The union of districts for high school purposes is also an outgrowth of the gradual extension

of the elementary school. As a type it is the result of combining two or more advanced district schools that had already developed considerable high school work in connection with their elementary courses. The township unit of organization is more prevalent than the district unit, in so far as the term applies to such rural high schools as have state recognition as such. This is a perfectly natural condition, since in most of the older and wealthier states, the Eastern and Middle Western groups, the township constitutes the unit of taxation and organization for public school as well as other civil purposes. The method of uniting townships into high school districts has also been employed to a considerable extent, particularly where the townships covered a small area, or where their most thickly populated areas were adjacent. The county plan of organization is quite largely practiced in the Western and in certain of the Southern states. This plan of organization almost always implies large local support, and is especially adaptable to thinly populated districts. Village and town districts sometimes unite with their counties or with their own townships or with a group of adjacent townships in the establishment and maintenance of union high schools. In fact, in a large number of the states any combination of territory may organize itself into a high school district.

**Curriculum.** — The courses of study in the rural high schools are very similar to those of the city high schools in the states wherein they are located. The most notable difference is that they offer a smaller number of courses, which is a direct result of the small teaching force employed and of the small number of pupils in attendance. Most of the states, recognizing that these schools are at least in theory finishing institutions, have required one course of instruction other than the classical, making the foreign languages elective, if offered at all. In most cases, however, these schools give also a college preparatory course, including at least one foreign language, usually Latin, though the modern languages are rapidly gaining ground.

The present tendency is to create for these schools courses of a more practical nature. This is to be accomplished by modifying the courses and instruction in the sciences, by adding courses in agriculture, stock-raising, dairying, horticulture, and other practical subjects, as demanded by the particular school. So far little of a practical nature has been accomplished in this line. In fact, in regard to practical education, the cities are at the present time far in advance of the rural districts. Some of the Middle Western states, such as Wisconsin, Michigan, and Nebraska, have made considerable progress in this line.

Another tendency worthy of note is that of recognizing and aiding rural high schools

which offer only a partial course of study, particularly the two-year rural and small village high school. Such schools are becoming common in the upper Mississippi Valley, though as yet only a few states have granted them any special financial encouragement. California, with its two-year "Grammar-High" schools (*q v*), is a notable exception in this particular. (See also HIGH SCHOOLS, SUPPORT OF.)

*Statistical Summary* — A statistical statement of the number and condition of the strictly rural high schools in this country is not possible, because, as pointed out above, the statistics of rural high schools proper are combined with those of all villages and towns having populations that do not exceed 8000 inhabitants. The increase in the number of reputable non-urban high schools is a good index to the vitality of the institution at the present time.

The following statistical summary is based on an extended study of twenty states selected because of their availability for the purpose. These were Maine, Massachusetts, New Jersey, California, Colorado, Washington, Connecticut, Vermont, New Hampshire, Michigan, Wisconsin, Minnesota, Ohio, Indiana, Illinois, Iowa, Missouri, Texas, Kansas, and Nebraska. The high school and other necessary statistics for these states for the nine years ending 1906 were compiled, and interpreted with the following general results. —

(1) The average increase in the number of rural<sup>1</sup> high schools in the twenty states was, for the nine-year period, 50 per cent. (2) The average relative<sup>2</sup> increase in the enrollment of pupils in the urban<sup>3</sup> high schools of the twenty states was, for the nine years, 46 per cent, while for the non-urban<sup>1</sup> high schools it was, for the same period, 65 per cent. (3) The average increase to the school in the number of teachers employed in non-urban high schools was, for the nine years, more than 19 per cent. (4) The average decrease in the relative number of one-teacher high schools was, for the nine years, more than 11 per cent. (5) The average decrease to the school in the relative number of two-teacher high schools was, for the nine years, more than 33 per cent.

The general methods employed by different states in extending financial aid to rural secondary education are varied, and are discussed in the section on SUPPORT OF HIGH SCHOOLS.

The influence of this aid upon the rural high schools of these states is clearly shown by the following comparison of the average development of rural secondary education during a period of nine years, 1897-1906, in six states, Minnesota, California, Massa-

chusetts, Washington, Wisconsin, and Maine, — all of which provided state subsidies to rural high schools and two of which also provided for the reimbursement of tuitions, — with the average development of rural secondary education during the same period in eleven states, Nebraska, Ohio, Indiana, Kansas, Colorado, Michigan, Illinois, New Jersey, Iowa, Missouri, and Texas, none of which provided direct state aid to secondary education in any manner whatever. The results were as follows: —

(1) The average increase in the number of non-urban high schools was, for the six states, 68 per cent, for the eleven states, 48 per cent. (2) The average increase in the number of teachers employed to the school in non-urban districts was, for the six states, 38 per cent, reckoned on an average status of 2.4 teachers to the school in 1897; for the eleven states 6.5 per cent, reckoned upon an average status of 2.5 teachers to the school in 1897. (3) During these nine years the average relative proportion (.25) of one-teacher high schools in the six states was reduced 63 per cent, in the eleven states the average relative proportion (.27) was increased 15 per cent. (4) During the same period the average relative proportion (.52) of two-teacher high schools in the six states was reduced 53 per cent, while in the eleven states the average relative proportion (.44) was increased 2 per cent. (5) The average status of enrollment of pupils in all types of secondary schools, 4.44 individuals to each 100 of census (5-18), in the six states in 1897 was increased during the nine years 57 per cent, while in the eleven states the average status of enrollment, 3.68 individuals to each 100 of census (5-18), was increased but 39 per cent. (6) The average status of enrollment of pupils in city high schools, 4.81 individuals to each 100 of census (5-18), in the six states in 1897, was increased during the nine years 52 per cent, while in the eleven states the average status of enrollment, 4.13 individuals to each one hundred of census (5-18), was increased 49 per cent. (7) The average status of enrollment of pupils in non-urban high schools, 2.85 individuals to each 100 of census (5-18), in the six states in 1897 was increased during the nine years 100 per cent, while in the eleven states the average status of enrollment, 2.49 individuals to each 100 of census (5-18), was increased 49 per cent.

Thus it appears that the rapidly developing standard of rural secondary education in the states that provide special financial aid is slowly approaching the increasing standard of the same in the cities of these states. On the other hand, it appears that the rapidly increasing standard of rural secondary education in the states that offer no special aid is slowly diverging from the constantly increasing standard of the same in the cities of these states. On the

<sup>1</sup> All high schools not located in cities with a population to exceed 8,000 inhabitants.

<sup>2</sup> Enrollment for each year compared to census, five to eighteen years.

<sup>3</sup> High schools in cities with 8,000 or more inhabitants.

# HIGH SCHOOLS IN UNITED STATES

whole the general increase of standard of urban as well as non-urban secondary education has been very rapid in recent years E R S.

**The Curriculum.** — When the American high school first arose, and during what may well be termed the period of its struggle for existence, the need of higher education for any large percentage of our people was relatively slight. With an elementary school system of very meager proportions still in its infancy; with the principle of general taxation for education scarcely established; with little surplus national wealth; with few of the pressing problems of government, industry, and human relations, with which we of to-day are so familiar, not as yet markedly in evidence; and with but a small portion of our present organized knowledge as yet available for purposes of instruction, it can readily be understood that the high school of the earlier period was very limited in its scope, and was demanded by but a very small percentage of the people. Latin, Greek, and mathematics constituted the backbone and the bulk of all instruction; the course of study was the same for all; and the school was useful chiefly as a preparation for entering some one of the denominational colleges of the time.

The past fifty years, however, have witnessed very great and very significant changes in every feature of our national life, and the public secondary school has shared in these changes. Everywhere such schools have been adopted as a necessary part of a system of popular education, new classes of people have been attracted to them, and new subjects of instruction have been provided. The development of the secondary school since 1890, and particularly since 1900, has been marked. With the gradual evolution of the new conceptions as to the purpose and function of public education, there has been a gradually increasing demand that the secondary schools shall more thoroughly meet the needs of the new classes in the population which have turned to them for help and enlightenment. This has greatly changed the nature of high school work.

First to be introduced was history and English literature, and then the modern languages. In the seventies and eighties came the sciences, first in book form and shortly afterward as laboratory studies. Manual training and domestic arts came to be recognized as teaching subjects for special schools in the late eighties, and have since been incorporated as parts of regular high school instruction. Business training, at first introduced as a concession to public opinion and to meet the competition of the private "business colleges," has since been adopted as a useful addition, and, in the larger city high schools, is being transformed into good, strong, commercial or business courses (See COMMERCIAL EDUCATION.) Still more recently agriculture has been admitted as a useful subject of instruction, and the develop-

# HIGH SCHOOLS IN UNITED STATES

ment of the agricultural high school has been very rapid (See AGRICULTURAL EDUCATION.)

These many additions have affected the high school curriculum in two ways: (1) the old course has been expanded and crowded, resulting in the introduction both of elective studies and elective courses, and (2) new types of high schools have arisen by the side of the old to minister to the new needs. These changes may be illustrated by a few typical examples of high school curricula, chosen from different types of American high schools, and by an enumeration of the different types of high schools which have been formed.

*Types of High School Curricula* — I A small New England high school, in which the one fixed, traditional course of study, almost entirely based on book work, has had to give way to changing demands and admit a few electives during the last two years. This type of school is still very common in conservative communities and among rural high schools.

FIRST YEAR		THIRD YEAR	
English Composition and Literature	Ancient History	English Literature	Modern English History
Latin	Algebra	Latin (or German)	Physics (or Bookkeeping and Business Arithmetic)
SECOND YEAR		FOURTH YEAR	
English Composition and Literature	Medieval History	English Literature	American History and Government
Latin	Geometry	Latin (or German)	Chemistry (or Typewriting and Shorthand)

II A medium-sized city high school, located in the Mississippi Valley. Here, by combinations, five different courses of instruction have been arranged, supposedly to fit different types of individuals. Such combinations are quite common, though the tendency is to decrease the number of required subjects and to increase the number of electives in each. In the administration of the school this is usually done in individual cases, though not indicated in the paper courses of study.

I ANCIENT CLASSICAL COURSE	II MODERN LANGUAGE COURSE	III HISTORY-ENGLISH COURSE
First Year, Latin Ancient History English Algebra	First Year, German Ancient History English Algebra	First Year, Latin or German Ancient History English Algebra
Second Year, Latin Greek English Geometry	Second Year, German Medieval History English Geometry	Second Year, Latin or German Medieval History English Geometry
Third Year, Latin Greek English Physics	Third Year, French (or Spanish) Modern History English Physics	Third Year, Modern History English Physics Drawing
Fourth Year, Latin Greek English (Elective)	Fourth Year, French (or Spanish) American History and Government English (Elective)	Fourth Year, American History and Government English (Elective) (Elective)

## IV SCIENTIFIC COURSE

First Year,  
German  
Botany  
English  
Algebra

Second Year,  
German  
Zoology  
English  
Geometry

Third Year,  
Physics  
Drawing  
Trigonometry  
(Elective)

Fourth Year,  
Chemistry  
Drawing  
American History and Government  
(Elective)

## V BUSINESS COURSE

First Year,  
(any other course)

Second Year,  
(any other course)

Third Year,  
Spanish  
Business Arithmetic  
Bookkeeping  
Typewriting

Fourth Year,  
Spanish  
Business Practice  
(Commercial Geography)  
(Commercial Law)  
(Shorthand)

III A large city high school, located in the West, where fixed courses have been abandoned. The school offers a wide range of subjects, requires certain fixed units by groups, and makes up a different course of study for each high school pupil. The following studies are offered, the numbers in parenthesis following each indicating the number of years of each subject offered by the school.

## GROUP I — Languages

Latin (4)  
Greek (3)  
German (4)  
French (2)  
Spanish (2)

## GROUP II — English

English Composition (2)  
English Literature (4)  
Hist. Eng. & Am. Lit. (1)

## GROUP III — History

Ancient History (1)  
Medieval History (1)  
Modern English History (1)  
General World History (1)  
Am. Hist. & Govt. (1)

## GROUP IV — Mathematics

Algebra (1, 1½)  
Geometry (1, 1½)  
Trigonometry (½)  
Surveying (½)  
Business Arithmetic (½)

## GROUP V — Science

Botany (1)  
Zoology (1)  
Biology (1)  
Physical Geography (1)  
Physics (1)  
Chemistry (1)  
Geology (½)  
Astronomy (½)

## GROUP VI — Miscellaneous

Music (2)  
Freehand Drawing (2)  
Vocal Expression (2)  
Physical Training (4)

## GROUP VII — Vocational

Mechanical and Geometrical Drawing (2)  
Manual Training (3)  
Domestic Science (2)  
Household Management (1)  
Bookkeeping (1)  
Business Practice (1)  
Shorthand (1)  
Typewriting (1)

## Rule governing combinations and graduation

(1) Students, to graduate, must complete 15 years' work, viz., four studies each year for three years, and three studies one year.  
(2) Students may, on permission, take as many as five studies or as few as three studies each half-year.  
(3) Students, to graduate, must have had two years' work in groups I and II, one year's work in each of the other groups, and four years' work in some one group.  
(4) Study cards must be made out each half-year, and must be approved by the principal and the parent.

The three types of high school courses given above illustrate the development which has taken place, and the tendency. Excepting agriculture, all new forms of instruction are represented in the one school. The advantages to the pupil are evident, while it is clear that

such grouping of courses to meet individual needs as is provided for in the third type has advantages over that provided in the second type.

In some cities high school development has taken a different direction, and instead of expanding the high school to meet the many different needs, new types of high schools have been founded, and type or class high schools have resulted. There are to-day, in different places, the following different types of secondary schools.

(1) The so-called cultural or general high school; offering courses in the languages, literature, history, mathematics, and some science. This is distinctively a college preparatory high school. (2) The manual training (*q.v.*) high school; offering courses in science, mathematics, modern languages and history, English, and shopwork. This is preparatory for the engineering colleges, and work in shops and trades. It often includes the third type, for girls. (3) The household arts (*q.v.*) school. While usually included under the manual training school, a few such are being established separately. It offers courses in English, history, the sciences, and subjects relating to household management, and is a technical school for women's work. (4) The commercial high school. (See COMMERCIAL EDUCATION.) This is an intensification of the commercial course, and offers good courses in modern languages, history, science, and office practice. It is preparatory for commercial pursuits, on a larger scale than the old business course. (5) The agricultural high school. (See AGRICULTURAL EDUCATION.) This offers courses in English, mathematics, sciences, some manual training and household science, and agricultural studies. It is preparatory for farm life, or for the colleges of agriculture.

It is desirable both that these different types of high schools should exist separately in some cases, and in many other cases should be combined in one. In their beginnings all new types of schools usually prosper better if provided for separately; but, after these new schools have established themselves and their work has been accepted as a good and legitimate educational effort, it is wise then to combine a number of such types in one school, and thus offer a larger range of choice to each high school pupil. The American high school, if it is to realize its highest educational purpose, should be preeminently a place for the testing of capacity, the development of tastes, and the opening up of vocational opportunities of many kinds. This involves intelligent oversight and direction on the part of teachers and principals, a rich and varied curriculum from which to select, and freedom from hard and fast prescriptions.

E P C

See also articles on various subjects of the curriculum, *e.g.* LANGUAGE, ENGLISH, LITERATURE, ENGLISH, GEOGRAPHY; HISTORY; GREEK; LATIN, etc.

### The Elective System of Secondary Schools

— In the course of its evolution, the high school has developed an extensive program of studies, — four or five foreign languages; English for every grade; mathematics for three or more years; two, three, or four sciences, history for two or more grades, and, in addition, manual and commercial subjects. These have contributed to the making of a program far too extensive to be within the reach of any one pupil. For a time with the introduction of new subjects, less and less time was assigned to each, with the result that when the *Report of the Committee of Ten* (*qv*) was written, many large high schools were giving twelve and fourteen weeks' courses in science, short courses in history, and smatterings of three or more foreign tongues. The *Report of the Committee of Ten* greatly emphasized the desirability of an intensive treatment in the high school of relatively few subjects. The effect of this *Report* was only rarely the complete elimination of any subject from the high school, but generally resulted in a tendency to intensify and extend the treatment of each one. More than ever did it become necessary that the individual student should take but a part, and frequently a small part, of the entire range of subjects open to him. Another tendency contributing to the flexible course of study was the increasing range of capacity and interest found in the students of the high school. A variety of studies in science, drawing, commercial branches, and manual training were introduced to meet these demands. A third element in the development of the flexible course grew out of the conception in the *Report of the Committee of Ten* that it was of less importance what particular studies were pursued than what was the method employed in teaching them. From the standpoint of the majority of the Committee, each secondary school subject was assumed to have equal value with any other, if properly taught. It was, therefore, natural to assume, if a pupil manifested a strong aversion to Latin or mathematics, that some other equally well taught subject could be substituted. (See FORMAL DISCIPLINE.)

Not long after the appearance of the *Report*, students of education began actively to question certain fundamental assumptions implicit in it, and particularly the disciplinary conception advocated by the Committee. It was commonly asserted that Latin, better than any other subject, trained faculties of observation, verbal discrimination, powers of analytical thinking, etc. Equally, it was claimed that the study of mathematics strengthened reasoning powers and greatly improved the capacity for systematic generalization. A series of critical articles, as well as certain investigations in psychological laboratories, tended during the last decade of the nineteenth century to unsettle existing preconceptions regarding mental discipline; in fact, there developed a tendency

to assert that mental training should be a secondary consideration in the teaching of any subject, and that the subject itself should involve a content of knowledge or other power-producing material which should justify it and that, in the course of its presentation, mental training would follow as an accompaniment.

Finally, in recent educational theory there has grown up an increased belief in the wisdom of adapting education to the individual. This represents a considerable departure from an older theory of education, that the individual should be fitted to a given field of subject matter. This change came about, partly, from the causes already presented. It was found that not only the interests, but the needs and capacities of secondary school pupils vary greatly. Furthermore, it was found that the important end of education was to prepare individuals for some field of activity wherein that which was learned in the high school would find application, either as culture or vocational power.

The foregoing influences resulted in the development of the so-called elective system. It is true that, from its beginnings in the academy, the secondary school program had been somewhat elastic, but its elasticity had assumed the form of alternative courses, each course, however, representing a fixed and unvarying demand on the pupil. Naturally, alternative courses varied mainly in their demands for foreign language and for science, English and mathematics were usually prescribed subjects.

The elective system, however, carried the matter of alternative subjects to the point of allowing each pupil, within the limits of the range of subjects presented by the school and the other inherent restrictions of program, substantially to make up his own course. From the standpoint of the school or the pupil, the important consideration was not always so much the subjects which could be taken as those which could be omitted. During the last years of the nineteenth century and the first decade of the twentieth, the literature of secondary education was filled with discussions of the elective system. It was felt by some that it represented a demoralizing tendency in that it weakened the educational conception of discipline through the more difficult subjects. Educational conservatives feared that it meant a persistent discounting of classics and mathematics. They apprehended a rapid development of the more vocational studies, and denied that the individual pupil had any capacity for self-direction in the choice of a program of studies. They asserted that, from the standpoint of the best development of the individual, it was highly important that certain fields of culture should be opened to him, even by compulsory methods. In only a few schools did the theory of free election of subjects make much progress. In these instances the graduation of the pupil was made to depend upon the

accomplishment of a certain number of units of work, but without reference to any specific subjects. He might omit history or mathematics, no less than a foreign language or a branch of science. More commonly the system took the form of a certain number of prescribed studies, with a considerable range of alternatives or options from which the pupil could choose. In the case of some large high schools, for the requirement of specific subjects, there was substituted the demand that, for graduation, a minimum number of units of accomplishment in foreign language, science, history, etc., should be presented, the pupil, however, retaining the privilege of electing among the various subjects in science or history as the case might be.

As a rule, few of the apprehended evils of the elective system have developed in practice. There has been an increased tendency to induce the pupil to make his selections not only with the approval of some advisory teacher, but of parents as well. The limitations of the school curriculum, even in the larger schools, have acted as an important barrier to free election. Furthermore, the fact that a considerable number of students anticipate entering college where the entrance requirements are more or less prescribed has prevented anything like a free use of possible electives.

While the tendency is still to extend the possibilities of election of secondary school subjects, it is nevertheless true that important underlying problems must be solved before an adequate discussion of election is possible. There yet exists no satisfactory theory regarding educational values, especially of secondary school subjects. Quite universally, for example, algebra and geometry are prescribed for both boys and girls in secondary schools. Neither experience nor the tests of educational laboratories serve yet to demonstrate the superior value of these subjects. The same may be said to be true of the foreign languages so far as their training value is concerned. The science subjects have undergone steady modification in modern education, becoming more formal and rigid. There is yet no satisfactory evidence that, as now taught, these sciences contribute in an important way to either culture or practical capacity in greater degree than other possible subjects.

In prescribed programs it is the tendency to require subjects such as foreign language, mathematics, and science, which are most fully organized and which lend themselves most satisfactorily to traditional methods of pedagogic treatment. Until, however, there exists more satisfactory knowledge regarding educational values, it will be difficult to treat the subject of the elective system with anything like finality. It can be easily seen that the arguments for and against election hinge upon the theory of educational values and the capacity of a school to effect individual programs

adapted to the various pupils. If we believe that a limited number of well organized secondary school subjects give either practical capacity, cultural insight, or mental training to be equaled in no other way, then it is a fair assumption that the school program should make these subjects prescriptive. There is little place for election, since the self-knowledge of the pupil and the experience of his parents are altogether insufficient to offset the results of the constructive effort which has gone to the making of the programs. If, on the other hand, we are inclined to believe that the educational values of certain subjects have been greatly exaggerated, and that what the pupil shall study is of less importance than his interest in the subject and the methods employed in teaching it, then it can easily be seen that satisfactory arguments can be made for allowing a part selection on the part of the pupil himself.

Other factors naturally enter into the discussion. Freedom of election means, naturally, that popular teachers will be sought and unpopular ones avoided, — a result which may tend to demoralize administration, and may or may not tend to promote more effective pedagogical methods on the part of the teachers themselves. It is believed that free election would tend to promote the study of practical subjects, at the expense of the more cultural, but again the relative educational values of the two types will be disputed. It is highly probable that a more extended analysis of the subject of election will have to wait a fuller and more scientific formulation of educational theory, as applied to secondary school studies.

There are many reasons for believing that the high school as at present organized contributes certain types of definite training more effectively than it develops culture and appreciation. On the other hand, the greatest deficiency of existing high school programs seems to be their incapacity to produce results of a persistent nature, for example, the study of a foreign language or of mathematics, even when well carried on, fails largely in the face of later demands, the general goal aimed at is not realized. Distinctions will have to be made among various high school studies, with a view to determining the specific principles or purpose which each should serve in a program of fairly well defined educational ends, and in adapting to each subject its own suitable method. This may be illustrated in the case of English. One object of the teaching of English in the high schools is undoubtedly efficiency of expression, both oral and written. Another object, however, and quite distinct from the above, is appreciation of good literature. It seems highly probable that these two ends will have to be attained by radically different methods. The same distinction will apply to certain of the sciences, when pursued from the standpoint of application in vocation

on the one hand, or service in general culture on the other.

The general discussion of the elective system has probably greatly promoted interest in the problems of educational values. It brought subjects into competition, as it were, in a definite way. Until, however, more knowledge is available, many educators will assume that the choices made by the pupil, even when dictated by whim and caprice, may, and, so far as he is concerned, will be no worse than the choice made by a more or less inflexible system which not only fails to take account of him as an individual, but which, to a large extent, has had its origin independently of the study of any group whatever of actual living individuals.

**Six Years' Course of Study** — The fact that the American secondary school, unlike similar schools in Europe, takes the pupil at fourteen, or on the completion of an elementary course extending over eight years, is to a certain extent one of the effects of the historical development of American education. The common school or the elementary school was first established, and, in order to accomplish a full measure of general education, it involved eight or nine, and sometimes ten grades, each a year in length. The typical American elementary school of to-day consists of eight grades, and carries the average pupil from the age of six to the age of fourteen. The first secondary schools — the Latin-grammar school and then the academy — partook something of the character of European secondary schools, in that they maintained preparatory classes in which attention was early given to some secondary school studies. The public high school, however, was almost universally designed to succeed the elementary school course, and to build on it. As a consequence, admission to the high school everywhere requires the completion of an eight-year elementary course, and brings the pupil in at approximately fourteen or fifteen years of age.

This situation has obvious defects. It cannot be insisted, of course, that all American children, or even any considerable number of them, should complete the high school course of study. For those who do, however, the postponement of the beginning of foreign language study, as well as of algebra and geometry, works undoubted harm. For the boy who is to go through high school and into college, there can be little doubt but that the years between twelve and fourteen under the present system of schooling are largely wasted, at least, when viewed from the standpoint of the mastery of particular studies which should assist in the higher schools. The attention given to this subject in recent years has led to a fairly widespread demand for a six-year course of study in the high school, which should take pupils at approximately the age which is becoming customary in some European countries, and which especially should aid them to begin the study of foreign language at

a time when the vocal and auditory organs are still plastic. The administrative difficulties have been so great, however, that only in rare instances has the experiment been tried. The chief difficulty is found in the unwillingness of the American people to permit either a differentiation of schools or a differentiation of classes of studies before the elementary school course has been completed. On the other hand, there is little tolerance for the prescription of foreign language study for all pupils in the upper grades of the elementary school. The result has been that, while a considerable literature has been produced bearing on the desirability of extending high school studies and high school methods downward, very little of a practical nature has been accomplished.

The problem is now being approached in some cities in a different way. It is recognized that the boys and girls from twelve to fourteen years of age possess certain distinctive characteristics and educational needs, which should separate them from the primary school which has preceded. In not a few cities it is now customary to group the upper grades in what are sometimes called intermediate schools where favorable opportunities may be given for manual training, domestic science for girls, commercial studies, and, in a few instances, foreign language. While few of these schools have reached the point of differentiating their courses, there can be no doubt that in a large number of instances they are ready to do so, if public opinion responds favorably. One of these schools in a Massachusetts city (Fitchburg) now receives pupils on the completion of the sixth grade, and admits them to any one of four courses. Certain studies, such as English, history, geography, and music are common for all, and are taken jointly in the classes. Certain other studies are alternative, and it is on the basis of these that the courses are distinguished. For example, boys who wish it may take two hours of manual training per day, and thereby become members of the industrial arts course; for them the arithmetic and drawing will also be somewhat specialized along the lines of the industrial arts. Another group of boys and girls, instead of manual arts, may take a foreign language, the beginnings of algebra, geometry, and English history. This is obviously a high school preparatory course, and may legitimately be regarded as part of a six years' high school course, which it is hoped in time may become five years in length, thus admitting pupils to college one year earlier. A third course offers to girls two hours per day of household arts, the subject being treated very broadly, with related history and science. A fourth course, known as the commercial course, offers opportunities in typewriting, commercial arithmetic, the beginnings of book-keeping, and a line of work wherein commercial geography and industrial history are combined.

It is not intended that any of the above

courses shall be vocational, but that some of them shall draw from the world of vocational activities studies and problems that are significant and vital to the pupils concerned. Neither is it intended that any of the above courses shall be a blind alley, in the sense that it leads to no higher work. Nevertheless, it is obvious that a pupil from the industrial arts course who wishes to go through high school will have to take additional time in order to meet the language requirements.

The above represents a type of development in educational administration which will probably realize the purposes of the so-called six years' course of study, without involving premature differentiation of classes of pupils on the basis of their ability or economic state in life. It will afford an opportunity to make of foreign language study something more effective than is possible at the present time. It will promote departmental teaching, and the introduction of college-trained teachers in the higher grades.

D S

**Maintenance and Support** — It is only within recent years that any real attempt to aid in the maintenance of secondary schools has been made by the states or counties, and the giving of such aid, though becoming more common each year, is still not a general feature of our state school systems. (See APPORTIONMENT OF FUNDS.) In some states no distinctions are made between common or elementary schools and high or secondary schools, either in statistics or in finance. Communities which maintain secondary schools are placed on the same footing as communities that do not, with the result that the maintenance of a high school is purely a local burden. Secondary education is, comparatively speaking, so recent an undertaking that most states have not as yet made any definite provision for the equalization of its advantages. These schools, however, have recently grown greatly in popular favor, due in part to the need of increased education to meet the changed conditions of life, to the introduction of new studies and methods of instruction, and to the changed conception of the purpose of secondary instruction. The result is that the high school is destined soon to be a regular and a necessary part of our systems of public instruction, and that high school facilities will be provided for all. This change in attitude is certain to add force to the demand for some form of general aid for secondary, as well as for elementary instruction. The maintenance of elementary schools and a state university, and the refusal to help in the maintenance of secondary schools, is not a logical position for a state to assume.

The expense of maintaining secondary schools is so much greater than that for elementary schools, due to the need of better trained and more expensive teachers, smaller classes, the smaller number enrolled, and more expensive teaching equipment, that the need of some

general aid is apparent, if they are to be developed at all generally. This is accentuated by the fact that the cost for elementary schools is also increasing, and that the money now at hand and originally intended for the support of elementary schools alone is rapidly proving insufficient for the support of both classes of schools. Many communities are at present trying to support a full twelve-year school system with funds hardly sufficient to properly maintain the elementary schools.

Such provision as has been made by the different states extends from mere permission to communities to form such schools and to tax themselves to pay for them, — which is analogous to the first legislative permission to the people of a community to organize a taxing district and tax every one for the support of an elementary school, — to a general state tax levied for the support of secondary education and apportioned and used for that purpose alone. The first is the mere beginnings and the second is the culmination of the process, and between the two are many intermediate plans for the granting of some degree of aid to secondary schools.

Mere permission to cities, towns, districts, and unions of districts to form a high school and to tax themselves to pay for it, must be regarded as the first step in the process of the evolution of a system of general aid to secondary education. A petition and an election are the usual preliminary steps, and after the formation of the high school district an annual local tax, frequently of a limited amount, is permitted for the support of the school. Sometimes such schools are under the control of a separate school board, known as a high school board (*qv*), and sometimes the board which has control of the elementary schools merely takes charge of the high school also. A number of states have taken this first step, but have not gone further. The next step is found where the principle of local support is retained, but the taxing area is extended to a larger area, as to the county as a whole. In states which have taken this step, common in the West, we find the county high school. The common features of these permissive high school laws are the necessity of a petition asking for the submission of the question of the formation of a county high school to a vote of the people, a special election to decide the question, the appointment or election of a board of trustees for the school, an annual county tax for support, free tuition in the school to all residents of the county, and usually provisions for the dissolution of the school, after a time, if desired, by vote of the people. With the formation of a second county high school at some other place, or with the segregation of a certain district or districts to form a local high school separate from the county high school, the process of subdivision of the high school district has begun.



The next step in granting aid to high schools is taken when the state begins to make a series of grants, or subsidies, to aid secondary schools. A number of states have taken this step, though the plan has been worked out but poorly in most of the states. The granting of such aid naturally stimulates the development of high schools, and if the appropriation to pay the grants or subsidies is not of a flexible form, and one that increases with the growth of the schools, the result will be a failure to provide the aid intended. Where a definite legislative appropriation has to be made to pay the grant, as in a number of the states, the appropriation is likely to fail to increase as fast as the schools do, and the result is a forced scaling down of the grant. In Minnesota, for example, the state aid determined upon was \$1000 to each properly approved school, but the schools increased so much faster than did the appropriation that the grants were scaled lower and lower for a number of years. The same thing happened in Pennsylvania. This gives an uncertainty to the value of the grant which makes the method less desirable than other plans that can be devised. The method, also, places all of the premium on the mere existence of the school, but none on the employment of a sufficient number of teachers to do the work properly, or on the addition of such subjects of instruction as will make the school of greater worth. A school with only a single "classical course" stands on the same footing, so far as state aid is concerned, with another school which employs relatively more teachers and offers two or three courses of instruction. The second school will cost much more per capita to maintain, assuming that the two are located in somewhat the same kind of communities, and will attract more students and will render a much larger educational service, but under the lump subsidy plan of aid it will receive no greater reward than the smaller and poorer school. If it is worth while to aid secondary education at all, then the state ought to so apportion its aid as to place a premium on the giving of instruction under good educational conditions. The subsidy method places no premium on growth or better instruction and makes the position of the state as to the improvement of existing conditions a purely negative one. The subsidy method marks the beginnings of state aid, and ought to be abandoned as soon as possible for a better form of assistance. If the subsidy plan is to be used, it ought to be graded both as to years and character of instruction offered, and the power to grant, scale down, or withhold the grant ought to be centralized in some responsible educational body, possessing powers of inspection. The one marked merit of the subsidy plan, where graded subsidies are employed based on the number of years of instruction offered, is that it places a premium

on the development of two-year and three-year high schools, as well as four-year schools. Any good instruction beyond the grammar school, even if for only one year and taught to only a few pupils, is a stimulating influence which reacts most favorably on all lower instruction. Two-year high schools frequently develop into four-year high schools, and communities are usually able to provide two years of instruction before they would be able to provide a fully equipped four-year high school.

California and New Jersey stand as examples of states which have reached the culmination of the process. In both states the high school has been adopted as a part of the state school system, though by a somewhat different method in each. In California the complete adoption of the high school has come through the provision of separate and special taxation for the support of high schools and by a constitutional provision that the income from the state school fund, and the proceeds of all previous taxation, can be used only for the support of elementary schools. This forever prevents the robbing of the elementary schools to maintain high schools, a process which goes on in many of our states. For the support of the high schools of the state a special state tax for high schools is levied and apportioned. To keep the income for this purpose constantly up to the needs of the schools, it has been provided that the tax to be levied shall be determined annually by multiplying the number of high school pupils in average daily attendance in the state the preceding year by \$15, which requires a state tax of approximately  $1\frac{1}{2}$  mills. This is then apportioned to all approved high schools in the state on the following basis: one third equally to all schools, regardless of size, and two thirds to all schools on the basis of average daily attendance. The apportionment plan could be improved still further by making a partial apportionment on the basis of the number of teachers actually employed. Length of term is here a negligible factor, because all schools are required to maintain a term of at least 180 days to receive any aid. New Jersey offers an example of the complete incorporation of secondary education into the state school system. Here the apportionment of school funds is made to high schools as to elementary schools, on the teacher basis, viz. \$400 for every teacher actually employed in each high school, and the remainder on a basis of so much per pupil per day in actual attendance, in all kinds of schools. The apportionment of state aid to a high school is thus made on a plan similar to a kindergarten, primary school, or grammar school. All belong to the same state school system, all share in the apportionment of funds, and all are paid out of a common fund. The value of such a plan, if sufficient revenue can be obtained, is

at once evident. High schools cease to be a separate part of the school system, and become an integral part of the system of public instruction. The state then rewards a community's efforts according to the amount of instruction provided, as measured by the number of teachers employed, and according to the actual amount of work done, as measured by the attendance upon the instruction offered. If a rural union school will provide only the ninth-grade work, and thus give the boys and girls in the rural districts a taste of something beyond the common school branches, the state will reward such an effort by a grant for both the teacher employed and the extra attendance resulting. If a village will employ one additional teacher and provide two years of high school instruction, the state will similarly reward such effort. To the large city school the state offers a similar standing premium on additional effort, every new teacher and line of work added receiving additional aid. The simplicity, justice, and automatic adjustment of the plan to community needs and efforts are strong points in its favor. One thing, though, which ought always to accompany such a complete incorporation of the high schools into the public school system, is a proportional increase of available funds, with provision for an automatic increase. There is no wisdom in incorporating high schools into the state school system, if the elementary schools are to be made to pay the bills.

Such an incorporation of high schools into the system of public instruction is not possible if the census basis of apportionment is used (See article on APPORTIONMENT OF SCHOOL FUNDS.) The essential unit in higher, as in elementary instruction, is the teacher who must be employed to teach the pupils, and not the number of pupils alone. Under a combination of teacher-actually-employed and attendance bases, as used in New Jersey, the high school is placed on the same basis as any other school, and thus becomes an integral part of the system of public instruction. The California and the New Jersey plans are the best that have been evolved for the support and incorporation of high schools. The California plan is especially meritorious in that it provides a separate and a large fund for aid to secondary education, and the New Jersey plan is especially commendable in that it establishes one organization. In view of the possibility of a reorganization of the plans for upper grammar grade and high school instruction (see article on INTERMEDIATE HIGH SCHOOLS), this must be considered an important gain. If in the future a six-year high school should prove to be a desirable addition to our school work, the present somewhat rigid classification in some states would stand in the way.

Another form of support for high schools comes in the attempt to abolish tuition fees for

those children who do not happen to live in high school districts. Children who live in cities, towns, or districts which maintain high schools of course have free high school tuition, but children who live in adjoining districts which are not a part of some high school district are almost invariably forced to pay a tuition charge, and this is frequently made very high for the purpose of reducing the attendance of such outside pupils. The unfairness of such tuition charges is at once evident, and a number of states have attempted to do away with them. The method employed in doing so varies in different states. In Indiana the pupil applies in person for a transfer, which, if granted, carries with it the payment of fees; in Ohio the township from which the pupil comes is directed to assume the fees, in Wisconsin a bill is presented by the school receiving the pupil to the district from which he comes, and then a tax is levied to pay the bill; in Massachusetts the town in which the pupil resides must pay the tuition charge, unless it is one of a class of poorer and smaller towns, in which case the state pays the bill, and in Connecticut the state reimburses towns for two thirds of the tuition paid, and will also pay one half of the cost of transportation. In California a very simple and very effective method has recently been worked out, whereby every child in the state has free high school privileges. The county superintendent of schools of each county is required to estimate annually the number of probable high school pupils for the coming year who live in non-high-school territory, and then to have levied by the county authorities a county high-school-tuition tax sufficient to pay the tuition charge of all non-high-school district pupils in the nearest or most convenient high school. As the state pays the high schools for all pupils in average daily attendance, this includes state aid to all. It remains purely optional with a district now whether it will form a high school of its own, join a high school district already in existence, or pay its tax for the tuition of non-high-school pupils. In any case the cost is paid by general taxation, levied on all property for high school purposes.

E. P. C.

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## HIGH SCHOOL, ACCREDITED

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**HIGH SCHOOL, ACCREDITED** — See ACCREDITED SCHOOLS.

**HIGH SCHOOL, ACCREDITING OF.** — See ACCREDITED SCHOOLS, COLLEGE EXAMINATION AND CERTIFICATION BOARDS

**HIGH SCHOOL, AGRICULTURAL** — See AGRICULTURAL EDUCATION, under the subdivision on Secondary Schools

**HIGH SCHOOL AS A SOCIAL CENTER.** — See SCHOOL AS A SOCIAL CENTER; also the RURAL SCHOOL PROBLEM

**HIGH SCHOOL ATHLETICS.** — See ATHLETICS, EDUCATIONAL

**HIGH SCHOOL BOARDS** — Boards of control having charge of the general management of high schools. Such boards are found in states where the organization of high schools, separate from elementary schools, has been provided for in the laws. This is commonly found in the West. In many Western states the law provides for the organization of district high schools, town high schools, and city high schools, by action of the people or of the Boards of Education or Trustees for such districts, towns, or cities; and also for the organization of union high schools by the joint action of two or more boards or districts, and county high schools by vote of the people of an entire county. In the first case the Board of Education for the elementary schools of the district, town, or city becomes the high school board as well, and, except in so far as the finances of the two schools are usually kept separate, the two classes of schools are managed as a unified system by the one board. The added high school merely becomes a part of the public school system of the district, town, or city, and has no separate management, except in some states where high school money must be levied and paid out separately from elementary school funds. In the case of union district high schools a separate board of education is elected to take charge of the high school, usually consisting of representatives from each of the districts so uniting to form the union high school. In the case of county high schools, the County Board of Education, where such a body exists, is usually made, *ex officio*, the high school board for all county high schools, and where it does not

## HIGH SCHOOL FRATERNITIES

exist a special high school board is elected. In many of the Southern states, and in some of the upper Mississippi Valley states, county high schools, partly or largely agricultural in type, have been created within recent years. These are supported by general county taxation and state aid grants. These schools are under the county boards of education, or special county high school boards, elected or appointed for the special purpose. The county superintendent is commonly a member, *ex officio*, of such high school boards. E. P. C.

### Reference:—

The California School Law, *High School Act*, contains a good explanation of this form of separate high school management, and the North Carolina or North Dakota School Laws describe the county high school of agriculture type of high school management.

**HIGH SCHOOL, COEDUCATION IN.** — See COEDUCATION.

**HIGH SCHOOL, COMMERCIAL.** — See COMMERCIAL EDUCATION

**HIGH SCHOOL DISTRICTS** — School districts organized primarily for the establishment and maintenance of a high, or secondary school. Sometimes these coincide with existing school districts, formed for the maintenance of elementary schools, as in towns or cities; sometimes they are larger and include two or more elementary school districts, and not infrequently a dozen or more elementary school districts. Sometimes the high school district is the same in size as a township, and sometimes, especially in the West, the same in size as a county. See DISTRICTS, HIGH SCHOOL BOARDS, HIGH SCHOOLS, SUPPORT OF. E. P. C.

**HIGH SCHOOL, EVENING** — See CONTINUATION SCHOOLS, INDUSTRIAL EDUCATION

**HIGH SCHOOL FRATERNITIES** — This term applies to organizations of high school pupils modeled in imitation of the Greek letter societies in colleges. (See FRATERNITIES.) The high school secret society is usually designated by a Greek letter symbol taken from the initials of the motto of the club. Rites of initiation, grips, pass words and the other usages of secret organizations are common features.

These societies began to appear about the year 1890. At first the movement attracted but little attention, although in some instances high school principals and teachers gave sympathy and support, but in most cases wherever any attitude was assumed by the school authorities, it was in opposition to such societies. The number of organizations increased rapidly, and with this increase came a more thorough organization. The society chapters began to form national organiza-

## HIGH SCHOOL FRATERNITIES

tions. Instead of using the homes of the members as places for the gatherings, many chapters secured rooms in office buildings, wherein meetings were held. The expense of membership increased. Serious abuses appeared in the practice of the rites of initiation and in the influence of the societies upon high school discipline and scholarship. As a result, the subject of high school secret societies came to attract the earnest attention of schoolmen, of superintendents, and of various educational organizations throughout the United States. One of the most notable investigations was that conducted by the National Education Association through a special committee, reports from which were presented at the 1904 meeting at St. Louis and at Asbury Park in 1905. In 1904 a report was made by a committee on the influence of fraternities in secondary schools to the eighteenth Educational Conference of the academics and high schools in relation with the University of Chicago. Under the auspices of the Massachusetts Council of Education a study of high school fraternities and sororities was made and a report presented to that body in 1905. The consensus of opinion in each case was that the high school secret society, whether a fraternity composed of boys, or a sorority composed of girls, is an undesirable element in the life of the secondary school. The reasons adduced are as follows:

(1) The influence on the school is injurious by reason of the division of the school into cliques, the introduction of petty politics, and the loss of interest on the part of pupils in literary and other organizations with serious purpose. (2) The pupil suffers injury, the protection of secrecy gives opportunity for much evil to be practiced in the fraternity rooms. There is a decline in the spirit and standards of scholarship of the individual pupil. (3) There is no real need for such organizations in the high school because conditions are so different from those in college. (4) Such societies set up improper standards, and counteract the influence of the teacher. (5) They constitute a source of danger in the proper government of the school.

As a result of the findings of these various committees and of the expressions of opinion from men prominent in the work of education, boards of education have undertaken to lessen the influence and power of these societies or to eliminate them entirely from school life. Often such action has been met by determined opposition on the part not only of pupils, but of parents. In several instances the decrees of boards of education have been resisted and an appeal made to the courts. A notable instance is that of the Seattle High School Fraternity, before the Supreme Court of the state of Washington. The directors of school district No. 1 in Seattle had established

## HIGH SCHOOL FRATERNITIES

a rule whereby the use of the name of the Seattle High School by a fraternity was forbidden, and pupils were prohibited from becoming members of any secret society under penalty of being deprived of all privileges of the school outside of the classroom. A pupil so punished brought suit through his guardian to compel the school directors to restore him to these privileges. The judge sustained the action of the school committee. In several other cases the right of the school authorities to inflict various penalties on pupils for membership in secret societies has been sustained by the courts.

In a number of states drastic legislation has been passed with a view to controlling or abolishing the secret society in the high school. In 1907 Indiana, Kansas, and Minnesota passed laws of this nature. In addition to recourse to legislation, principals, superintendents, and school committees have undertaken in different cities to deal with the fraternity question by appeal to public opinion and by regulations forbidding the use of the schoolrooms, the school name, or the recognition of the organizations in any way in connection with the school publications. In some instances the cooperation of parents has been secured and the societies eliminated. In other cases the pupils themselves have joined with the teachers and agreed to give up the organization. The influence of the secret societies in the school itself has been successfully met by the encouragement on the part of the teachers of clubs and organizations of pupils each of which is based upon some real and valuable interest, such as debating, publication of school papers, glee clubs, and French and German circles. Under proper guidance membership in such organizations soon comes to be valued and esteemed by the pupils, and the secret society to some extent loses its charms.

The high school fraternity has its defenders not only amongst the pupils, but among parents and in the general public. It is claimed that such clubs constitute a natural and fitting opportunity for the expression of the social instincts of young people of high school age, and that the members learn important lessons in cooperation in managing the affairs of the society and in conducting various enterprises in the name of the club. It is pointed out by these advocates of the system that the abuses of which so much complaint has been made are incidental, and that under proper supervision and control such evils need not exist. They argue further that in schools where all the members are admitted to such societies there will not arise feelings of rivalry and jealousy such as exist where some members are left out in the choice for these organizations. The consensus of opinion is, however, against the existence of such exclusive sets or coteries of pupils in a public institution supported by

taxation, because their very presence is inconsistent with a truly democratic spirit

W O

#### See FRATERNITIES

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#### HIGH SCHOOL INSPECTION AND APPROVAL -- See ACCREDITED SCHOOLS

#### HIGH SCHOOL INTERMEDIATE. — See INTERMEDIATE HIGH SCHOOL.

#### HIGH SCHOOL, MANUAL TRAINING — See MANUAL TRAINING

#### HIGH SCHOOL, NORMAL TRAINING CLASS IN — See NORMAL SCHOOLS

#### HIGH SCHOOL, RELATION TO COLLEGE — See COLLEGE EXAMINATION AND CERTIFICATION BOARDS, ACCREDITED SCHOOLS, COLLEGE REQUIREMENTS FOR ADMISSION

#### HIGH SCHOOL, SELF-GOVERNMENT IN — See SELF-GOVERNMENT IN SCHOOLS

#### HIGH SCHOOL, STATE AID FOR — See HIGH SCHOOLS, Section on Support

#### HIGH SCHOOL TEACHERS, TRAINING OF — See TEACHERS, TRAINING OF

#### HIGH SCHOOL, TUITION CHARGES IN — See HIGH SCHOOL, section on Support.

**HIGHER EDUCATION** — A term somewhat loosely used with different connotations not only in different countries, but in each individual country. In England it is used by the Board of Education to refer to "education other than elementary" (See Education Act 1902, Pt III, § 2); but in Graham Balfour's *Educational System of Great Britain and Ireland* (Oxford, 1903) higher education refers to "that general training given in Universities and University Colleges," while the most recent work on secondary education bears the title *Higher Education of Boys in England*

(Norwood, C, and Hope, A H, London, 1909). The same confusion exists in Germany. Lexis, *Das deutsche Unterrichtswesen*, uses the term *Das höhere Schulwesen* to refer to the secondary school system, while Fick, *Auf Deutschlands Hohen Schulen*, deals entirely with the German universities, and the term *Hochschule* always signifies an institution of university grade. In southern Germany this attitude is well marked by the designation of secondary schools as *Middle Schools (Mittelschulen)*. The German use is also prevalent in the United States, where higher education refers to such education as is given above the high schools. Thus the title of Chancellor Brown's work, *The Making of our Middle Schools* (New York, 1903), is intended to mark the place of secondary education as intermediate between elementary and higher, and this use is more clearly emphasized in various essays on "Higher Education," which deal with the education in the college and university. In France the term *Éducation Supérieure* definitely means education beyond the secondary schools.

See MITTELSCHULE.

#### HIGHER NORMAL SCHOOL OF FRANCE — See NORMAL SCHOOLS

**HIGHLAND COLLEGE, HIGHLAND, KAN** — A coeducational institution which grew out of the Indian Mission School. Opened as a university in 1857, it is under the auspices of the Presbyterian Synod of Kansas. Academic, collegiate, commercial, and music departments are maintained. The entrance requirements are equivalent to about fifteen units. The degrees of A B and B S are conferred on the completion of the necessary courses.

**HIGHLAND PARK COLLEGE, DES MOINES, IA** — A coeducational institution founded in 1889, now under the control of the Presbyterian Church. It maintains a normal college, academy, colleges of liberal arts, law, engineering, pharmacy, music, oratory, commerce, a correspondence school, and a summer school. The college gives degrees of A B and B S, on three-year courses. Lower credits are required for admission to the three-year engineering courses. There is a faculty of sixty members.

**HILDEBRAND, HEINRICH RUDOLPH** (1824-1894) — German philologist, who exercised considerable influence on the teaching of German in elementary schools. Born in Leipzig, he attended the Thomasschule, and thence proceeded to the university. He returned to his old school in 1848, and proved a very capable teacher. His interest, however, was mainly in linguistics, and as early as 1859 he began to assist Jacob Grimm in the edition

of his dictionary, and on his death became one of the coeditors of the work. In 1868 he resigned his position at the school, and in 1869 became extraordinary and in 1874 ordinary professor in the University of Leipzig. His chief work was *Vom deutschen Sprachunterricht in der Schule und von deutscher Erziehung und Bildung überhaupt* (*Teaching of German in the School and German Education and Culture generally*, 1865), in which he recognizes the cultural and national value of training in the vernacular. He emphasizes the importance of oral expression in the schools and the teaching of the significance and history of words, believing, as he did, that language in its development presents a composite picture of national history and growth. For similar reasons he would not neglect dialect forms, the embodiment of the thought and life of the people. His other works are *Beiträge zum deutschen Unterricht* (*Contributions to the Teaching of German*, 1886), *Gesammelte Aufsätze und Vorträge zur deutschen Philologie und zum deutschen Unterricht* (*Collected Essays and Lectures on German Philology and Instruction*, 1890).

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**HILFSSCHULEN** — See EXCEPTIONAL CHILDREN, SPECIAL CLASSES.

**HILL, FRANK ALPINE** (1841-1903) — Superintendent of public instruction in Massachusetts; was educated at the Biddeford, Me., High School and at Bowdoin College, graduating in 1862. He was principal of secondary schools in Maine and Massachusetts from 1862 to 1893, when he was chosen secretary of the State Board of Education of Massachusetts, which position he filled for ten years. He was active in the organization of district school superintendents in the state. His educational writings include *Seven Lamps of the Teacher* (1902), a textbook on United States history (with John Fiske), and numerous essays on educational subjects. W S M

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**HILL, JOHN HENRY** (1791-1882) — Founder of the Hill School at Athens, Greece; was graduated from Columbia University in 1807. He went to Greece as a missionary in 1830, and two years later established the Hill School at Athens. This institution, which includes elementary, secondary, and normal departments, had large influence on the sub-

sequently organized municipal schools at Athens and the national schools of Greece. He translated a number of American and English books into the modern Greek. W S M

**HILL, MATTHEW DAVENPORT.** — See HILL, THOMAS WRIGHT

**HILL, SIR ROWLAND.** — See HILL, THOMAS WRIGHT

**HILL, THOMAS** (1818-1891) — Twentieth president of Harvard University; was graduated from Harvard. He was president of Antioch College from 1859 to 1862, succeeding Horace Mann (*qv*), and of Harvard University from 1862 to 1868. His educational works include an *Arithmetic* (1845), *First Lessons in Geometry* (1855), *Liberal Education* (1855), and *True Order of Studies* (1859). He invented the occulator and other contrivances for the teaching of mathematics. W S M

See HARVARD UNIVERSITY

**HILL, THOMAS WRIGHT** (1763-1851) — English educational reformer, born at Kidderminster, Apr. 24, 1763, the son of a baker and dealer in horse corn. Hill received his early education in a school at Market Harborough kept by a Nonconformist minister. In childhood he showed a strong taste for literature and physical science. At the age of fourteen he was apprenticed to a brass founder in Birmingham, where he became a member of Joseph Priestley's congregation, and threw himself with energy into the work of Sunday school teaching in connection with Priestley's chapel. He invented a system of shorthand, and devised a plan for the representation of minorities by a proportionate vote. Hill was the father of a distinguished family: viz. Matthew Davenport Hill (1792-1872), reformer of the criminal law, friend of Jeremy Bentham (*qv*), colleague of Mary Carpenter (*qv*) in the establishment of reformatories, and active advocate of the boarding out of pauper children; Edwin Hill (1793-1876), writer on the currency and an ingenious inventor who improved the machinery for the manufacture of stamps; Rowland Hill (1795-1879), who planned the scheme of penny postage and by persistent advocacy forced it upon a reluctant and ungrateful government; Arthur Hill (1795-1879), schoolmaster, whose son, George Birbeck Hill, was editor of Boswell's *Life of Johnson*; and Frederic Hill, Inspector of Prisons in Scotland and afterwards Assistant Secretary in the Post Office.

Hill's school in Birmingham was the result of the joint labors of himself, his wife, and four of his sons, Matthew Davenport, Edwin, Rowland, and Arthur. It is difficult to assign the original ideas which underlay its organization and discipline to the several members of this family group. Perhaps the greatest

credit should be ascribed to Rowland, who, greatly influenced by Maria Edgeworth's stories, began to teach in his father's school at the age of twelve, distinguished himself as a teacher of mathematics, and, at the age of seventeen, undertook the entire management of his father's money affairs and at last cleared off his debts. Rowland recorded in his *Journal* that it was the height of his ambition "to establish a school for the upper middle classes wherein the science and practice of education might be improved to such a degree as to show that it is now in its infancy." A new house was built for the school at Hazelwood in the outskirts of Birmingham, and its educational method became famous as the Hazelwood system. Special attention was paid in the curriculum (a) to the teaching of languages in which the "natural method" was employed, i.e. both dead and modern languages were taught in great measure orally and by conversational methods, the abstract technicalities of grammar being relegated to a subordinate place, (b) to elocution, with the purpose of refining literary taste and teaching right enunciation and inflection, (c) to the art of writing in such a way as to combine beauty and swiftness, (d) to the scientific teaching of arithmetic, including mental calculation and applied geometry and open-air surveying, and above all (e) to the formation of character and to inculcation of right ideas of moral duty, including a sense of civic obligation, the cultivation of social sympathy, and the love of justice. A full description of the aims and methods of the school was published (anonymously) by Matthew Davenport Hill in a work entitled *Plans for the Government and Liberal Instruction of Boys in Large Numbers, drawn from Experience*. This book was epoch-making. It forms one link of a chain of influence, which, beginning with Rousseau's *Emile*, took on English characteristics in the *Practical Education* (1798) of R. L. and Maria Edgeworth (qqv), and subsequently culminated in Stanley's *Life of Thomas Arnold* (1844). The authors of the book show that they are well acquainted with some of the writings of Pestalozzi and also of the older English educational reformers and of the French encyclopedists of the eighteenth century. Shortly after its publication (in 1822), Hill's book was reviewed by De Quincey. It fascinated Jeremy Bentham, and secured for the school the enthusiastic patronage of the Benthamite group. Numbers of pupils were sent to the school from the newly founded republics of South America and from Greece. A school was established in Stockholm in imitation of it. There is little doubt that the educational discussions provoked by the publication of the book had considerable influence upon the mind of Dr. Arnold, and bore fruit in his work at Rugby, 1828-1843. In 1827 the main body of the school was transferred

from Hazelwood to Bruce Castle, Tottenham, near London.

As for the mechanism of their plan of school government, they recognized their indebtedness to the monitorial tradition of medieval education and of the English Public Schools, but disclaimed any debt to Bell and Lancaster, whose services they recognized, but whose purpose they regarded as dissimilar. They applied somewhat inconsiderately to school conditions the machinery of elective local government, thus anticipating later experiments in the formation of the school city. Their ideal was a judiciously supervised, self-governing boy democracy. The details of their scheme were overintricate and a little doctrinaire. Joshua Toulmin Smith (1816-1869), himself a native of Birmingham, and, like the Hills, a member of the Unitarian Church, shared the same antiquarian enthusiasm for pure local democracy. But the vital significance of the educational doctrine of the Hills lay in its emphasis upon the moral and spiritual power which may be developed through the wise organization of corporate life in a skillfully ordered community. This is the conception which appealed to Thomas Arnold (qv), and to which he gave effective development at Rugby, with far-reaching results upon higher education throughout the world. The Hills were thus among the first to give utterance in the sphere of education to the new collectivist ideal which arose in reaction to the individualist presuppositions of eighteenth-century rationalism and of the French Revolution. One defect of their scheme, as of Dr. Arnold's, was that their school bore no organic relation to the public life of the adult community which it served. The Hills in their private school, like Dr. Arnold in the endowed school at Rugby, were, though intensely civic in purpose, unconsciously separatist in their influence upon subsequent educational organization. But in the circumstances of the time, this was inevitable — the close connection of King Edward School, Birmingham, with the Church of England making it natural that Nonconformist parents of the middle ranks should support a private school more in accordance with their convictions, just as the presuppositions of the then central government made it natural that Arnold of Rugby should resist any extension of state control over the religious and intellectual life of the great Public Schools. A chief part of the work of recent educational reformers in England has lain in the attempt to bring the conception of corporate school life (which is largely due to the work of the Hills and of Dr. Arnold) into living relation to the educational systems under government and local authorities.

A second defect in the system of the Hills, as also in that of Arnold of Rugby, was that it tended to induce precocity of moral sensitiveness. A former pupil, W. L. Sargant, wrote

of it: "By juries and committees, by marks and by appeals to a sense of honour, discipline was maintained. But this was done at too great a sacrifice. The thoughtlessness, the spring, the elation of childhood were taken from us, we were premature men."

M. E. S.

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**HILL, WALTER HENRY** (1822-1907) — Jesuit educator; was educated at St Mary's College at Marion, Ky., and at St Louis University. He was instructor in St Joseph College, Ky., and St Louis University, and was president of Xavier College from 1865 to 1869. He was author of *Elements of Philosophy* (1873), *Ethics* (1878), and *Historical Sketch of St. Louis University* (1879). W. S. M.

**HILLARD, GEORGE STILLMAN** (1808-1879) — Educational writer and textbook author, was graduated from Harvard College in 1828. Between 1856 and 1863 he published twelve school readers. He was also the author of a work on public instruction in Prussia (1836) and of numerous articles on the common schools of New England. W. S. M.

**HILLHOUSE, JAMES** (1754-1832) — Statesman, graduated from Yale College in 1773. He engaged in the practice of law; served as an officer during the Revolutionary War; represented Connecticut in Congress from 1791 to 1810, acting as president *pro tempore* of the Senate after the election of Thomas Jefferson to the presidency; he was commissioner of the common school fund of Connecticut (practically state superintendent of education) from 1811 to 1825, and for fifty years treasurer of Yale College (1782-1832). W. S. M.

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**HILLSDALE COLLEGE, HILLSDALE, MICH** — A coeducational institution, opened Dec. 4, 1844, at Spring Arbor, Mich., as the Michigan Central College. In 1853 the site was changed to Hillsdale, but the college

was not opened there until Nov. 7, 1855. There are seven departments, as follows: liberal arts, preparatory, theology, music, fine arts, oratory, household economics, pedagogics, business and shorthand. There were twenty-six members on the instructing staff in 1910-1911. The total enrollment in the same year was 371 students.

**HINDU EDUCATION** — See INDIA, EDUCATION IN.

**HINDU NUMERALS**. — See NOTATION

**HINSDALE, BURKE AARON** (1837-1900) — American professor of education and educational writer; was born at Wadsworth, Ohio, on Mar. 31, 1837, and was educated at the Eclectic Institute (afterwards Hiram College). He was for several years engaged in the work of the ministry. He was president of Hiram College from 1870 to 1882, superintendent of the schools of Cleveland from 1882 to 1886, and professor of the science and art of teaching in the University of Michigan from 1888 to 1900, succeeding William H. Payne (*q.v.*). His contributions to educational journals were numerous, and he wrote a large number of books on education. The latter include *Schools and Studies*, *President Garfield and Education*, *The Art of Study*, *Studies in Education*, *Jesus as an Educator*, *How to Teach and Study History*, *Teaching the Language Arts*, *Horace Mann and the Common School Revival in the United States*, and *History of the University of Michigan*. He published several works on American history and edited the writings of James A. Garfield. He was also active in the council of the National Education Association and the Michigan State Teachers' Association. W. S. M.

For portrait, see p. 219

See EDUCATION, ACADEMIC STUDY OF, HIRAM COLLEGE; MICHIGAN, UNIVERSITY OF

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**HIPPARCHUS** — The greatest of the Greek astronomers, born at Nicæa in Bithynia, c. 160 B.C. He seems to have studied at Alexandria, but the greater part of his work was done at Rhodes. He was a very careful observer, and he determined the length of the year to within six minutes, the obliquity of the ecliptic to within five minutes, the annual precession of the equinoxes to within eight minutes and eight seconds, and the eccentricity of the solar orbit to within  $\frac{1}{17}$ . He made numerous other important discoveries and laid the foundations for the work of Ptolemy. (See PTOLEMY and ALMAGEST) He may be called the first great teacher of astronomy and the first to place it upon a scientific basis. While trigonometry



(*q.v.*) had made a beginning before his time, he was the first to use it in any large scientific way, and he has therefore been looked upon as entitled to be called its inventor. Geography is also greatly indebted to Hipparchus, since he was the first to locate places upon the earth's surface by means of their latitude and longitude. D. E. S.

### HIPPIAS — See GEOMETRY.

**HIPPOCRATES** (c. 460–370 B.C.) — Greek physician and philosopher, the “Father of Medicine,” born at Cos of a family of priest-physicians, the Asclepiadae. His training he probably received mainly in the famous temple of health (Asclepion) at Cos. He studied under the sophists, Democritus and Gorgias, and under Herodicus, who applied physical exercises to the healing art. He traveled extensively, and practiced in many places. Many stories cluster around his name, the majority, however, are legendary. In a rationalistic age Hippocrates was the first to establish a medical science independent of superstitions and priestcraft and of philosophical speculation. There was no one disease, he held, without a natural cause. Diseases are due to seasons, climates, water, location, air, food, or exercise. The chief remedies for disease are regimen and diet, but there is also an innate restoring essence (*φύσις, vis medicatrix naturæ*). Numerous works are attributed to Hippocrates, but of these only about fifteen are regarded as genuine. His writings are marked by careful observation and broad experience. Many of his medical principles have stood the test of centuries. But his anatomical contributions are naturally of less value, although it would appear from some of the descriptions that he knew something of anatomical dissection. His chief work is the *Aphorisms*, a collection of about 400 sentences on principles of medicine, physiology, and natural philosophy. This has been translated into all the languages of the civilized world. With those of Galen, the works of Hippocrates formed the chief subjects of study in the medieval medical faculties. They were translated in the sixth century into Latin, and although they were lost, a Græco-Latin medical tradition seems to have been established. After the middle of the eleventh century the knowledge of Hippocrates was direct and the *Aphorisms* were translated from Arabic into Latin by Constantius Africanus about 1080. He was especially studied at Salerno and Montpellier, where Rabelais lectured on his works in the original Greek in 1537. How great has been the reverence for the “Father of Medicine” is shown by the fact that the Hippocratic oath is still administered to medical graduates in many American universities (*e.g.* Columbia University). The following is a translation of the oath, which is instinct with the highest ideals for the profession: —

“I swear by Apollo the Physician and Æsculapius, and I call Hygieia and Panacea and all the gods and goddesses to witness, that to the best of my power and judgment I will keep this oath and this contract — to wit — to hold him, who taught me this Art, equally dear to me as my parents, to share my substance with him, to supply him if he is in need of the necessities of life, to regard his offspring in the same light as my own brothers, and to teach them this Art, if they shall desire to learn it, without fee or contract, to impart the precepts, the oral teaching, and all the rest of the instruction to my own sons, and to the sons of my teacher, and to pupils who have been bound to me by contract, and who have been sworn according to the law of medicine.

“I will adopt that system of regimen which, according to my ability and judgment, I consider for the benefit of my patients, and will protect them from everything noxious and injurious. I will give no deadly medicine to any one, even if asked, nor will I give any such counsel, and similarly I will not give to a woman the means of procuring an abortion. With purity and with holiness I will pass my life and practice my art. Into whatever houses I enter I will go into them for the benefit of the sick, keeping myself aloof from every voluntary act of injustice and corruption and lust. Whatever in the course of my professional practice, or outside of it, I see or hear which ought not to be spread abroad I will not divulge, as reckoning that all such should be kept secret. If I continue to observe this oath and keep it inviolate, may it be mine to enjoy life and the practice of the Art respected among all men for ever. But should I violate this oath and forswear myself, may the reverse be my lot.”

Of the works which have been attributed to Hippocrates, the following are regarded as genuine: *On Airs, Waters, and Places*, *On Ancient Medicine*, *On the Prognostics*; *On the Treatment in Acute Diseases*, *On Epidemics* (Books I and III), *On Wounds of the Head*, *On the Articulations*, *On Fractures*, *On the Instruments of Reduction*; *The Aphorisms* (Seven Books); *The Oath*; *The Physician's Establishment or the Surgery*; and *The Law*.

See MEDICAL EDUCATION, section on History, and the References there given.

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### HIPPOCRATIC OATH. — See HIPPOCRATES.

**HIPPOLYTUS** (d. 236) — A disciple of Irenæus, and the most learned member of the Roman Church in the Ante-Nicene Era. He was the first anti-pope, in opposition to Callistus, but was afterwards reconciled with the reigning pope and revered as a martyr. He was a man of immense literary activity, and he and his works have been the subject of long-continued controversy. They were written in Greek, and consisted of a multitude of treatises, polemic, dogmatic, apologetic, and exegetic. Most of them have been lost. In 1842 the greater part of the *Philosophumena*, only the first book of which had been extant up to that time, was discovered in an ancient monastery upon Mt Athos. At first attributed

to Origen, and later to Caius and Epiphanius, it was ultimately assigned by the unanimous agreement of scholars to Hippolytus. It is a refutation of all heresies by tracing their origin to pagan philosophy and Oriental theosophy. Its author is as uncompromising a foe to the ancient systems of philosophy as Tertullian himself (*q.v.*), and exhibits great acuteness in tracing the relationships between them and the heresies which disturbed the early Christian Church. His work is also valuable as a source-book of history. W. R.

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**HIRAM COLLEGE, HIRAM, OHIO —**

Founded in 1850 by the Disciples of Christ as the Western Reserve Eclectic Institute for the education of both sexes. From 1856 to 1861 and from then to 1866 with intervals President Garfield (*q.v.*) was principal and lecturer at the Institute, which in 1867 became Hiram College. In 1907-1908 the Board of Trustees became a self-perpetuating body. The institution maintains a college and departments of music and missionary service. The entrance requirements are fifteen units. Four courses are offered in the college, literary, ministerial, philosophical, and scientific, leading to the degrees of A. B., B. S., and Ph. B. Of 345 students enrolled in different departments 224 took work in the college. The faculty consists of twenty-two members.

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**HISTORY.—As a College and University Study.** **Content and Method.**—History is concerned with the past life of man considered as a member of society. It is thus distinguished from biography, which deals only with individuals, and from anthropology, which treats of man as a unit in the animal kingdom, but these distinctions are not absolute, for the history of the individual cannot be cut off from the society in which he lives, and no sharp line can be drawn between the natural history of man and his social history. In a looser sense history is often used to denote any succession of facts, as when we speak of the life history of a plant or animal or the history of the solar system—an extension of the term which arises from the general adoption of the historical habit of thought, which looks upon all things in the universe, not as fixed and stable, but as undergoing a process of change. History

comprises the whole period of the development of human society from the earliest ages for which evidence has been preserved, and includes the various manifestations of the human spirit in art, literature, and religion, as well as the vicissitudes of states and their leaders and the course of economic and social evolution. Certain of these fields are commonly marked off for separate treatment, so that we have the history of language, of literature, of art, of religion, of philosophy, as well as the social and political sciences which derive their material largely from historical records; but such a division is one of convenience only. None of these more special topics can be understood apart from the general course of historical development, and only the historian can bring them into their proper relations as parts of the evolution of civilization. Before this broader conception of history the attempt to limit it to "past politics" is rapidly losing ground, but the life of the state, as the most important social group of civilized man, must remain prominently in the foreground of history, by reason of its intrinsic significance and because on the whole it furnishes the most natural category for the classification of historical facts. History thus stands in especially close relations with political science and economics, not only because it furnishes them with the greater part of their materials, but also because it constantly needs their assistance in interpreting the social and political life of the past, and for similar reasons it welcomes the advance of any new sciences, such as comparative and social psychology, which promise to throw further light upon the social life of man.

Unlike the natural sciences, history cannot avail itself of experiment or of repeated observation. Except for the infinitely small body of information which has been acquired by his immediate personal experience, the historian depends entirely upon indirect sources of knowledge, arriving at the facts of the past only by working back from the existing traces which they have left behind them. These traces, the fountainhead of historical knowledge, are called sources. Originally limited to the oral traditions handed down in song and story, and then including written material in the bare lists of early inscriptions and annals, the conception of what constitutes an historical source has widened with the growth of knowledge and with the enlargement of our ideas of the scope of history until it now includes, not only chronicles and public documents, but newspapers and private correspondence, buildings and pictures, ideas, customs, and superstitions, clothing and tools and implements and every sort of object from which information respecting the human past may be derived. For purposes of convenience, sources are often classified into narrative, such as biographies, chronicles, and memoirs; documentary, including laws, charters, and official acts of every sort; literary, so

far as literature throws light on the ideas and conditions of an age; and archæological, including the great body of monuments, works of art, and material remains. The use of these materials for historical purposes often demands technical knowledge of a very special sort, and a group of subjects has grown up which are often called the "auxiliary sciences" of history. Chief among these are language, as a means to the understanding of historical records; palæography, or the science of ancient writings; diplomatics, treating of official documents; epigraphy, or the science of inscriptions; numismatics, archæology, chronology, and historical geography.

Out of such materials and with such aids, it is the business of the historian to reconstruct the past for his readers. After he has collected his sources by patient research in libraries, archives, museums, and similar repositories, he cannot use them until he has subjected them to a searching critical examination with reference to their origin, genuineness, credibility, and value. In the case of narrative and documentary sources this may involve elaborate textual criticism in order to restore the original form of a document, the determination by external and internal evidence of its authorship and the time and circumstances of its composition (the so-called "higher criticism"), and the weighing of the value of the various assertions which the document contains, with reference to the knowledge, good faith, and impartiality of the author. The chances of error in the transmission of evidence are great, and they are enormously increased by the fact that in the case of all written or spoken sources we can only arrive at the original fact through the intermediary of the human mind which transmitted its subjective impression to us, so that history is often reproached with the uncertainty which may exist regarding events of the highest importance. While this human element makes it impossible for historical knowledge ever to attain the degree of precision and certainty which belongs to the sciences of observation, the historian is able, by means of converging lines of evidence, to establish such moral certainty as may be reached in the affairs of men; and, although this assurance is often lacking respecting particular events of a remote period, it becomes sufficient for any purpose in the case of ideas, institutions, and social conditions of wide prevalence or continued duration. Regarded from this point of view, the thoroughness of its critical search for truth and the nature of its results entitle history to rank as a science. On the other hand, the processes of historical synthesis by which the historian combines individual facts into sequences and generalizations, and with the aid of the constructive imagination groups them into an ordered work of history, give a much greater opportunity for variation and individual choice, and on this

side of historical method there is as yet no such general agreement as has been reached respecting the analytic operations of historical criticism. Moreover, the form in which the result of the historian's labors are presented to the reader is a question of art, more important here than in the case of the natural sciences because of the element of sympathy and imagination which arises out of the human appeal of the subject matter of history, and the artistic presentation of history is thus a branch of literature. Inasmuch as the critical faculty, the constructive imagination, and high literary art are seldom combined in the same person, it rarely happens that a work is produced which is eminent both as a work of historical science and as a work of literature. This tends to a division of labor by which the preliminary operations of collection, criticism, and arrangement are performed by the editors of texts, the authors of *regesta*, and the writers of monographs, leaving to the synthetic historian the more ambitious tasks of historical construction. Such a division can, however, never become complete, for the historian must know how to test for himself the materials with which he is to build, and both the writer and the teacher of history must understand, though they need not regularly use, the whole historical process.

The teaching of history, at least in the higher grades of instruction, is concerned with a body of knowledge, a point of view, and a method of inquiry. The body of historical knowledge is enormous and is constantly enlarged by the progress of historical investigation as well as by the lapse of time, and the problem of the teacher is, in the first instance, to select those facts which will make clear the general course of historical development and contribute to an understanding of the periods and countries of special significance with reference to the world as a whole and to the particular country and age in which the student lives. These facts must on the one hand be seen as actual realities, against their contemporary background, while on the other hand they must be grasped, not as disconnected events or dates, but as bound together in certain relations and forming part of a continuous process of development. The student must learn that while the past is vitally connected with the present and can only be reconstructed by working back from the phenomena of actual experience, it was never the same as the present, and he must be taught to lay aside for the moment the ideas and standards of his own age in order to enter into those of the age he is studying. Impartiality, sympathy, and imagination thus become necessary qualifications for the study and teaching of history, and the attitude toward the past which is thus attained is often called "historical-mindedness." One element in this is the critical spirit, and the general student of history finds it necessary to know something of the way the historian collects

and tests his materials, while the special student requires initiation into the nature of historical evidence and the processes of historical criticism and construction. Such training is necessary, not only for the professed historian, but also for those who as investigators of topics in economics, political science, education, and the history of literature, art, or philosophy, are, often without realizing it, obliged to make use of the historical method of inquiry. In the earlier stages of historical instruction, attention is given particularly to the teaching of a few simple facts and the development of the historical imagination; in the higher stages the number of facts increases and more emphasis is put upon their relations and political and social significance, and upon the acquisition of a critical and impartial habit of mind; while in the most advanced grades of instruction the student learns to find, test, and combine his facts for himself until he is able to undertake independent research.

Probably no other subject of study is so dependent upon great libraries as history. The sciences of observation depend primarily upon field work or the laboratory; the specialist in literature or philosophy can go far with a small collection of the great works in his department, but the student of history not only needs the newest works upon his subject and the standard authorities whose views he must compare and examine, but he is constantly driven back to the sources of information, which in history are almost endless. For him no book is or can ever be wholly "dead," since when it ceases to have value as a statement of facts, it always retains a place in the history of learning or of ideas, and thus serves as a source of historical knowledge. The efficiency of a university department of history is closely conditioned by the libraries to which it has access, and these must be rich in the great collections of printed chronicles and documents and in the files of periodicals and publications of learned societies, as well as in current historical treatises. Moreover, as no single library can hope to be complete, even for printed works, advanced investigation involves the necessity of visiting other libraries and archives for rare and unpublished material. For many fields of history, as well as for the whole period before written records begin, museums of art and archaeology perform a function analogous to the library as repositories of historical materials, and access to them may in many cases be equally indispensable.

**History in European Universities** — Although history is as old as the Greeks, it has acquired academic status only in comparatively recent times. The curriculum of the medieval universities made no provision for history, as it made none for literature, nor did the revival of learning prove immediately favorable to historical study. The only period of history

for which the humanists cared was the Græco-Roman, and the study of history remained a subordinate part of the study of the Greek and Latin classics, just as oriental history was limited to a study of the Old Testament. The Protestant Revolt and the Catholic reaction gave an impetus to the study of the Middle Ages, but only on the ecclesiastical side, and so far as these movements furthered the teaching of history in universities and seminaries, their influence was confined to the history of the Christian church. The separation of history from philology on the one hand and from theology on the other was slowly accomplished and is not yet at all points complete. As an independent subject history gained its footing gradually in the course of the eighteenth century and became fully established only in the nineteenth. The rapid expansion of historical instruction in the course of the past hundred years has come about partly as the result of the great activity of historical research and the enormous extension of historical knowledge in this period, partly through the growth of nationality and democracy, and the consequent efforts to cultivate patriotism and develop the civic virtues, and partly from a realization of the need of giving the youth of each generation an orientation with reference to the development of the world's civilization and their own place in it.

In the universities of Germany history acquired an independent status in the eighteenth century, notably at the University of Göttingen, but German historical scholarship showed no peculiar strength in this period, and its preeminence was established by the school of writers and teachers which had its center in Berlin between 1810 and 1830. The pioneer in this movement was Niebuhr, in the lectures on Roman history which he gave as professor at the University of Berlin and which formed the basis of his writings on this subject, and his influence was soon apparent in the spread of his critical methods to other fields of history and in the application of the historical habit of thought to the study of law, language, and religion. With Niebuhr, as with German professors since his time, the writing and teaching of history went hand in hand, and the connection became still closer through the methods of teaching introduced in 1825 by Leopold von Ranke. "Ranke," says Lord Acton, "has not only written a larger number of mostly excellent books than any other man that ever lived, but he has taken pains from the first to explain how the thing is done." His first book, written in 1824, was accompanied by a critical discussion of the materials upon which it was based, and in the following year he reinforced his lectures at the University of Berlin by the inauguration of an historical seminary. The idea of such a meeting of professors and students for training and practice in the critical use of historical sources Ranke borrowed from

the classical seminaries of which he had been a member at Göttingen; but it soon became an established feature of the university system, and in one form or another (seminary, practical exercises, *cours pratique*) it is now generally recognized as an essential element in higher historical instruction. The purpose of the historical seminary is to teach not the facts of history, but the process of historical investigation, and it is designed as a part of the training of the teacher as well as of the investigator. "An essential characteristic of the work," as it has recently been analyzed by Professor George B. Adams, is the practice of the methods of historical criticism and synthesis "together by a number of students of about the same stage of advancement, and the resulting mutual criticism and stimulus of mind by mind." The group of students must necessarily be small, and the relations with the instructor must be free and informal. The subject of study may consist of a chronicle, a series of documents, or a limited historical period or movement, and the work may be conducted either by joint discussion of a topic prepared by all the members of the seminary or through the presentation and criticism of reports or essays assigned to individual members; but such work cannot profitably be carried on unless it is so arranged that all members may take an intelligent part. The method is essentially cooperative, and frequently results in a group of published studies upon related topics. The narrative lecture and the seminary constitute the regular forms of historical teaching in the universities of Germany, Austria, and German Switzerland, and practically all these institutions maintain such instruction in ancient, in medieval, and in modern history, while at a university such as Berlin a great variety of seminary and lecture courses is offered. Significant types of allied institutions are the *Institut für österreichische Geschichtsforschung* at Vienna, which gives a thorough grounding in the auxiliary sciences and in other subjects necessary for the study of Austrian history, and the *Institut für Universalgeschichte* at Leipzig, where Professor Lamprecht has led a revolt against the more strictly political form of history cultivated by the followers of Ranke.

In France a chair of history was established at the Collège de France in 1769, but although the incumbents comprised men of the distinction of Guizot (*qv*) and Michelet, they tended to address their lectures to the general public rather than to students and had no special functions as teachers. The professorships at the Sorbonne were of the same sort, so that until the close of the Second Empire the actual teaching of history at Paris was confined to the *École Normale Supérieure*, which prepared teachers for the *lycées* and colleges, and the *École des Chartes*, established in 1821 for the training of archivists and librarians, but developing an excellent set of special courses

which gave a sound historical training, especially in the medieval field. The foundation of the *École des Hautes Études* in 1868 opened opportunities for the special study of history similar to those afforded by the German seminary, and under the Third Republic the strengthening of the faculties of letters and the development of a university organization have given a large place to historical instruction. The universities now perform the functions once monopolized by the *École Normale*, which is now combined with the University of Paris, and in addition to the public lecture courses maintain *cours fermés* for the special training of teachers and scholars in the principal fields of history. The change in the character of university instruction is seen in the modification of the requirements of the *agrégation d'histoire*, the competitive selection of professors of history in the *lycées*, which in addition to the comprehensive examination on the general field of history now demands a thesis based upon original sources, and certain examinations on more special topics. The provincial universities seek, so far as their resources permit, to do the same kind of work as the University of Paris, but they are less liberally supported than the corresponding German institutions, and their students of history are at a special disadvantage because of the absence of the special schools and great libraries of the capital. Besides the more strictly academic training of the *École des Chartes* and the *École des Hautes Études*, the *École Libre des Sciences Politiques*, a private institution established in 1871 primarily for the purpose of fitting young men for the civil service, offers instruction in modern political and diplomatic history.

The Camden Professorship of Ancient History was founded at Oxford in 1622, and the Regius professorships of Modern History at Oxford and Cambridge in 1724, but it was not until the second half of the nineteenth century that historical studies began to occupy a position of importance in the English universities. Long subordinated to classics and later to law and the moral sciences, history was given an independent status through the establishment of the Honori School of Modern History at Oxford in 1872 and the Historical Tripos at Cambridge in 1875. The historical instruction thus organized has been almost entirely directed to the preparation of undergraduates for the final examinations for their degrees, and to this end emphasis is laid upon wide and thorough reading in standard authorities under the guidance of a tutor, who is responsible for but a small number of students. Brief courses of lectures are also given by the tutors and lecturers of the various colleges on the principal periods and fields of history covered by the examinations. Recently some progress has been made in the direction of advanced teaching, especially on the part of the university professors, who take no part in preparing under-

graduates for examinations and thus have considerable leisure for graduate instruction and the guidance of research. So far few English students have availed themselves of the privileges of this sort of study, but the research degree of B Litt., recently established at Oxford, has proved attractive to a certain number of graduates of American and colonial colleges. Among the newer English universities the University of Manchester is an important center of historical study, and the University of Liverpool has recently organized a special school of local history and records.

**History in American Colleges** — Like their English contemporaries, the early American colleges made no regular provision for the study of history. The curriculum was predominantly classical, and historical instruction was limited to the history and antiquities of Greece and Rome. In course of time a few recitations upon a manual of universal history were introduced, but the nature of the required curriculum gave no opportunity for the growth of organized historical instruction. A professor of ecclesiastical history was appointed at Yale College in 1778, but the first professorship of history in the more general sense of the term was created at Harvard in 1839, and filled by Jared Sparks, who three years later brought the study of American history for the first time into an American college. Another significant date is 1857, when Henry W. Torrey took up at Harvard the work which Sparks had relinquished when he resigned the presidency in 1853, and when Francis Lieber became professor at Columbia and Andrew D. White at the University of Michigan. These three men had been trained in Germany, and the development of historical studies in the United States during the next twenty-five years is directly traceable to the influence of the German historical school. This movement, however, began slowly, and outside of the three institutions just named the systematic teaching of history belongs to the period since the Civil War. Some qualification of this statement is necessary as regards the colleges of the South, where in the generation preceding the war historical and political studies received more attention than in the North; for example, Lieber had been professor in the University of South Carolina, and instruction in history and political science, though not provided for by special chairs, had an important place in Jefferson's plans for the University of Virginia. Even in the more recent period history has made way more slowly in the smaller colleges of the East than in the state universities of the West, where the traditional subjects of the curriculum have had a weaker hold; but at the present time every reputable college has at least one professor of history and a regular sequence of historical courses which offer some sort of view of the history of the world in general and of the United States in particular.

The organization of the historical curriculum in American colleges is conditioned by the fact that their freshmen have reached the age of students in European universities without having acquired any such accurate and substantial knowledge of historical facts as is possessed by pupils of the corresponding stage of the gymnasium or the *lycée*. Accordingly, while it is possible in the later years of the college course to do work which is in many respects of university quality, this work suffers from the lack of a sufficient basis of knowledge and discipline, while the earlier years of the course must be devoted in large part to carrying on studies of secondary grade with students who are too old for the methods of secondary instruction. For this reason it is particularly important that the teaching of history should begin with the freshman year, in order to remedy as soon as possible the defects of the students' earlier training. The problem of the introductory course in college is, however, peculiarly difficult, since this course is likely to be taken by a large number of students, of wide diversity of preparation and interests, and since it has not only to serve as a basis for more advanced work, but also to meet the needs of those whose formal study of history will stop at this point. The effort must here be made to give at the same time a body of definite historical information, some training in the use of historical material, and some quickening of the imagination and broadening of the historical horizon. The field chosen must be large enough to give an idea of the growth of institutions and the character of historical development, yet not so extensive as to render impossible an acquaintance at close range with the men and conditions of the times; but it cannot be said that any general agreement has yet been reached as to the course which best fulfills these conditions. With rare exceptions, of which Columbia College and the University of California are the most notable, the attempt is no longer made to cover the whole range of universal history in the first course in college, as so rapid a survey has generally proved confusing and unsatisfactory; a favorite type of course is one covering the history of Europe from the close of the Roman period to the eighteenth century or, more commonly, to the close of the nineteenth. Some colleges, such as Harvard, Wisconsin, and Kansas, finding this period too long, limit the introductory course to the Middle Ages, in order to secure time for more thorough study and more careful training. In some instances, a general course in English history is given for this purpose; at other places a course in ancient history; while Cornell, Wisconsin, Pennsylvania, and some others offer two or more parallel courses for beginners, an arrangement which avoids some difficulties but loses the advantage of uniform preparation for later courses and tends to keep students too long in the ele-

mentary stage American history is generally regarded as not well suited for this purpose, since it is commonly studied in the last year of the high school and does not offer the freshness of interest and the breadth of view desirable at the beginning of college work.

An introductory course of this kind should be taken by all college students, and most of them should be encouraged to take two or three additional courses as an essential part of their general education. For the needs of the general student every college should provide instruction in ancient history, the history of the Middle Ages and of modern Europe, English history, and American history. How far courses in these fields should be multiplied and subdivided is a matter which each institution must decide for itself, provided always that it remains possible for the ordinary undergraduate to get a fairly satisfactory survey of the general field of history without devoting an unreasonable amount of time to the subject. Some subdivision is desirable in every institution in order that students may have opportunity for the more intensive study of a period or topic, as a means to the fuller comprehension of what history is and how it is studied. It is also important that toward the close of their college work students of special aptitude for history should have access to an elementary seminary or practice course, not only for historical training and for an understanding of the subject chosen, but also as a step toward the intellectual independence which comes from forming one's own conclusions after a careful examination of all available evidence. If the topic for such a course is not beyond the powers of a good senior, its selection may well be determined by the facilities of the library and the special interest and competence of the instructor. In all questions of the historical curriculum there is great diversity of practice among American colleges, and while there is a growing tendency to pay attention to the experience of other institutions, uniformity is neither desirable nor at present attainable. Moreover, the field of history is so vast and its variety so great that it will never be possible to establish any such regularity and definiteness of order as exists in the case of courses in mathematics and natural science.

With respect to the methods of college instruction, equal diversity exists. The slavish memorizing of textbooks, once practically universal, has generally been abandoned, and the text is now supplemented or replaced by lectures, prescribed or recommended reading, and written reports, often reinforced by an outline or syllabus. Illustrative material of various kinds has been introduced, and the outline map has proved a valuable adjunct for the teaching of historical geography. Considerable use is now made of extracts from the sources in undergraduate instruction, partly for greater vividness and freshness, partly, as

in the case of constitutional documents, as a means to the more thorough understanding of significant topics, and partly for exercises in the process of historical criticism and construction. The systematic use of such material at all stages of college work has been especially notable at the University of Nebraska. As a result of these changes, the textbook itself has been greatly improved in the past twenty-five years, although, for commercial reasons, school and college texts in history are as yet imperfectly differentiated.

One of the most difficult problems in the college teaching of history is that of the management of the large classes, numbering from fifty to five hundred, which have developed in all but the smallest of American colleges and for which the teachers of history and similar subjects can hardly be said to have worked out a method equal to the laboratory work which accompanies classes of this size in the field of natural science. Many colleges have adopted the so-called "Harvard system," by which the class meets together for lectures and is divided into small sections under instructors and assistants for discussion and quiz upon the lectures and the assigned reading. This method is most effective when a written test forms part of the work of the sections and when frequent individual conferences are also held. It is the most economical system and the only one which brings all members of the class into contact with the most experienced teachers in the department, but it requires for its success a larger number of thoroughly competent assistants than is usually available. Elsewhere, as at Yale, Columbia, and Chicago, the class meets only in sections, an arrangement which provides well for daily drill but cuts off a considerable body of students from any contact with men of professorial rank, as no college has yet been willing to furnish a staff of highly paid men sufficient to conduct all the divisions of so large a class. At Princeton and Bowdoin the method first described has been modified and carried much farther by means of preceptors who direct the students' reading in groups of four or five, an exceedingly costly arrangement which shows promise but has not yet been tested on a large scale with introductory courses.

#### The University Study of History in America.

— The university study of history in the United States may be said to have begun with the original investigations in medieval institutions which were undertaken at Harvard University in 1874 by a group of advanced students under the direction of Henry Adams and which bore fruit in 1876 in a volume entitled *Essays in Anglo-Saxon Law*. An "historical seminary" for seniors had, it is true, been organized at the University of Michigan by Charles Kendall Adams (*qv*) in 1869, but it was of a general and elementary character and did not reach an advanced stage till ten years later. Seminary



work in history was likewise a feature of the system of graduate study instituted by the Johns Hopkins University at its foundation in 1876, and after 1881, under the leadership of Herbert Baxter Adams (*q v*), this seminary exerted a wide and fruitful influence upon the study of American institutions and upon methods of teaching throughout the country. In 1880 Columbia University organized a Faculty of Political Science, in which the study of constitutional and legal history held an important place, and about the same time more adequate provision for advanced instruction in history was made at Cornell University, where the first distinct professorship of American history in the United States was established in 1881.

While the introduction of the seminary method was the determining element in the differentiation of the higher study of history in America, the line between college and university work has never been sharply drawn in this subject, nor is such demarcation likely in the near future, since it is possible to begin certain kinds of original investigation in college, while on the other hand the preparation of the advanced student and teacher demands a large amount of general work which cannot be completed in college and can best be carried on in the graduate school along with the beginnings of independent investigation. Accordingly under American conditions the transition from elementary to advanced work in history is more gradual than in European universities, while at the same time the antithesis between the lecture and the seminary methods of teaching is less strictly observed, many of the most profitable graduate courses being conducted by a combination of lectures, student reports, and class discussions. Free use is everywhere made of the library, indeed the freedom of access to the stack and the greater promptness of service in American libraries are points of distinct superiority over European institutions of learning; but at most American universities the resources of the library, outside of narrowly limited fields, are quite inadequate for the most advanced historical work. Another characteristic of the advanced study of history in America is the close connection maintained with economics and political science, both in the organization of instruction and in the emphasis put upon the economic and constitutional aspects of history, and subjects like economic and diplomatic history are often left to these related departments.

A well organized university department of history needs a great library and the support of strong departments in related fields; it must also offer advanced instruction in ancient, mediæval, and modern history, as well as in such fields as economic history, ecclesiastical history, and the history of religion, and in the auxiliary sciences. Special attention will naturally be paid to the history of the United

States and of those countries and movements most closely connected with American history. At present the universities which have the most extensive equipment of teachers and books in these various fields are Harvard, Yale, and Columbia, each with a dozen professors and assistant professors of history. Well developed graduate departments of history are also maintained by Chicago, Cornell, Pennsylvania, and Wisconsin. Illinois and Michigan also have important departments, while at Johns Hopkins and Bryn Mawr graduate work in history is definitely organized, but with a smaller body of teachers. Certain other universities do graduate work of good quality in more limited fields, notably the University of California on the history of the Pacific Coast and the University of Nebraska on the French Revolution, and most of the state universities carry candidates as far as the master's degree, if not farther. The state universities regularly omit any special treatment of church history and the history of religions. Topics which have recently obtained a footing in historical departments are the history of Latin America, which receives particular attention at Columbia, Yale, Illinois, and California, and modern Oriental history, represented most fully at Yale and to a less degree at Wisconsin, Columbia, and Harvard. Proper university provision for the promotion of research also demands the creation of traveling fellowships, for the exploration of libraries and archives at a distance, and opportunities for publishing the results of the investigations of professors and advanced students. So far Harvard is the only university which possesses regularly endowed traveling fellowships in history, but several institutions have established organs of monographic publication. The most important special series are the *Johns Hopkins University Studies in History and Political Science* (since 1882); the *Columbia Studies in History, Economics, and Public Law* (1891); the *Bulletins of the University of Wisconsin* (1894), with an Historical Series and an Economic and Political Science Series, and the *Harvard Historical Studies* (1896) and *Harvard Economic Studies* (1906). At several other universities facilities exist for the publication of historical monographs, either as members of a general series of university studies, or in conjunction with the work of state departments of history or local historical societies. The majority of such products of seminary study naturally relate to topics of American history, but excellent monographs are also produced in various fields of European, and especially of English, history. C. H. H.

**History in the Secondary and Elementary Schools.**—The teaching of history in the secondary or elementary schools presents two main problems: first, the relative amount of time which should be assigned to the subject,



with the periods or kinds of history to which this time should be given; second, the methods of instruction. Each of these problems must be examined separately for the secondary and for the elementary school. History is a record of human experience, the rich variety of which is not indiscriminately valuable for children of all ages. The effort to find answers to these questions of matter and method appears late in the development of educational systems. This is mainly due to the fact that not until the nineteenth century was the study of history well organized in the universities.

Before the *Report of the Committee of Ten*, made in 1892, the work of the secondary schools in history was usually composed of courses in Greek and Roman history for pupils looking forward to college studies, with a brief course in English or "general" history for others. The schools with a more developed program were so rare that their practice is not significant. For the year 1889-1890 only 27 per cent of the pupils in the public secondary schools were studying history. In the elementary schools American history was generally taught in the seventh and eighth grades alone. As the majority of the pupils did not remain in school until the seventh grade was reached, they received practically no instruction in history. The subject had long been gaining more intelligent attention in France and Germany. With the organization of the *lycée* and the *gymnasium* early in the nineteenth century it was given an important place on the program of the secondary school. The recognition of its value for elementary education came later. In England, until Arnold's time, there was little systematic teaching of history in the "public" schools, and even after his day, except at Rugby and Harrow, the character of the work depended upon the interest of the individual teacher.

The *Report of the Committee of Ten* (qv) of the National Education Association, embodying the results of the Madison Conference, brought the question forward and suggested a program covering the last four years of the elementary school as well as the four years of the secondary school. The most important single influence in the movement toward the adoption of a standard program for secondary schools has been the *Report of the Committee of Seven*, of the American Historical Association, which appeared in 1899. This recommended a four years' course, beginning with ancient history in the first year, placing medieval and modern history in the second, English in the third, and closing with American history and civics in the fourth year. Effect was given to the recommendations of the committee by the action of the prominent textbook publishers in arranging for series of texts constructed according to the plan. Another influence has been the requirements fixed by colleges for entrance either upon examination

or by certificate. (See COLLEGE REQUIREMENTS FOR ADMISSION.) The complete success of the movement for uniformity has been hindered by the consequences of the elective system introduced into the schools. Sometimes also the fact that many colleges have not given credit for more than one or two units of history had a similarly retarding influence. An investigation made in 1909, principally of schools in the Middle West, showed, however, that out of eighty-three schools offering a three years' course fifty-six required all three units for graduation.

Dissent from the recommendations of the Committee of Seven has usually been prompted by the desire to lay greater emphasis upon the modern period. In order to satisfy this desire a Committee of Five, partly of the same personnel, also appointed by the American Historical Association, advised that schools ready to make a change should place English history as far as 1760, with its European connections, in the second year and give the third year to a course on the last century and a half of European history.

The recent development of commercial and technical high schools has rendered necessary a course adapted to their requirements. For them emphasis should be put upon the history of the arts and of trade. The interests of the two are also distinct, because, although the achievements of the Greeks and the Romans, and, in a measure, of medieval peoples, are instructive to students of certain technical arts, students of commerce will find the modern period the most important. Both should be taught to place the special aspects of life which they study in a true historical setting, while at the same time they should not forget other phases of history which explain the general growth of civilization.

The attempt to construct a standard course for the elementary schools has been beset with even greater difficulties, because many diverse authorities must be brought into harmony, and because of excessive assignments of time to other studies, especially geography. Typical solutions of the problem have recently been presented by the University of the State of New York in a *Syllabus*, by the teachers of the Horace Mann School in their *Elementary School Curriculum*, by the Chicago University Elementary School, by the Indiana State Board of Education, and by the Committee of Eight of the American Historical Association.

The New York *Syllabus* divides American history into two cycles, the first, principally in a series of biographies, occupying the fifth and the sixth years, the second, with a narrative treatment, occupying the seventh and eighth years. The plan adopted in the Chicago University Elementary School is the most radical departure from traditional arrangements of program, and is based on the attempt to develop the pupil's historical sense in con-

nection with his own industrial activities or those of the community in which he lives, and without much attention to chronological sequence. The curriculum suggested by teachers of the Horace Mann School, after providing stories and exercises drawn from primitive life for the youngest children, begins at the third grade with work on the Phœnicians, as typical of ancient trade and adventure, and passes by a natural transition to the stories of Columbus and of Hudson, and to the early history of Manhattan. In the fourth grade there is a study of the typical men of America, closely correlated with the study of geography. This is followed in the fifth grade by Greek and Roman history, and in the sixth by medieval history, passing over into the work of the discoverers and colonizers, in order to show the movement out of which America grew and to emphasize the fact that American civilization did not have its beginnings in the first settlements. In the seventh grade, which is the final grade, there is a study of American history from the struggle between the French and the English for control in America to the present day. The program of the Indiana State Board of Education offers certain similarities to this course, although it gives only part of one grade to stories of primitive life, follows these by stories of American heroes, emphasizes the heroes of Hebrew history as well as those of Greece and Rome, and gives the sixth year to English history, followed by two years of American history and civics (*qv*).

The plan of the Committee of Eight was based on the conviction, shared with the framers of the courses already described, that in teaching American history too little account had been taken of the European background or of the origin in Europe of American civilization. The plan falls into two parts, the first suggesting simple tales and descriptions of types of life easily intelligible to children of the three earlier grades, developing into a biographical treatment of American history in grades four and five. In the second part is outlined a course, continuous chronologically, for grades six, seven, and eight. Two thirds of the time of the sixth grade is given to what may be called an elementary introduction to the study of American history. Its topics include typical characters, stories, ways of living, selected from the most characteristic periods, beginning with the age of the Greeks and closing with the age of Columbus. In the later portions of the course stories and descriptions from the European background are introduced wherever this makes the setting of American history more intelligible.

In France and Germany the secondary school, *lycée* or *gymnasium*, gives instruction in history throughout a nine years' course. The course corresponds to a possible course in our schools running from the fifth grade through the elementary school, the secondary school, and up to the third college year. History is also given

in elementary schools distinct from the *lycée* and the *gymnasium*, and is parallel, therefore, to the first part of the secondary school course. In the elementary school the content is confined more exclusively to the national history and omits ancient history. The last seven years of the secondary course are divided into two cycles, one of four and one of three years, thus including two journeys through the field from ancient times to the present day. In the second cycle of the French course, if the pupil is on the classical side, *ie* has Latin and Greek, or Latin and the "living" languages, he devotes four hours to history, two to ancient and two to modern, if he takes the sciences with either Latin or the living languages, he devotes two hours to modern history. Except at this period of the course, the time given to history, both in German and French schools, averages three hours a week and the work is correlated closely with geography.

In England the average amount of time given to the subject is two hours a week in both the preparatory years and in the secondary school proper. On account of the variety of type in the organization of the English schools it is difficult to summarize the practice. The most authoritative recommendation is presented in Circular 599, published by the Board of Education in 1908, and includes, for the first stage, with children up to the age of twelve, stories from the history of England and of other countries, centering about great characters like Charlemagne, Columbus, and Washington, as well as famous Englishmen; for the ages between twelve and sixteen, a chronologically continuous course in English history with the European connections, during the final years, classical history for students going to the universities, for others English or modern continental history. The Circular records the gradual falling off in the practice of introducing a special period for more intensive study, and argues that there should be judicious selection all the way through of incidents and characters for special emphasis. The Circular also criticizes the concentric method by which in some schools the whole subject of English history is gone over each year summarily. In too many instances history is lumped in the program with "English subjects." The general influence of the type of questions asked in various public examinations, in competition for prizes, honors, etc., has been to retard the development of a plan of study satisfactory to the more progressive teachers.

From the practice abroad, as well as from the character of the efforts to promote the teaching of history in American schools, it is evident that the best opinion is in agreement upon the necessity of making the instruction continuous throughout the pupil's school career. Only by this means is it possible to form in his mind a useful framework of historical events and to train him to think of events historically.

Time is also needed for the growth of interest and the formation of a habit of reading historical books. In the opinion of a recent French minister of public instruction the habit of reading historical books is an important element of the reading habit, which, next to the habit of observation, should be the aim of popular education, and without which the pupils are in danger of falling into illiteracy after they leave school.

**Methods of Teaching** — Upon methods of teaching there is less agreement than upon questions of program, although for the attainment of the aims of the subject an effective method is more important than the choice of any particular period for study. If the method of teaching is not effective, the subject is discredited as an instrument of education. As the matter now stands, the statement that a pupil has had a course in ancient or medieval and modern history, means much, little, or worse than nothing. The most urgent need of the present time is the adoption and the general practice of a well-considered method of teaching the subject. In the management of subjects which are already well organized pedagogically, like English, chemistry, or Latin, teachers know what is expected the first month, the first term, the first year, they realize what are regarded as the essential elements of a good method. But the teacher of history may confine his work wholly to the explanation of the paragraphs of the textbook, or he may assign selections for reading in other books, or he may also utilize collections of source material. He may tram his pupils in the use of notebooks or he may never allude to them. What he shall decide to do seems to depend generally upon his individual preference. The well-trained teacher is capable of solving the problem for himself, but many others are groping about among haphazard experiments or apathetically following methods sanctioned by local tradition.

In Germany there is a recognized method of teaching history. This is true of France also, although French teachers differ among themselves in regard to the function of the textbook. In Germany reliance is placed mainly on the teacher and the instruction is principally oral. Many teachers even object to the use of a notebook during a class exercise, because they wish the attention of the pupils concentrated upon what they are saying. By a process of questioning and repetition they work the facts literally into the pupil's mind, so that he is gradually enabled to construct so solid a framework of the past that it is serviceable for all his future work whether in the university or elsewhere. Books of simple outlines, or *Leitfaden*, are used to supplement the oral work. So complete is the dependence upon the teacher that few or no references are given to historical works and there is slight use of selected sources. This has been criticized as not offering the pupil

enough training for independent work in history and as being in one respect a poor preparation for the freedom of university work. Such reliance upon the teacher is possible only because of the thorough training insisted upon by the State in the case of every teacher. In both France and Germany the subject is intrusted almost wholly to special teachers. Although the French use the textbook more than the Germans, they generally go over the lesson in a carefully prepared lecture which the pupils record in notebooks. The reason for this when a textbook is also used, is the need of placing the right emphasis and of stimulating the attention. It is believed that by such a method the dull pupil obtains more than if he is expected to master without direction the topics assigned. The French do not make extensive use of selected sources or of other reading references. In England, with no central controlling authority, the methods of work show less uniformity than those of France or Germany, but where the subject is well taught it is likely to include excellent training in writing up topics on the basis of an intelligent use of reading references.

European methods of teaching history should not be transferred mechanically to American practice, but acquaintance with them emphasizes the value of a standard of work and directs attention to the elements of the problem. What may be suited admirably to the needs of the German boy in the *gymnasium* or the French boy in the *lycée* may not take sufficient account of the more precocious individuality of the American boy. An adequate method must be the outcome of a careful study of the child and a wise consideration of the benefits which he should derive from his work in history. The study of history should give him not merely a body of information, it should affect his attitude towards the world and tram his mind for the successful search for certain kinds of truth.

In the elementary school the question of method, like the question of program, is partly conditioned by the fact that many pupils leave school at the end of the fifth grade. For such a pupil the most that can be hoped is some acquaintance with the history of the United States through stories, primarily biographical, and pictures of life and customs. Stories of the great world heroes should be added. At this stage it is upon the never-failing interest of the story well told that the main reliance must be placed. The teacher should be trained for his work as the librarians of children's libraries are trained for the "story hour." The most usual defect of the story is its lack of vivifying details, which enable the comparatively feeble imaginative power of the child to form a picture of the incident as of something that actually happened. Children of the fourth and fifth grades are also beginning to read for themselves, and they should be led to read stories from history. It is unnecessary

to emphasize the need of correlating this work with what is done in English and in geography.

In the higher grades of the elementary school the pupil should be enabled to form a picture, fairly accurate in its details, and in chronological order, of the principal events of American history and of its European background, in order that it may be a serviceable framework for later historical knowledge. More emphasis should be laid upon reading, in books furnished by the school library or by local public libraries. Some use can also be made of original sources, with the aim of illustrating facts easily within the comprehension of children of this age. Selections which illustrate two sides of a controversy, like that between Parliament and the colonies after 1765, or between the North and the South before the Civil War, will train pupils, who are beginning to read the newspapers, to read more intelligently and with some effort of judgment. There should be practice in making simple maps, explaining geographically an historical situation. Outline maps may be used for this work. Pictures offer an opportunity not only for awakening interest, but also for giving training in observation.

The problem of method for the secondary school is more complex, because the element of training should receive greater emphasis. The most obvious requirement of a course is the mastery of the contents of the textbook. To attain this result there are needed, besides the ordinary recitation exercises, the preparation of outlines and summaries, the construction of what the English call "date strips," and the preparation of reviews. The teachers most interested in the improvement of the teaching of history would add some reading from historical books other than the textbook, the study of selected sources of a simple and clearly illustrative character, and the making of reports upon topics with the use of several books of reference. There must also be the construction of maps. How many of these exercises the individual teacher may be able to embody in any particular course depends upon the special conditions of the school, that is, the amount of other work demanded of the teacher, the existence of a school or public library, the number of available historical maps, etc. Each exercise should be repeated at least once, because the first attempt serves principally to make clear the difficulties. There should be orderly progress in the manner of work from the beginning to the end of the course. The pupil is studying history in order to learn how to study history as well as to acquire a body of historical facts. Each exercise should have relation to its predecessor and to what is to follow.

The teacher's first task should be to construct a calendar of the course, apportioning the work of each day, and indicating at what stage any particular exercise is to be attempted. An examination of the textbook will show what

topics are adequately treated and upon what topics there must be supplementary oral explanations or informal lectures. It is apparent that an exercise in constructing summaries should be inserted after an epoch of marked characteristics has been studied. Upon the completion of the study of a long and complex process an outline, chronological or topical, will be useful. Teachers may wish to use a simple outline for each day's work, but the construction of such outlines should not be required every day of all the class, for this work would soon become mechanical and wearisome. A review of the geographical relations of the subject will show at what points illustrative maps should be constructed. Certain topics should be studied partly through the medium of pictures. (See VISUAL AIDS TO TEACHING.) If there are to be reports on long readings, the place of these will be determined by the interest of the topic or incident and the availability of books on the subject. The same is true of topical studies, of which there should not be more than two or three during the particular course. The results of these exercises should be embodied in the pupil's notebook. They should be written on sheets of paper which may be inserted without copying in a loose-leaf notebook. The pupil will need careful instruction upon the manner of preparing this written material for the notebook.

The teacher may not be able to insert upon the calendar more than an indispensable minimum of exercises, because such exercises require efficient supervision, and the burden upon the average teacher is already heavy. The way to meet the difficulties of the situation is to agree upon what this indispensable minimum includes, and from it as a basis work steadily toward the desirable. H E B

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### HISTORY OF EDUCATION — Its Value

— An appreciation of the value of the study of educational traditions and customs is united with the tardy recognition of culture history in general. The earlier study of historic aspects of education was connected either with particular institutions, chiefly universities, or with the philosophical interpretation of education. Recently, however, a wider significance is recognized both because of the function of the study in professional education and of its cultural value. Certain of these reasons may be indicated briefly. In the first place the recent strong emphasis upon the genetic approach has brought into clearer light the significance of the historical, if a large proportion of our educational ideas and practices have no other support in the present but a historical or traditional one, it is quite essential to the teacher to know something of the origin and significance of these customs. Again as a guard against the danger of extremes in moving away from the restrictions of inherited standards, such a study is of value. The waves of opinion which are popularly called "fads and frills" can be minimized by a study of past experience with similar schemes. As an instrument for broadening the interests and sympathies of teachers, often far more restricted than those of the children whom they teach, this study is of great value because of the broad conception and wide social relation of education which it gives. When the Herbartian conception of education as the development of many-sided interests upon the part of the pupil is considered, the importance of the same development for the teacher is evident. The greatest professional significance is that the contributions of historical study clarify standard and ideals. Where, as in teaching, no definite purpose, adequate or satisfactory, can be gained either from a knowledge of the subject matter imparted or from the mind of the

child taught, some formulation of ultimate standards is essential. The study of the relation of school work to social needs and various historical stages contributes much to this end. On the technical side, much is to be said for the training in the use of the comparative or historical method as well as for the experimental through psychology or the logical through philosophy. On the cultural side much could be argued for the value of a subject which represents society's conscious attempt to perpetuate its achievements of the past and to realize its aspirations of the future. It is needless to add that these values are not to be found if the subject is to be conceived as a study of schoolroom devices or the pedagogical ideas of a few leading teachers or philosophers. It is only reached when treated, as by Plato and Aristotle, as an essential part of the study of society represented in its highest conscious effort, — the culmination of the social process.

**Historical Development of the Subject** — The study of the history of educational thought and practice did not receive serious attention until the end of the eighteenth century, when it was stimulated by two movements. The first of these was the general interest in the past and a desire to estimate human progress by comparison with the past. Secondly, an impetus was given to a study of antiquity by the revolutionary and rationalistic movements of the age which refused to recognize the influence of the past. Hence the desire by the opponents of these movements to trace the evolution of human progress and establish some standards and norms to counteract what were regarded as revolutionary proposals.

Probably the earliest history of education as such was the *Traité des Choix et de la Méthode des Études* (1675) by Claude Fleury, who was associated with Bossuet as instructor to the royal children. This work was translated into English in 1695 by S. Keble. As Fleury states in the opening sentences of his work that "to understand well the Order of our publick Studies, it seems to me Advisable to go to the Fountain-head; that so we may see whence every part is deriv'd down to us; how the whole body of these Studies has been form'd in the Succession of many Ages." The first part, about fifty pages, is devoted to a history of studies down to the "Restoration of Humanity." The chief interest in this part is perhaps a recognition of the influence of Arabian and Hebrew thought on the Middle Ages. Otherwise the work, as might be expected, is somewhat sketchy. The second part is devoted to a theory of the curriculum. In the century following there appeared many histories of individual schools, but no connected history of education. Among these may be mentioned: Ludovicus, G., *Historia Rectorum Gymnasiorum, Scholarumque celebriorum* (Leipzig, 1908-1911); Biedermann, *Acta Scholastica, Altes und Neues von Schulsachen* (Halle, 1752-

1755); Burckhardt, *De varis Germanæ Scholarum a Caroli M tempore usque ad Sæc. XVI Mutationibus* (1715); Schottgen, *De Statu Scholarum ante Reformationem* (1717); Ulrich, *Pragmatische Geschichte der vornehmsten Katholischen und protestantischen Gymnasien und Schulen im Deutschland* (1780). The author of the last work hopes by a complete account of the qualities and defects of certain schools to lead to improvement and greater perfection of teaching method and discipline in the schools of his day. The work gives an account, valuable because contemporary, of Basedow's theory of the Philanthropinum (f. 1774), a history of the Fürstenschulen of Saxony, and of schools in Austria and Bavaria. It is interesting to note, as bearing out the introductory statement, that the work which has usually been regarded as the first history of education, C. A. Mangersdorf's *Versuch einer Darstellung dessen was seit Jahrtausenden im Betreff des Erziehungswesens gesagt und gethan worden ist* (Leipzig, 1779), was prompted by opposition to the educational thought represented by Basedow. "If one desires," he writes, "to form a correct judgment on new proposals for improving education, one must not only know what has been done in various directions, but also what has been said." This work was followed by the *Geschichte des Schul- und Erziehungs-Wesens in Deutschland von der Einführung des Christenthums bis auf die neuesten Zeiten*, by Fr. E. Ruhkopf (Bremen, 1794). This is an attempt to record the most important steps in the origin and progress of German education. The work is based on source material, and is valuable, bibliographically, for the references to earlier books on education, which, however, contained nothing but biographies, lists of births and deaths, or collections of writings. The author refers to a plan for a History of Education published by Schoppelein in *Magazin für Schulen* about 1770, which was never carried out. He takes a broad view of education, and recognizes the intimate connection of education with the church, politics, and literature, and claims his book to be the first attempt in a new field. A significant step in advance was made by Fr. H. Christian Schwarz, who in 1802 had published *Erziehungslehre*, to which he added in 1813 *Geschichte der Erziehung in ihrem Zusammenhang unter den Völkern von alten Zeiten her bis aufs neueste*. A new edition in 1829 was preceded by the history, since a true conception of present problems is impossible without a knowledge of what has already been done. He is opposed both to the view which looks upon the past as perfect because it is past, and to the view "which holds that truth has never yet been discovered and that every moment brings something better than before." History of education is a branch of the history of civilization, and while giving an account of the past, affords insight into the present. The work is comprehensive, and deals with the educational

history of most of the nations of antiquity up to the philanthropinistic movements and the new education. The importance of the history of education was also recognized by A. H. Niemeyer, who added a historical section (*Überblick der allgemeinen Geschichte der Erziehung und des Unterrichts nebst einer specielleren pädagogischen Charakteristik des achtzehnten Jahrhunderts bis auf die neuesten Zeiten*) to the later editions of his *Grundsätze der Erziehung und des Unterrichts* (1796). Here the history of education is given in outline up to the eighteenth century, which receives more detailed treatment. A separate work, *Originalstellen griechischer und römischer Klassiker über die Theorie der Erziehung und des Unterrichts* (1813) serves to supplement the earlier summary. While the author recognizes the breadth of the subject as an account of the theory of education, the leaders, institutions, and writings of the past, his work gives little more than biographical sketches of educational leaders.

The practical purpose of a study of the history of education, emphasized by Schwartz, was recognized in a number of histories written about 1830. Thus A. Kapp, in *Commentatio de historia educationis et per nostram aetatem culla et in posterum colenda* (1834) would include a study of all types of education in addition to the school, for "the correct historical account of a science or art leads to a clear knowledge of the really true standpoint." He himself was the author of *Platons Erziehungslehre* (1833) and of Aristotle's *Erziehungslehre* (1837). So in the forties most books on the theory of education were preceded by some historical account; as examples may be cited Gustav Braun, *Grundzüge der Erziehungslehre* (1849), and Rosenkranz, *Die Pädagogik als System* (1848).

The history of education was not uninfluenced by the Hegelian philosophy of history. Hegel's own *Lectures on the Philosophy of History*, dealing as it does with the development of human Geist or spirit toward self-realization, may to that extent be regarded as a history of education in its broadest sense. Several works accordingly appeared in this field with a preconceived law of progress to serve as a standard of judgment. Fr. Cramer devoted his lifetime to the study of history of education, but never completed the work. He published in 1832 *Geschichte der Erziehung und des Unterrichts im Altertum*, which in 1839 was brought down to the time of Lucian; and in 1843 appeared his *Geschichte der Erziehung und des Unterrichts in den Niederlanden während des Mittelalters*. He regards as the main aim of education not its purely practical aspect, but a knowledge of the educational means of ancient times, what the human efforts were in all fields, and how the divine idea to bring the human race to perfection has developed and revealed itself in human progress. History should trace the influence of divine providence in the direction of human

affairs without any subjective additions. With K. Schmidt, *Geschichte der Pädagogik dargestellt in weltgeschichtlicher Entwicklung und im organischen Zusammenhange mit dem Kulturlieben der Völker* (1860-1862), the idea of the God-man is the central point in world history, progressive evolution is accordingly the embodiment of God in man, and the history of education attempts to accompany the spirit of man through the struggle for freedom. At the same time this work contains a great deal of material and a full bibliography.

The work of Karl von Raumer, *Geschichte der Pädagogik vom Wiederaufblühen klassischer Studien bis auf unsere Zeit* (1847), is important in a historical survey, for this work more than any other has exercised an influence on the histories of education written in English. Von Raumer began his studies with a course of lectures at Halle in 1822, and continued at Erlangen from 1838 to 1842. While he recognizes that a history of education must keep in view the cultural ideal of the time and show how this ideal was worked over into the practical field of education, he devotes the greater part of his work to biographies of educational leaders as the embodiment of the ideals of their day. Nor does he accept the theory that a history should be an objective account of facts, for if the history of education, for example, is to have any value, it must be approached with subjective problems and standards.

More comprehensive than any of the preceding works is the *Geschichte der Erziehung von Anfang an bis auf unsere Zeit* (1884-1902), issued by K. A. Schmid with the collaboration of many scholars, each one a specialist. The work represents the modern conception of history as an account of facts as they really were and in their actual connection. Systems of education remain unintelligible when freed from the general intellectual atmosphere in which they are set. So extensive a work would have been impossible for one man alone, and it is representative of another modern tendency, not to issue general histories but monographs on special topics and publication of source material. Since Schmid most of the general histories of education have merely been textbooks based on previous works, but an exception must be made in favor of Paulsen's *Das deutsche Bildungswesen in seiner geschichtlichen Entwicklung* (Leipzig, 1906), which, in spite of its short compass, gives a good account of German education as part of the development of German culture. It was pointed out earlier how the first histories of education were histories of individual schools. Valuable special studies were A. Heppe's *Geschichte des deutschen Volksschulwesens* (1858); Grasberger, L., *Erziehung und Unterricht im Klassischen Altertum* (1864); Kehr, K., *Geschichte der Methodik des deutschen Volksschulunterrichts* (1877); Paulsen, F., *Geschichte des gelehrten Unterrichts* (1884). Since then the number has increased rapidly, the most scholarly and valu-



able series being the *Monumenta Germaniae Pædagogica* (q.v.), edited by Kehrbach and issued since 1889. Under Kehrbach's influence was organized in 1890 the *Gesellschaft für deutsche Erziehungs- und Schulgeschichte* for systematic research into the local educational history and the collection and publication of records bearing on education in German-speaking countries. School ordinances, textbooks, biographies, diaries, pictures, etc., are investigated. In addition much local research is carried on, as an example of which may be cited H Heyd, *Geschichte der Entwicklung des Volksschulwesens im Grossherzogtum Baden* (1894-1897), done under the auspices of the Elementary Teachers' Association of the duchy. The following series explain their purpose without any further description: Fr Mann, *Bibliothek pädagogischer Klassiker* (1869-1895); G A Lindner, *Pädagogische Klassiker*, Karl Richter, *Pädagogische Bibliothek*, G Frohlich, *Die Klassiker der Pädagogik*, E Friedrich, and H Gehrig, *Die pädagogischen Klassiker*; R Vormbaum, *Evangelische Schulordnungen des 16., 17., und 18. Jahrhunderts*, A Richter, *Neudrucke pädagogischer Schriften*, H Schutze, *Auslese aus den Werken berühmter Lehrer und Pädagogen des Mittelalters*; Aug Israel, *Sammlung seltener gewordener pädagogischer Schriften des 16. und 17. Jahrhunderts*, Kurz, F X, *Bibliothek der Katholischen Pädagogik*, Von Ufer, *Internationale Bibliothek für Pädagogik und den Hilfswissenschaften*, *Sammlung der bedeutendsten pädagogischen Schriften*. For the history of the universities excellent material can be found in the work of W Erman and E Horn; *Bibliographie der deutschen Universitäten* (Leipzig, 1904), a comprehensive list of works dealing with universities up to 1899. To this may be added the monograph series edited by Th Kappestein, *Die deutschen Hochschulen* (Berlin, 1907-).

**English** — Histories of education in English have in the main followed the work of Von Raumer as a model. Few of them have even attempted to trace the development of education in its broadest aspect as a branch of the history of civilization, and the majority have been content to give accounts of the educational leaders and their theories. Probably the earliest systematic survey in English was given in a small volume issued in *Harper's Family Library* in 1842. The author, H I Smith, Professor of German Language and Literature in the Theological Seminary at Gettysburg, Pa., was evidently familiar with the earlier German works. The volume gives a very creditable survey of educational development, and is superior to many published much later. Barnard, while in general covering the whole of the history of education in different issues of the *American Journal of Education*, either based his contribution on German sources or translated parts of Von Raumer. *German Teachers and Educators* (1878) is an expansion of the

*German Educational Reformers*, collected from the *American Journal* and published separately in 1863, being thus probably the first history of education in English. This had been preceded in 1859 by the translation of Vol IV of Von Raumer, *German Universities*. A similar collection on English education from the *American Journal* was made in 1876, when two volumes, *English Pedagogy*, *The School and the Teachers in English Literature*, were published. This work is of great value for the collection of source material and the light thrown on English education by the quotations of writers who were not professional educators, and has hardly been surpassed up to the present.

Another work which has had and still has a great vogue is R H Quick's *Educational Reformers* (1868), also based largely on Von Raumer; this was expanded in 1890. Here, too, the treatment is confined almost entirely to education of the schoolroom. The aim which Quick had in mind was to acquaint practical men in education with "what has already been said and done by the leading men engaged in it, both past and present" (1868), in a later edition (1890) the aim is stated to be "to select a few people especially worth knowing about and to tell concerning them in some detail just that which seemed to me specially worth knowing." As professor of education in the College of Preceptors, Joseph Payne (q.v.) delivered the first course of lectures on the history of education in English, which aimed at nothing more than a treatment of the art of education at different periods. In general the emphasis which was prominent with the German historians is also found here, to understand the history of the subject as an aid to the solution of modern problems. Few have recognized the comprehensiveness of the educational influences, or, if they have, as Seeley did who saw that the "details . . . embrace a study of the history and environment, of the internal, social, and religious conditions of the people," they have failed to carry them out. The following works which appeared before 1900 may be mentioned. Browning, O, *Educational Theories* (Cambridge, 1881), Painter, F V N, *A History of Education* (New York, 1886), Williams, S G, *The History of Modern Education* (Syracuse, 1892); Munroe, J P, *The Educational Ideal* (Boston, 1895), Seeley, J., *History of Education* (New York, 1899). The appearance of Thomas Davidson's *A History of Education* in 1900 marks an epoch in the conception of educational history in English. This is the first work which is not mainly biographical, and is an attempt to trace educational development as a phase in human evolution. But while trying to avoid the narrowness of earlier histories, Davidson's book errs somewhat in exaggerating the other side without giving a clear definition of education. An attempt to strike the mean by making "evident the relation between educational development and other aspects of the



history of civilization and to deal with educational tendencies rather than with men," is made in Monroe's *Textbook in the History of Education* (1906). While not neglecting the practical aim, to show connection between theory and school practice, and the influence of the past on the present, the work has the advantage of constant reference to source material.

Very little of the nature of the German monographs has been done in English, nor is the interest in the history of education so strong either in England or America as in Germany. A valuable contribution on Education in Early England was made as early as 1867 by F. J. Furnivall in the introduction to the *Babees Book*, but with the exception of Leach's *English Schools before the Reformation* (1896), *Educational Charters* (1911), and his contributions to the Victoria County Histories of England, de Montmorency's *State Intervention in England*, and Watson's *English Grammar Schools to 1660 and Beginnings of the Teaching of Modern Subjects in England*, little has been done toward a comprehensive history of English education, the series of monographs on the colleges of Oxford and Cambridge, and several on the large Public Schools may here be mentioned. In America the field is only just beginning to be studied.

P. M. and I. L. K.

#### See EDUCATION, ACADEMIC STUDY OF

**France** — The history of education is hardly taught in France, and only figures in the curriculum of normal schools. A ministerial decree of Aug. 3, 1881, introduced this subject into the course for the third year in the following terms: "History of Pedagogy, the chief educators and their theories, Analysis of the most important works."

In the universities there are no special chairs in the history or science of education except where occasionally the professors of philosophy or the instructors, few and far between, who fill a chair in the science of education, devote their courses to the history of a period in education or to some educational topic. It was in this way that the present writer as professor of philosophy in the faculty of letters of the University of Toulouse, took education as the topic of his lectures, which resulted in the two volumes on the *History of Educational Theories in France*.

In the secondary schools, *lycées* and *collèges*, no attention is paid to the history of education, but the candidates for the various *agrégations* (*q v*) must study at least some sections. The decree of July 26, 1900, which regulates the requirements in the practice of education which candidates must attain to be permitted to present themselves for the competitive examination distinguishes between the practical apprenticeship as assistants in a number of classes in the *lycées* and preparation in theory by attendance at twenty conferences dealing with secondary education in general, its history and organization in France and abroad.

Thus the history of education is not a regular subject of instruction in France. For a long time those who were inclined to study it had only the German authorities at their disposal. Thus Fritz, in giving a survey of the works on history of education (in *Esquisse d'un Système complet d'Instruction et d'Éducation et de leur Histoire*, Vol. III, ch. I (Strassburg, 1843), refers in the main to German works and only mentions one in French (Guizot, *Essai sur l'Histoire et sur l'État actuel de l'Instruction publique en France*, Paris, 1816). A year after Fritz's work there appeared *Histoire critique et législative de l'Instruction publique et de la Liberté de l'Enseignement en France* by H. de Riancey (Paris, 1844), which aimed with the help of a survey of educational history to establish some standards for further reform. But the contributions to the subject in France were very small until the eighties, since when a large number of works, the majority dealing rather with French history, and particularly the period during or subsequent to the Revolution. The standard work until this period was that of Jules Paroz, *Histoire universelle de la Pédagogie* (Paris, 1867).

The time has gone by when the efforts of the Revolution in educational matters can be ignored, or when a French university scholar, like Théry, in his *Histoire de l'Éducation en France*, can open the chapter on the Revolution with these contemptuous words, *On n'étudie pas le vide, on n'analyse pas le néant*. It is precisely this period in our history, which with the Report of Talleyrand to the Constitutional Dynasty, of Condorcet to the Legislative Assembly, of the plans of Mirabeau, Lakanal, Daunou, has been one of the most productive, preparing the ideas which have been assured their accomplishment in the Third Republic. Collections of important documents have been published which enable scholars to investigate the educational part, of these the most notable is the work of Gréard (*q v*), *La Législation et l'Instruction primaire depuis 1789 jusqu'à nos Temps*, including laws, decrees, and ordinances preceded by an introduction. Gréard was one of these who contributed greatly to spreading a taste for the history of education in France, especially by his excellent studies of the most celebrated educators, Mme de Maintenon and Mme de Rémusat, and by his introduction to Fénelon's *Éducation des Filles*. Mention must also be made of M. F. Buisson, the second edition of whose *Dictionnaire de Pédagogie* has just appeared, giving a careful treatment of the history of education and articles on the most important educators. The author's own *Histoire de la Pédagogie* has been translated into English by W. H. Payne, as well as a few volumes of his series *Grands Educateurs* (*Pioneers of Education*, London, 1908).

G. C.

**Its Place in the Curriculum** — See EDUCATION, ACADEMIC STUDY OF.

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**HITCHCOCK, EDWARD** (1793-1864) — College president and scientist, was born at Deerfield, Mass., on May 24, 1793. He received his education in private schools and at Yale College. He was principal of the Deerfield Academy (1815-1818), professor of chemistry and natural history in Amherst College (1825-1844), and president of Amherst College (1844-1854). He served as state geologist of Massachusetts, and was one of the founders of Mount Holyoke College (*qv*). His writings include *Life and Labors of Mary Lyon* (1852), *Reminiscences of Amherst College* (1863), and several works on geology and botany.

W. S. M.

See AMHERST COLLEGE

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**HOAR, LEONARD** (1630-1675) — Third president of Harvard College, and a prominent clergyman and physician, was graduated at Harvard in 1650, and subsequently took a degree in medicine at the University of Cambridge, England. He succeeded Chauncy as president of Harvard in 1672. "As a scholar and a Christian he was very respectable, but being deficient in the spirit of government, and falling under the displeasure of a few men of influence in the neighborhood, the students were thus encouraged to array themselves against him, and his situation was rendered so unpleasant that he was under the necessity of resigning his office March 15, 1675." He advocated technical and industrial education as a part of the college course.

W. S. M.

See HARVARD UNIVERSITY

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**HOBART COLLEGE, GENEVA, N.Y.** — The successor of Geneva Academy. In 1860 the present title was adopted. Though largely aided by Protestant Episcopal Societies and individuals, the college is nonsectarian in ad-

ministration. Hobart College is among the institutions originally accepted by the Carnegie Foundation for the Advancement of Teaching (*qv*). The institution confers the usual bachelor's degrees in arts, philosophy, and science, and the degree of A. M. for one year's graduate study in residence. Admission is by examination or certificate from an approved four-year high school. In September, 1908, the trustees of Hobart College opened William Smith College for the separate instruction of women, founded through the gift by William Smith, Esq., of Geneva, of \$475,000. The work of the two colleges is conducted independently by a common faculty upon whose recommendation the corporation of Hobart College grants to the students of both institutions the same degrees. There was in 1910-1911 an enrollment of ninety men and thirty-eight women, with a faculty of twenty-three members.

C. G.

**HOBART, JOHN HENRY** (1775-1830) — Founder of Hobart College (*qv*), was educated at the University of Pennsylvania and Princeton University. His life was devoted to the ministry and episcopacy of the Protestant Episcopal Church. In 1821 he established an academy and divinity school at Auburn, N. Y., which four years later became Hobart College. He was the author of several works on religion and religious education.

W. S. M.

See HOBART COLLEGE

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**HOBBS, THOMAS** (1588-1679) — Son of an illiterate clergyman of the English church. He was brought up by an uncle, a glovemaker in Malmesbury. Hobbes' education began at four years at a school in Westport, where he mastered Latin and Greek at an early age and was able to translate the *Medea* of Euripides into Latin iambic verse before he was fourteen. Entering Magdalen Hall, Oxford, at fifteen, he received his bachelor's degree in 1608. He seems to have had little sympathy with the pronounced Calvinism which prevailed in Oxford under Dr. Wilkinson, and was left very much to his own devices in his university course. Later he became tutor to the son of the Duke of Devonshire and throughout his life retained his connection with the family, with the exception of two breaks. During the Protectorate he was appointed tutor of the Prince of Wales, then in exile in Paris, where Hobbes became a member of the learned coterie which gathered about the genial Père Mersenne. He also traveled much in Europe and acquired considerable acquaintance with the mathematical and physical sciences and philosophy of the continent. His devotion to the cause of the English monarchy and nobility, however, rendered him unpopular among the leaders of the Puritan uprising, and gave a decidedly political

cast to all his more important speculations, thus illustrating a characteristic tendency of English philosophy. For if Hobbes be "the father of English psychology," he also led the way in teaching that intellectual activity should, in aim and application, be practical.

Not long before the opening of the Long Parliament (1640) he wrote his works entitled *On Human Nature* and *De Corpore Politico*. At Paris he wrote others, including his masterpiece, *Leviathan* (1651), which is a treatise on social polity. It was, therefore, not until his fiftieth year that the germ of his system began to fructify, in which the following points are to be noted. (1) Hobbes sought a philosophical foundation for his doctrine in the idea of motion. With this as a starting point he believed that the whole body of knowledge could be disposed of in three sections under the headings of Body, Man, and Society. (2) Accordingly, in the work *De Corpore*, the idea of body is examined. Here he anticipated Leibnitz by attributing an atomic structure, endowed with potentialities of feeling, to matter. He explained natural or physical phenomena in terms of the universal laws of motion, as motion had been mechanically explained by Galileo and others. (3) In *De Homine* he sought to deduce all subjective experience from sense, as sense is physically determined by the body and its motions. All knowledge, therefore, grows out of sensations. After sensation there remains behind the memory of it, which may reappear in consciousness, and, aided by signs (words, general notions, definitions, and mathematical formulæ), be communicated to others. All thought is merely the addition and subtraction of sense perceptions. (4) In *De Cive* he attempted to bring both society and man within the same principles of scientific explanation as he found applicable to nature, being the first Englishman to make such an attempt. This part of his doctrine starts with the idea that all human beings are at war with each other. But this state of things is so unsatisfactory that there is all the more need of an absolute ruler, king or assembly, whose authority shall be law and to which all are compelled to render unconditional obedience by formal contract. Right and wrong are thus merely the conduct which the State sanctions or punishes. Even religion is a State-regulated convention, from which there is no appeal.

The great work of Hobbes, *Leviathan*, is an elaboration, in a more popular form, of his theory of the commonwealth, and it is in this work that he touches on the question of education. For in it he attacked violently the universities and their systems, maintaining (1) that by their allegiance to the Puritan cause they were subverting public order; and (2) by their adherence to the old learning they were working social mischief. A bitter controversy was aroused by these charges, which Dr. Wallis, of Oxford, succeeded in meeting. As a reply

to Wallis he published his *Six Lessons to the Professors of Mathematics* (1656), in which he explains his anti-Euclidean view of geometry. This he followed by other smaller works on the same subject, written in a controversial style, which, however, did not add greatly to his reputation as a philosopher.

Hobbes was a man of immense energy, untiring activity, and regularity of life. Some idea of the range of his interests can be gathered from the fact that he translated Thucydides and at eighty-five turned four books of the *Odyssey* into English rhymes, adding later the *Iliad*, to which he prefixed an essay on the nature of heroic poems.

H. D.

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**HOBY, SIR THOMAS** (1530-1566). — English diplomatist and translator of Castiglione's *Il Cortegiano*. He studied at Cambridge and traveled much in Europe; he was knighted in 1566 and was sent as English ambassador to France. He died in Paris. The *Courtier of Count Baldessar Castilio* was published in London in 1561, and its popularity is attested by the number of other editions, 1565, 1577, 1588, 1603. Of Hoby, Ascham (*q v*) says in the *Scholemaster* (Arber's reprint, p 66) that he "was many ways well furnished with learning, and very expert in knowledge of divers tongues."

See CASTIGLIONE, BALDASSARE.

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**HOCKEY, FIELD.** — This is one of the few team games played by men and women. Although its origin goes back to the fourteenth century in France, hockey was developed in England, the home of nearly all modern athletic games. It is the favorite winter sport among English women and is gaining in popularity among men. The game was introduced to girls in American schools and colleges in the autumn of 1901. It was received with so much interest and enthusiasm that it soon won a permanent place in the athletics of schools and colleges for women. Field hockey is a splendid, healthful game; its effect upon the players is to develop vigor, endurance, and mental alertness. It offers to girls essentially the same advantages that boys derive from football, lacrosse, and ice hockey.

The game is played by two teams of eleven players — five forwards, three half backs, two full backs, and a goal keeper. The outfit con-

sists of a hardwood stick which has a blade about a foot long, bent at an angle of forty-five degrees from the handle, which is about two feet long. The ball used is a cricket ball or a solid rubber ball painted white. The game is played on a smooth field a hundred yards in length by not less than fifty yards nor more than sixty yards in breadth. This space must be marked out with whitewash lines and with a flag at each corner. The longer lines are called the "side lines" and the shorter ones the "goal lines." Transverse lines are marked in the centre and midway between the center and the goal lines. Five yards inside each side line is marked a dotted line, parallel with the side line, this is called the "five-yard line." In the middle of each goal line, and four yards apart, are placed the goal posts. These are uprights seven feet high with a cross bar on top and a net forming a pocket behind the posts and crossbar. In the front of each goal line and fifteen yards from it is drawn a line four yards long, parallel to the goal line. The ends of this line are carried round in a curve, forming a quarter circle, until they reach the goal line at a point fifteen yards from the center of the goal. This half circle is called the "striking-circle."

G. L. M.

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**HOCKEY, ICE.**—A strenuous and fascinating game developed in Canada during the last quarter of the nineteenth century. The English game of field hockey and the old game of "Shinty" or "Shinny" contributed the essential principles of the modern game of Ice Hockey. In the United States this game is played by boys and young men in schools and colleges where the climate permits of ice skating during the winter months. It is played on a rink about 80 by 180, or 100 by 200 feet surrounded by a wooden wall about two feet high. At each end is a goal made of two posts four feet high and six feet apart. The game is played by teams of seven players—four forwards, one on each wing and two in the center, a cover-point, a point, and a goal keeper. The players use high, long, and strong skates, and a bent stick made of ash or hickory. The stick has a blade about a foot long and three quarters of an inch thick, bent at an angle of forty-five degrees from the handle, which is three and a half feet long. The game is to push and drive a puck into the goal. The puck is circular, one inch thick, three inches in diameter, and made of vulcanized rubber.

The rules of the game resemble those of American football; the player must be "on side," and the puck must not be passed forward to another player. As played in the United States and Canada, it is a rough and strenuous game. A good hockey player must

be a fine skater, and possess strength, agility, pluck, good judgment, and endurance. Hockey is a splendid game to develop physical vigor and manly qualities when properly played, but like basketball, and football it degenerates into a rough and sometimes brutal game when not properly supervised. Students should not be permitted to engage in this sport unless they have been examined by a competent physician, and declared free from disease or organic weakness.

There is a real need for such games as ice hockey, football, and basket ball for the best physical and moral development of healthy boys and young men, but these games require most careful supervision by educational authorities to insure beneficial rather than harmful results.

G. L. M.

See ATHLETICS, EDUCATIONAL.

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**HOFWYL.**—See FELLEBERG

**HOGG, QUINTIN** (1845–1903) — English social reformer and founder of the Regent Street Polytechnic, was born in London, February 14, 1845, the fourteenth child of Sir James Weir Hogg, Baronet and Privy Councillor. Quintin Hogg was educated at Mr. Lee's preparatory school at Brighton and at Eton (1858–1863), where he showed intellectual promise, was very popular with the boys on account of his athletic distinction and public spirit, and founded in Joynes' boarding house a Sunday Bible Class and prayer meeting which went by the name of the "Synagogue." England was moved at the time by a strong religious revival, and Hogg, most manly of boys, had an unique influence upon the life of his contemporaries at Eton. In 1863 he went into a tea merchant's business in Mincing Lane, in the city of London, and was touched with sympathy for the wastrel boys whom he saw in the streets. Impressed by some experiences with these, he devoted himself zealously to obtaining first-hand acquaintance with their class, and, disguised as a shoeblack, he spent nights with poor boys, frequently sleeping in the open or under arches. The beginning of the Polytechnic may be traced to his efforts to teach reading, with the Bible as a textbook, to two crossing sweepers.

With his friend Arthur (afterwards Lord) Kinnaid, he hired a room in Of Alley (now York Place, Charing Cross) and started a ragged school (*q.v.*). He and his friend held prayer meetings for the Covent Garden porters and classes for the flower girls at Charing Cross. All this time Quintin Hogg was mastering the details of his own business and taking a leading part in the athletic life of Eton and of Lon-

don. In 1868 he traveled in the West Indies and the United States and formed a strong admiration for the Americans. In 1871 he married the daughter of William Graham, a famous collector of pictures. For nearly thirty-two years Hogg and his wife devoted their leisure and a great part of their fortune to work among young people in London. Their experience in the United States and Canada made them strong advocates of supervised, selected child emigration. In America Hogg met D. L. Moody, whose subsequent work in England he did much to forward. The Ragged School, which had been moved first to Castle Street, W. and then to Long Acre, became the center of a widely extending philanthropic work. Mr. Robert Mitchell acting as secretary from 1872 onwards. Trade classes were organized with the aid of grants from the Science and Art Department, and the combination of educational with religious work was the distinctive feature of Hogg's policy. In 1881 he purchased the buildings of the Polytechnic, an institution famous in its time but then in decrepitude, which had combined instruction and amusement for the young. This was the first of the London Polytechnics (*q.v.*), which are institutions under public management for the provision of instruction, recreation, and social intercourse for young men and women of the wage earning and lower middle class. Hogg lived in Cavendish Square, in a house which adjoined the Polytechnic at the back. In order to make use of the rooms which lay empty in the daytime, a day school was established at the Polytechnic in 1886. The large annual deficit on the working of the Polytechnic was met from Quintin Hogg's private purse.

Hogg's life was given to the fusion of the two ideals of Christian service and educational organization. When his work came to maturity, the Elementary Education Act, 1870, had already provided a stronger, though still imperfect substructure for technical instruction. The religious revival had moved some of the rich to a new sense of public duty. Collectivist thought had diffused an ideal of social unity in civic enterprise. The timeliness of Hogg's work lay in the convergence of these different currents of thought and opportunity.

But educational work on a scale so large as Hogg's could not permanently depend upon private liberality. Its very importance not less than its financial needs necessitated public endowment and representative control. In 1878 a Royal Commission was appointed to inquire into the condition of the parochial charities of the city of London, many of which, though wealthy, had become obsolete in application. In 1883 the City of London Parochial Charities Act was passed and directed the Charity Commissioners to frame new schemes for the application of city charities in such a way as to promote the welfare of the poor of the metropolis by education, free libraries, open

spaces, and otherwise. The work of the Polytechnic attracted the attention of the commissioners, and large subsidies were promised from the city parochial funds, including a capital grant of over £11,000 to the Regent Street Polytechnic and a yearly endowment of £3,500, on condition that supplementary resources were obtained from the public. Quintin Hogg now for the first time appealed for subscriptions. The fact was disclosed that his personal expenditure upon the Polytechnic alone had amounted to £100,000. Public opinion was heartily responsive and in the course of a few years ten new Polytechnic institutes, with four branches, were established in London in imitation of the work which Hogg had set going in Regent Street.

Hogg, still immersed in the work of the Polytechnic, died suddenly on January 16, 1903. At the "Poly," as the Polytechnic is known to its members, the memory of "Q. H." will always remain in affectionate remembrance. Hogg's work was one of the causes which, at a critical time, prevented a breach between religious activities and educational developments in England. It now needs to be supplemented (1) by the systematic organization of continuation classes for adolescents, and (2) by an enlargement of the resources of the University of London and its more scientific adjustment to the educational needs of the metropolis.

M. E. S.

See BESANT, SIR WALTER, *MECHANICS INSTITUTE, POLYTECHNICS, LONDON*

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#### HOLBROOK, ALFRED (1816–1909) —

Normal school principal, son of Josiah Holbrook (*q.v.*), was educated in the public schools of Massachusetts and at Groton Academy. He was for several years principal of the Western Reserve Teachers' Seminary, and in 1855 he founded the Southwestern Normal School at Lebanon, Ohio, which ultimately assumed the name of National Normal University. He was president of this institution for fifty years. He wrote *Methods of Teaching, School Management*, and an English grammar.

W. S. M.

#### HOLBROOK, JOSIAH (1788–1854). —

Founder of the Lyceum movement (*q.v.*) in the United States and organizer of one of the earliest industrial schools, was educated in the district schools at Derby, Conn., and graduated at Yale College in 1810. He organized an industrial school at Derby in 1819, after the pattern of Fellenberg's institution at Hofwyl; and in 1824 he established an Agricultural Seminary at Derby, in which, besides the customary secondary school studies, surveying

## HOLIDAYS

and practical agriculture were taught (See AGRICULTURAL EDUCATION.) His most important service to education, however, was the development of the lyceum movement which resulted in the organization of lecture courses, the establishment of libraries, and the equipment of schools with scientific appliances in hundreds of towns in the country. (See AMERICAN LYCEUM ASSOCIATION.) In 1826 he opened an educational exchange in Boston for the manufacture and sale of school apparatus. In 1830 he began the publication of a series of *Scientific Tracts* for the use of teachers and advanced students. In the next year he was active in the organization of the American School Society (qv). In 1832 he founded *The Family Lyceum*, a weekly paper for the diffusion of useful knowledge. He lectured widely before lyceum associations on scientific subjects, and was a frequent lecturer at teachers' institutes conducted by Horace Mann in Massachusetts and Henry Barnard in Connecticut. He was also active in the American Institute of Instruction (qv) and the various educational associations in New England, New York, and Pennsylvania.

W. S. M.

See AMERICAN LYCEUM ASSOCIATION: LYCEUMS

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**HOLIDAYS, SCHOOL** — In the United States the public schools in cities usually begin in September and continue until May or June. The common term in the North Atlantic and North Central groups of states is from 180 to 200 days in the cities, 140 to 160 days in the village or town, and 100 to 140 days in the rural schools. The shorter the term, the longer the summer vacation. Nearly all town schools begin by October, the term being shortened at the end. During the regular school year certain holidays are commonly granted, the most common and universal of which are every Saturday and Sunday in full, Thanksgiving Day, on the last Thursday in November, and commonly the Friday following it; from ten days to two weeks covering Christmas and New Year's, and from one or two days to a week at, or near, Easter. Other general holidays frequently observed as school holidays are election day, coming early in November in alternate years; Washington's birthday on February 22; and Memorial Day on May 30. Admission Day is observed as a holiday in some states; Columbus Day (October 14) is being declared a school holiday in many states; and Lincoln's birthday (February 12) is also frequently observed in the Northern and Western states in whole or in part as a holiday.

On the continent of Europe Saturday is seldom a whole holiday. In Germany schools are commonly in session six mornings a week,

## HOLLAND

with from two to four afternoons in addition. Wednesday and Saturday afternoons are commonly half holidays. About ten weeks of vacation are allowed each year in German schools, in addition to certain church festivals. In Prussia and most of the northern states two weeks are given at Easter; about one week at Whitsuntide, four weeks in the summer, mostly in July, two weeks at Michaelmas; and two weeks at Christmas. Bavaria, where the summers are warmer, has no vacation at Whitsuntide and only one week at Christmas, but about eight weeks in summer. The church festivals of Epiphany, Candlemas, Annunciation, Corpus Christi, *Peter-Paulstag*, All Saints, and Conception of the Virgin are observed in Catholic countries, the *Reformationsfest* in German Protestant schools, and the birthdays of the reigning sovereigns commonly in all monarchical countries. Not to be omitted are the holidays given when the thermometer registers twenty-five degrees Celsius at ten o'clock A. M. (*Hitzefreiheit*), at the discretion of the school principal or the local school inspector (*Ortschulinspektor*). In France the week-holiday is on Thursday, Saturday being a full school day. The summer vacation is of about two months' duration, with short vacations at New Year's and Easter, and on certain religious and national holidays.

In England the common practice in elementary schools is to give about two months of vacation throughout the year, usually divided as follows: three to four weeks in summer, two weeks at Christmas, one week at Easter, and one week at Whitsuntide. Special holidays are unusual, although a movement is on foot to introduce the general observance of Empire Day in schools. In the secondary schools twelve to fifteen weeks in each year are given up to vacations, of which six or seven weeks are taken in summer, three or four weeks at Christmas, one to three weeks at Easter, and in some cases, especially in the North, one to two weeks at Whitsuntide. In addition most schools recognize a mid-term holiday of one or two days, and one or two half holidays in each week or a whole holiday on Saturdays. Special holidays are observed on Founder's Days in the older schools, and occasional half or whole holidays are given to celebrate any distinctions won by a school either in scholarship, athletics, or the more solid distinctions of later life.

See SESSION, LENGTH OF E. P. C.

**HOLIDAYS, SPECIAL** — See SCHOOL TERM, LENGTH OF, SPECIAL DAYS, also EXCURSIONS, SCHOOL; FESTIVALS, SCHOOL

**HOLLAND.** — See NETHERLANDS, EDUCATION IN THE.

**HOLLAND, PHILEMON** (1552-1637). — An English schoolmaster and translator, who practiced medicine for some time before he

became usher in Coventry Free School in 1608, and then headmaster (1627-1628). He played an important part in the civil life of Coventry, and was given the freedom of the city in 1612. The "translator Generall in his Age" (as Fuller calls him) was familiar with Latin, Greek, Italian, and French, and had a good command of the euphuistic style in English which was then popular. His translations were somewhat free, since he worked on the theory that "each nation hath severall manners, yea, and terms appropriate by themselves." He translated so many books, according to Fuller, "as will make a country gentleman a competent library for historians." These translations included Livy (1600), dedicated to Queen Elizabeth, Pliny's *Natural History* (1601); Plutarch's *Morals* (1603); dedicated to James I, Suetonius' *Twelve Caesars* (1606); Camden's *Britannia* (1610); and Xenophon's *Cyropædia* (1632).

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**HOLLOWAY COLLEGE ROYAL** — See WOMEN, EDUCATION OF, LONDON, UNIVERSITY OF

**HOLMES, GEORGE FREDERICK** (1820-1897) — College president and textbook author, was educated at Durham University, England, and came to America in 1838. He taught in secondary schools in Virginia and Georgia, was professor in Richmond College (1845-1848), first president of the University of Mississippi (1848-1849), professor in William and Mary College (1849-1857) and the University of Virginia (1857-1897). He was author of an extended series of textbooks widely used in the South, and of several historical works. W S M.

**HOLMGREN TEST** — A method of testing the ability to discriminate between colors. A large number of differently colored worsted skeins, thoroughly intermixed, is shown the subject to be investigated. The experimenter selects one of these, and, giving it to the subject without naming its color, asks him to pick out from the others, one by one, all worsteds of similar coloring. The normal subject does this rapidly and without error. The subject with defective color vision will, however, if the color given him to match falls within his defect, show such hesitancy in selecting and such uncertainty in his matches that the experimenter may, on this account alone, well be suspicious. But in addition to the uncertainty, he will make positively wrong choices. There are two main tests, — the green test and the red test. For the first a bright, low-saturated green, neither yellowish nor bluish, is given as the test color. The red-green color-blind person will then chiefly choose, as similar colors, the grays, the browns, and the slightly reddish, yellowish, and bluish hues. For the red test an unsaturated

red is chosen as the test color. The errors will include worsteds tinged with violet, and greenish and brownish hues. Sometimes one of these tests will suffice, sometimes both are needed. In one or the other, however, both types of the red-green color-blind will with fair certainty betray themselves, as well as those commonly termed "color-weak." The yellow-blue color-blind will choose a bluish red as similar to a yellowish red or a bluish green as similar to a yellow-green. It has been found, however, that many of the "color-weak," and even of the color-blind, may, especially with practice, successfully pass the Holmgren test, in cases of doubt, therefore, one of the more exact tests should be given. R. P. A.

See EYE, NAGEL'S TEST

**HOLT, JOHN** — The writer of a very early Latin grammar, the *Lac Puerorum, or Mylke for Children*. Holt was master of the school attached to Magdalen College, Oxford, a school renowned for its teachers of grammar, including such men as Anwykyl, Stanbridge, Robertson, and Cooper. Dr J H Lupton (*Life of Colet*, p 24) thinks that the earliest undated edition of Holt's book was published between 1486 and 1496. The earliest dated edition appears to be 1497, thirty years before Colet's *Aditio* (1527), which was the basis of Lily's *Grammar*. The simplicity of Holt's grammar is remarkable, being written in the easiest English, clearly with a view to helping children. The earliest printed Latin grammars were in English, the use of Latin in the textbooks was established by Lily and the later grammarians and was a constant cause of disagreement amongst English teachers. Holt begins with the names of parts of speech, and proceeds to the declension of the article. With the aid of woodcuts representing a hand or similar device, he illustrates the different cases or declensions by labeling different parts with the appropriate names. In a businesslike, sensible and concise way Holt goes through the whole of the accidence. Thus in dealing with the moods of the verbs, he calls them the showing mood or indicative, the bidding mood or imperative; the willing mood or optative, leaving the infinitive undescribed. Then he proceeds to the simple statement of the concord, the ablative absolute, construction of verbs with diverse cases, and other important constructions, all being arranged so as to give the pupil the most important as well as the shortest teaching. The book ends with epigrammatic verses of Sir Thomas More in praise of Holt's book. F. W.

See GRAMMAR, ENGLISH

**HOLY CROSS COLLEGE, NEW ORLEANS, LA** — A school for boys conducted by members of the Congregation of the Holy Cross, established in 1879. Commercial and classical courses are offered.

**HOLY CROSS COLLEGE, WORCESTER, MASS** — See JESUS, SOCIETY OF, EDUCATIONAL WORK OF.

**HOLYBAND or HOLLIBAND, CLAUDE** (pseudonym of Claude de Samliens or A Sancto Vinculo) -- French Huguenot refugee in England, came to England in the second half of the sixteenth century, at any rate by 1566, and remained there till 1597. He played an important part in the development of French studies in England. In 1566 Holyband published his *French Littleton*. This was intended to appeal specially to lawyers and students of the Inns of Court, and was published by Holyband's Huguenot compatriot, Vautrollier. In 1573 an edition of Holyband's *French School-master* was published (the first edition, of which no copy is known, is said to have been issued in 1565). This contains dialogues on such subjects as Getting up in the morning, Two neighbours meeting, Welcoming any one to a house, To ask the way, To ask for a lodging, To go to bed, To buy and sell. Then follow, Proverbs, Creed, Ten Commandments, Graces, etc. In 1580 Holyband wrote his *Treatise for declining of (French) Verbes* and his *de Pronunciatione Linguae gallicae* (in Latin) in the same year. In this year (1580) also, he published *The Treasure of the French Tongue, teaching the waye to maie all sortes of Verbes; enriched so plentifully with Wordes and Phrases*.

In 1593 the *Treasure* was developed into *A Dictionarie, French and English*. This was the most important French dictionary which had appeared, and Miss Lucy E. Farrer has shown that a copy was by 1608 augmented by Randle Cotgrave (*qv*) and in 1610 handed over to Islip the printer, who issued the complete work as Cotgrave's *French-English Dictionary* in 1611. Holyband thus deserves a high place in the history of French studies in England, and is an interesting example of the close connection of the immigration of religious exiles with the teaching of their native language in the country of their adoption, partly of course because schoolmasters often took an important part in the religious controversies of their time in their own country, and when exiled continued their old avocation of teaching for a living.

F. W.

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**HOLYOKE, EDWARD** (1689-1769). -- Eleventh president of Harvard College, was graduated at Harvard in 1705. He was librarian at Harvard from 1709 to 1712, and tutor from 1712 to 1716. He was president from 1737 to 1769. "At the head of the university he possessed a dignity peculiar to himself.

His majestic appearance, his speech and demeanor, were calculated to impress with awe, but notwithstanding his air of dignity and authority, he was humble in heart."

W. S. M.

See HARVARD UNIVERSITY.

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QUINCY, JOSIAH. *History of Harvard University*. (Cambridge, 1862).

**HOME AND COLONIAL SCHOOL SOCIETY.** — This society was founded by John Stuckey Reynolds (1791-1874), a retired civil servant, in 1836, though in the course of a few years his original plans were several times modified. (1) The first title, "The Home and Colonial Infant School Society," corresponded with the first purpose, the training of infants' teachers. A widening of the purpose was indicated in 1845, when the words "and juvenile" were added after "infant," but the new title proved too cumbersome for daily use, and it was in 1848 reduced to its final form, "The Home and Colonial School Society." (2) At the outset the students were not required to belong to any particular denomination if they held "the fundamental truths of the Bible" and were "of decided piety," though the committee in their first report seem to regret the preponderance of Dissenters among the students. In 1841 the object of the society was (as it still is) stated to be "the improvement and extension of education on Christian principles, as such principles are set forth and embodied in the articles of the Church of England." In 1846 critics were informed that the committee "some years ago deemed it expedient to provide" separate houses for Church and Dissent, that these houses were "at a moderate distance from each other," and that the students met "only during school hours and for lessons." The critics, however, were not silenced, and in 1848 a rule (now the thirteenth of the society's "Laws") was passed, prescribing that "all individuals appointed to reside" in the college should sign a declaration of conformity with the Church. (3) As Reynolds accepted Wilderspin's theory that an infant school ought to have both a master and a mistress, married couples were specially invited to become students. At first the invitation was readily accepted, but in 1847 the committee reported that the supply had diminished and that "these circumstances" had "necessarily led to the training and employment of females almost exclusively." (If they had waited a year or two, they could have omitted the "almost.") (4) The first home of the society was in Southampton Street, Holborn, London; but after two years the college was removed to Gray's Inn Road, where, with repeated enlargements of its borders, it remained till 1903.



The Rev. Charles Mayo (*q.v.*), one of the earliest English disciples of Pestalozzi, was an original member of the committee, and through his influence the principles of the Swiss reformer were included in the curriculum. He died in 1846, but the good work was continued by his sister, who wrote several textbooks and for many years supervised the professional training. The *Seventy-Fifth Annual Report* of the Society says that "the principles of Pestalozzianism which it strove to inculcate and extend have long since incorporated themselves in some form or other into every department of the training of the young, and are therefore no longer so distinctive as they were, say, fifty years ago."

When in 1846 state grants were offered to Training Colleges, the committee resolved to accept them. As some of the students had, almost from the beginning, been prepared for teaching in nurseries or in private schools, the operations of the society were divided into two departments (still subsisting), a "government department" and a "non-government department." The premises in the Gray's Inn Road, being only adapted houses, could never have reached a high standard of comfort or convenience, and as the standard rose faster than improvements could be made, the Committee determined to migrate to the suburbs. Large and imposing buildings surrounded by fourteen acres of fine grounds were bought at Wood Green, where in 1903 the college entered on a fresh career of usefulness and prosperity.

D. S-n

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**HOME AND THE SCHOOL.** — See FAMILY EDUCATION, PARENTS AND THE SCHOOL.

**HOME EDUCATION.** — See FAMILY EDUCATION.

**HOME EDUCATION, INTERNATIONAL CONGRESS OF.** — See INTERNATIONAL CONGRESSES OF EDUCATION.

**HOME GEOGRAPHY.** — See GEOGRAPHY.

**HOME STUDY, HYGIENE OF.** — An important function of school instruction is to develop interests that will determine and guide the pupil's activity outside of the school. For the attainment of this end home study is an important means. While hygienists strongly condemn excessive home work and the evils of worry and anxiety often connected with it, the desirability of a certain amount of home study, especially in the higher grades, is now generally recognized. With home study it is, of course, necessary that the home conditions should be hygienic. The wholesome habits developed in the school should not be broken

by unhygienic work at home. Pupils should sit in correct posture and hold the book at a proper distance from the eyes; they should work for rational periods of time; they should breathe pure air, not overheated or too dry. All the commonplace but important rules of hygiene for intellectual work should be observed.

For many years there has been great conflict of opinion among educators in regard to the kind and amount of home study that is desirable. Recently special investigations have been made by Schmidt and Mayer, which bring out certain factors that are likely to be overlooked. It appears that in our large cities frequently there is really no home, because a whole family may be crowded into one or two basement rooms, an attic, or the like, and suitable conditions for home work are out of the question. Again it is shown that in most subjects children working in a group of other children do more and better work than in the relative isolation of the home. Certain kinds of work, however, seem to be done better in the home when the conditions are hygienic, especially work requiring independent thinking, like composition in the mother tongue, for example. Schmidt's studies show apparently that the ordinary disturbances in the home from the presence of the other members of the family, the noise of domestic work, and the like, do not serve as distracting stimuli for ordinary children. And thus it would appear that for some kinds of work in a moderate amount there are distinct advantages in home study, but that for most of the school work, especially the more mechanical part, the conditions are more favorable in the schoolroom.

The practice of students in regard to home study differs greatly in different countries and in different grades of the school, and individual variations are likely to be very great, some children studying none at all, others perhaps several hours a day. There is grave danger that the best students will overwork. Kemsies, Griesbach, and Roller in Germany and Patzak in Austria found some students in the higher classes of the secondary schools who spent four or five hours daily in home study. The regulations and customs in different countries in this matter also differ greatly. There is probably, however, a consensus of hygienists that home work should be limited and in regard to the points included in the school regulation at the city of Zurich. For the secondary schools it reads as follows: "The home work must be thoroughly prepared for by the instruction. The repeated copying of the same task as a punishment is inappropriate. From the forenoon to the afternoon of the same day no tasks may be given. For Sundays and holidays, as well as the vacations, no more tasks are to be given than from one day to another. Where several teachers give instruction in the same class, there should be an understanding in

regard to the number and extent, and a proper division, of the home tasks " W. H. B.

See SCHOOL MANAGEMENT

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**HOMER** — The name Homer means to us the *Iliad* and the *Odyssey*, the two Greek epics with which occidental literature begins. It is generally agreed that these earliest poems of Europe are also the greatest. A fact so striking, while it raises questions that cannot be answered, itself goes far to justify the place which Greek has held in occidental education, if literature should have in education any considerable place. These epics are also a poetic picture (not a scientific description) of a historical period, an early stage in the development of European society. In this sense they may be called the beginning of European written history, though they are fiction. Archaeological finds, as idols, utensils, artistic handiwork, lordly dwellings, also throw light on the life of which they are the product, and are a parallel to Homer on this side, at some points perhaps of more scientific value, but for most people these fragments have less interest than the poet's whole.

Such highly wrought compositions, of nearly 15,000 and 12,000 lines respectively, must have had predecessors, though none survive. First, the meter is not that of rude beginnings. The dactylic hexameter is bound by strict laws, yet is flexible and expressive, and is employed with a mastery that speaks of long practice, it was probably formed long before Homer, by the slow welding of two more primitive short verses. The language also is not the unmixed speech of one region and a single period; it is a literary dialect, as truly as the language of Tennyson, combining for artistic use forms and phrases that in living speech had belonged to distant localities and distinct generations and that bear the marks of long poetic tradition. Again, into the tale itself are skillfully woven some elements that are shown to have originated,

and been highly elaborated in verse, in widely separated parts of Hellas. Finally, there are allusions in the poems to earlier heroic lays, tales of famous deeds, and to songs of labor and of festival, and of mourning. Far from being themselves primitive, the two poems are the culmination of a long development, the product of an age of high poetic culture and informed with the distinctive qualities of the greatest Hellenic art, however undeveloped the people may have been in other respects. The date of the poems is unknown, by inference and conjecture it may be placed about 1000 to 800 B C.

The *Iliad* is probably slightly the earlier. The title *Iliad* seems at first inappropriate, only a small part of the war against Ilios, another name for Troy, is included. Yet around the account of the wrath of Achilles and its consequences the poet groups a sufficient account of the origin and of typical incidents of the war to represent well the nature and spirit of the whole. The name is after all not an artistic fault. The subject of the *Odyssey* is the return of Odysseus after the fall of Troy.

The two poems together present a wide range of human life under forms both simple and typical, so elemental that they are in essence true for all ages. And this is done with dignity, with a purity of taste that rarely errs, with a rapid movement that is never hurried, with a charm that holds the reader as it held the ancient listener of every class. In Greek education, from the earliest of which we know anything, the *Iliad* and *Odyssey* were the school-books most widely used. The language was almost as antique by the fifth century B C as that of Chaucer to us, it therefore gave the Greek boy a little of the philological training that comes with the study of a foreign tongue, and was at the same time the basis of all later poetic language, so far as that differed — and it always differs — from daily speech. The substance also of the poems entered into all later Greek literature.

Were these masterpieces the work of one master, Homer, or of two, or of a group or school of popular poets? How did the *Iliad* and *Odyssey* come into being? That is the *Homeric question*. The two poems have about as much likeness and difference as two novels of Scott or of Thackeray have. If one supreme poet of that age is a marvel, still more are two. And yet more marvelous would be a whole school of poets, of more than one generation, all working in the same spirit, all anonymous, who should by any kind of joint activity, contemporaneous or successive, produce two such extraordinary works of genius. Yet it is true that each poem, while essentially a unit, contains incongruities not easy to explain. We must certainly admit later additions and interpolations, of considerable extent in the *Iliad*, less in the *Odyssey*. After more than a century of active investigation and vigorous discussion,

beginning with the *Prolegomena* of Wolf (1795), scholars are tending toward definite acceptance of one poet, wholly unknown except in the poems, with moderate additions and changes by successors and imitators, through whom, mainly by public recitation, the poems were transmitted for several centuries, until written copies became common. The references below will indicate where full discussion may be found.

In modern schools since the Renaissance Homer has been more read than any other classic Greek author, both because of his importance in the development of European letters and because his peculiar charm is of a sort that attracts young people as well as their teachers. At present Homer is taken up after a very moderate amount of reading in Attic prose, he is continued more or less alongside of other authors in *Gymnasium*, *lycée*, and college; the difficulties of interpretation and the Homeric question are a large topic in university study. Herbart and a very few teachers have maintained that Greek study should begin with Homer, on pedagogical grounds. Evidently that is an error. Would any one maintain that German boys should begin English with Chaucer, or that we should begin German with the *Nibelungenlied*? Homer should rather be postponed till more of Attic Greek has been read, both *Iliad* and *Odyssey* might then be read rapidly and nearly entire. Thus they would make more nearly their proper impression, and give far more pleasure. On the linguistic side at this first reading the comparison with Attic forms, diction, and syntax should aim at full understanding of the poet's meaning, and little more. And the rhythm, a most important element in the poetic form, is commonly quite missed. It is in even, or two-four, time, while English and German imitations, like Longfellow's *Evangeline*, are in triple time. The simplest way to acquire the true movement is to recite a few lines while walking, this leads one naturally to make the two halves of each foot equal, as they should be. For the English lines that is a villainous distortion; for the Greek the true rhythm is far more melodious and expressive. The titles below merely suggest a good line of approach to the works on Homer — a library in themselves.

T. D. G.

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*Homers Ilius, erklärt von K. F. Ameis u. C. Hentze*  
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*Homers Odyssee, erklärt von K. F. Ameis u. C. Hentze*  
 2 Bde mit Anhang (Leipzig, Teubner) This and the preceding have full German notes, with numerous references to special works — the most satisfactory single edition for a teacher. New editions of separate *Hefte* often appear. The partial editions

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**HOMERIC EDUCATION** — See GREECE, EDUCATION IN ANCIENT.

**HOMES AND REFUGES FOR CHILDREN.** — See ORPHANS, EDUCATION OF

**HONDURAS, EDUCATION IN** — Honduras has an area of 46,000 square miles with a population, in 1905, of 500,000, or less than eleven inhabitants to a square mile. The vast body of the people are Indians, and of these it is estimated that 90,000 are uncivilized. The republic is governed under a charter proclaimed in 1894 which provides for the election of a president by popular vote for a term of four years and a congress, the members of which are also elected by popular vote, in the ratio of one to every 10,000 inhabitants. The administration of public affairs is intrusted to a council of six ministers, one of whom has general charge of public instruction. The constitution provides for a system of free, secular primary schools, with compulsory attendance

for children seven to fifteen years of age; but by reason of the sparseness of the population, and its racial character, as well as the political upheavals of the country, little advance has been made in the general diffusion of education. The latest official statistics (1909) give the number of primary schools as 660, with about 32,000 pupils; an average attendance is maintained of 75 per cent. For primary education the government expends about \$140,000 (silver) annually.

At the chief town of each of the sixteen departments of the republic there is a school for secondary education (*colegio*) with normal school attached. The government subsidizes these departmental schools and also maintains a Central Institute (secondary) at the capital, Tegucigalpa. Recent efforts have been made to raise the standard of training for teachers and to induce young people to engage in the service by increasing the appropriations for salaries.

For the higher grades of education the following establishments are maintained: At Tegucigalpa, the Central University, with departments of law, medicine, literature, and science. In connection with the university there is a free public library, founded by President Soto in 1880, the College for Women, with courses in modern languages, music, domestic economy, physiology, and hygiene; the National Scientific and Literary Institute; a manual training school for mechanic and decorative arts. There is also a theological seminary and parochial school attached, which is supported by and under the control of the Roman Catholic Church. The National School of Medicine has recently been put upon a firm financial basis, and it is hoped that it may soon recover its former prestige. About 25,000 pesos are annually spent to support students of engineering and other practical professions in the United States, Mexico, and Europe. The increasing demand for engineers has led to preliminary measures looking to provision for their professional training either by the reestablishment of the department of engineering, which was formerly included in the university, or by the organization of an independent school of engineering.

**Honduras, British.** — A crown colony comprising an area of 7562 square miles bordering on the Caribbean Sea. The population numbers about 41,000. The chief town is Belize, with population between 9000 and 10,000. There are forty-one public primary schools in the colony, maintained almost entirely by government grants, which amounted in 1909 to 3714 (\$18,000). The enrollment in these schools was 4417, and the average attendance 3187, or 83 per cent of the enrollment. There are also five private primary schools, of which two have secondary departments, and three private secondary schools. Belize is a center for the local examinations maintained by Cambridge University.

A. T. S

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**HONOR SCHOOLS.** — Examinations and courses for degrees in the English universities are divided into two classes, — the pass or ordinary, and the honor school. The requirements for the pass degree are less extensive, and demand less specialized study than those for the degrees in the honor schools. Generally the studies for pass degrees are arranged either in groups or are partly prescribed and partly elective. The studies in the honor schools are narrowly specialized, and demand intensive study in one or two allied fields. The following are the honor schools at Oxford: *litera humaniores*, mathematics, natural science, jurisprudence, modern history, theology, oriental studies, English language and literature, modern European languages. At Cambridge the honor schools are known as Triposes and include classical, economics, historical, law, mathematical, mechanical sciences, natural sciences, moral sciences, medieval and modern languages, oriental languages, and theological. At the Manchester University, to take a modern institution, the honor schools are classics, history, English language and literature, modern languages and literature, philosophy, architecture, economic and political sciences, oriental studies, Celtic studies. The organization of honor courses in the colleges of the United States is very recent. These are discussed in the article on COLLEGE, AMERICAN. The Canadian institutions follow more generally the English custom.

See UNIVERSITIES; CAMBRIDGE UNIVERSITY; OXFORD UNIVERSITY, etc

**HONORARY DEGREES** — See DEGREES.

**HOODS.** — See ACADEMIC COSTUME.

**HOOLE, CHARLES** (1610-1667) — The most important writer on contemporary school practice of the seventeenth century, educated at Wakefield Free School, and graduated from Lincoln College, Oxford (M.A. 1636). He was master of the Rotherham Free School, and afterwards Rector of Great Ponton, Lincolnshire. In 1642, at the outbreak of the Civil War, he went to London and, as Anthony à Wood says, "by the invitation of certain noted citizens he taught a private school there, between Goldsmith's alley in Redcross Street and Maidenhead-Court in Aldersgate Street. By 1651 he had removed his private grammar school to Tokenhouse Garden in Lothbury, not far from the Royal Exchange; where, as in the former school, the generality of the youth were instructed to a miracle." He became later Rector of Stock near Chelmsford in Essex, "where he mostly spent the remainder of his

days with great content to himself and his parishioners." Finally, Wood summarizes him as "a noted royalist and therefore suffered for it in the beginning of the wars, was a good Latinist, Grecian and Hebrician and admirably skilled in classical learning."

Hoole's chief book is entitled: *A New Discovery* [=Description or Disclosing] of the old Art of Teaching Schools, In four small Treatises, concerning 1 *A Petty Schoole*, 2 *The Ushers Duty*, 3 *The Masters Method*, 4 *Scholastick Discipline* — in a Grammar School Shewing how Children in their playing years may Grammatically attain to a firm groundedness in and exercise of the Latine, Greek and Hebrew Tongues. Written about Twenty-three years ago, for the Benefit of Rotherham School where it was first used, and after fourteen years trial by diligent practise in London in many particulars enlarged, and now at last published for the general profit, especially of young Schoole-Masters, etc 1660

At the end of the "Address to All favourers of good learning" Hoole gives a "Note of School Authors most proper for every Form of Scholars in a Grammar School." In one row he places classical authors to be read, and in a parallel row subsidiary authors to be consulted. This he does for each of the forms into which he divides a school. Hoole, in the course of his work, gives the names of between 250 and 300 authors and writers of textbooks allotted out amongst the different forms of the school, and the *New Discovery* is therefore a most important storehouse of school bibliography.

In the *Petty School*, Hoole shows how children should be taught "with delight and profit," pronunciation, spelling, reading. The *Usher's Duty* is chiefly connected with the perfecting of English reading and teaching Lily's Grammar. The *Master's Method* deals with the training of scholars in Grammar, Authors, and Exercises; Greek, Latin, and Hebrew. The *Petty School* is a preliminary school, the usher deals with Forms I, II, III and the Master's work begins in Form IV.

Hoole deserves credit for laying emphasis on the earliest teaching of the child. He says: "The Petty [*i. e.* French *petit*] school is the place where indeed the first principles of all religion and learning ought to be taught, and therefore rather deserveth that more encouragement should be given to the teachers of it than that it should be left as a work for poor women or others, whose necessities compel them to undertake it as a mere shelter from beggary." Hence he appeals for the appointment of well qualified teachers for the *Petty School*, and the endowment of such posts with adequate funds, especially praising Bathurst and Gouge for their efforts in this direction. He considers forty children as many as any one teacher ought to have in one class. In the section entitled *Scholastic Discipline* Hoole deals with the Founding of a Grammar School, and appeals for provision of further schools and masters.

Besides the *New Discovery*, Hoole wrote: (1) *An Easie Entrance to the Latine Tongue*. 1649 (2) *Terminationes et Exempla Declinationum et Conjugationum*. 1650 and 1659. (3) *Propria Quae Maribus, Quae Genus and As in Praesenti, Englished and Explained*. 1650. (4) *The Latine Grammar Fitted for the Use of Schools*. 1651 (317 pp.) (5) *Ἡ ΚΑΙΝΗ ΔΙΑΘΗΚΗ. Novum Testamentum. Huic editioni omnia difficultiorum Vocabulorum Themata, quae in Georgii Pasoris Lexicon Grammaticae resolvuntur, in margine apposuit Carolus Hoole. In eorum scilicet gratiam, qui prima Graecae Linguae tyrocinia faciunt*. 1653 (6) A translation of Maturinus Corderius's *School-Colloquies*. 1657 (7) *Vocabularium Parvum Anglo-Latinum, In usum Puerulorum, qui prima Latinae Linguae Tyrocinia faciunt*. 1657 (8) *Sentences for children, English and Latin from Leonard Culman*. 1658. (9) A translation of Comenius' *Orbis Sensualium Pictus*. 1659. (10) A translation of Cato's *disticha de Moribus, Dicta insignia Septem Sapientum Graeciae, Mimi Publiani, sive Senecae Proverbia, Anglo-Latina*. 1659 (This contains a valuable Preface by Hoole on his Methods.) (11) *Children's Talk, English and Latine*. 1659. (12) *The Common Rudiments of Latine Grammar Usually Taught in all Schools*. 1659. (166 pp including Index) (13) *Examinatio Grammaticae Latinae in usum Scholarum adornatae*. 1660. (14) *A Century of Epistles English and Latine; selected out of the most used School-Authors — viz. Tullii, Plinii, and Textor*. By imitating of which children may readily get a proper style for writing letters. 1660 (15) *P. Terenti Comoedia Sex Anglo-Latinae*. Edited by Hoole, 1663 (16) *Aesop's Fables English and Latin*. 1700 F. W.

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#### HOPE COLLEGE, HOLLAND, MICH. —

Founded in 1851 as Pioneer School, reorganized as Holland Academy in 1857, and incorporated as Hope College in 1866, this institution is co-educational and is under the auspices of the Reformed Church in America. In addition to the college a preparatory school and a school of music are maintained. The requirements for entrance are about fifteen units. The college courses are arranged in classical, philosophical, modern language, and natural science groups, and all lead to the A.B. degree. There are twenty members on the instructing staff. The total enrollment in 1910-11 was 388.

**HOPKINS BEQUEST AND THE HOPKINS GRAMMAR SCHOOL** — The fund was established by the will of Edward Hopkins, a London merchant who emigrated to Hartford in 1638, and was many times governor of Connecticut. Subsequently returning, however, to England, he died there in 1658. After making other bequests, he left the residue of his New England estate — besides £500 to be delivered upon the death of his widow — “to give some encouragement in those foreign plantations for the breeding up of hopeful youths in a way of learning, both at the grammar school and college”, two residents of each Connecticut colony were named to execute the trust. After some hindrance the trustees in 1664 gave £400 for the grammar school at Hartford, and agreed to divide the remainder equally between the grammar schools at New Haven and Hadley, Mass., the latter being obligated, however, to give to Harvard College the sum of £100. Eventually, New Haven received £412 and Hadley £308. When the widow died in 1699, none of the original trustees surviving, then successors applied for the £500 bequest, but were told that the estate did not suffice to pay it. In the hesitation to enter upon a doubtful suit at law in a distant court, nothing was done. In 1708 the Society for the Propagation of the Gospel (*q v*), learning of the failure of the bequest, moved in Chancery that it be assigned to the Society. Whereupon friends of Harvard College moved vigorously in the matter and recovered nearly £800, principal and interest, of which sum the master in Chancery awarded three fourths to Harvard and one fourth to the Cambridge Grammar School. It does not now appear how this direction of the fund was justified.

The bequest so apportioned has been used in the main as directed. New Haven has utilized her portion most successfully. The Hopkins Grammar School, organized in 1668, has maintained an unbroken succession under the original trust, and has proved a most important preparatory school to Yale almost from the foundation of the latter. Hadley, Hartford, and Cambridge have not maintained separate foundations. The first of these has merged its remaining colonial grants and donations in the town high school, the two latter maintain from similar funds classical masters in their respective high schools. At Cambridge he is called the Hopkins classical master.

W. H. K.

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**HOPKINS, MARK** (1802-1887). — Fourth president of Williams College, born at Stockbridge, Mass., Feb. 4, 1802. He was instructed by private tutors and at the Clinton Academy, and was graduated from Williams College in 1824. Five years later he completed the course of instruction at the Berkshire Medical School. He was for several years instructor in private schools at Stockbridge and Richmond. For six years (1830 to 1836) he was a professor, and for thirty-six years he was president of Williams College. Under his presidency the course of instruction was broadened and the system of discipline modified. Physiology and other sciences were added to the course, and he developed the theory that “the college that is best is that in which there is the least government.” He made the personal influence of the teaching staff the chief factor in the government of the college. He was active in promoting the cause of education in mission fields, and gave three courses of lectures on moral science before the Lowell Institute (1844, 1860, 1861). In addition to his numerous sermons and addresses on education, he published *Lectures on Moral Science* (1862), *Christian Ethics* (1869), *An Outline Study of Man* (1873), and *Teachings and Counsels* (1884). He died at Williamstown, Mass., on June 17, 1887, having continued his connection with the college as lecturer on mental and moral philosophy after he resigned the presidency.

W. S. M.

For portrait, see p. 219

See WILLIAMS COLLEGE.

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**HORMAN, WILLIAM** (d. 1535). — English schoolmaster, born at Salisbury and educated at Winchester. He may have studied at Cambridge, and was fellow of New College, Oxford, when he became master at Eton in 1487, in 1494 he became master of Winchester until 1502, when he became fellow and later vice-provost of Eton. Horman was the author of many works in the fields of history, theology, and grammar. His best known work was the *Vulgaria*, published by Pynson in 1519, a collection of sentences in English and Latin arranged according to subjects, e.g., *de pietate, de impietate, de exercitamentis et ludis*, etc. The work presents an interesting picture of school life as seen by one who knew the two best schools of his day intimately. In the *Antibussicon* (1521) Horman came to the defense of his friend, William Lily (*q v*), whose method

of teaching Latin had been attacked by Robert Whyttington.

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**HORNBOOK.** — A device for teaching the alphabet and the first reading lessons to beginners. It consisted of a flat board with a handle, and on this was pasted a sheet of paper containing the letters of the alphabet, the vowels, combinations of vowels and consonants (*ab, eb, ib,* etc.), the Benediction (In the Name of the Father, and of the Son, and of the Holy Ghost Amen), the Lord's Prayer, and sometimes the Roman numerals. Over this was placed a thin sheet of transparent horn, which gives the name to the device, held down by narrow strips of some thin metal and nails. The handles were generally pierced with a hole by which the hornbook was fastened on the girdles or round the necks of the scholars. The backs of the hornbooks, such as were used in noble families, were sometimes covered with leather embossed with a picture of St. George and the Dragon, or Charles I. mounted on a horse, or with silver or gold filigree work. When the hornbooks came into use cannot now be traced, but they were certainly known at the beginning of the sixteenth century. In a manuscript of Sacrobosco, c. 1442, a teacher is represented holding in his hand a board shaped like the hornbook, on which the Roman numerals up to nine are written (see Smith, *Rara Arithmetica*, Boston, 1908). The hornbook, containing only the alphabet, appears in an illustration in Reisch's *Margarita Philosophica*, issued in 1503. By the end of the sixteenth century the use of the hornbook is referred to as a common practice in English literature. And so it continued to be to the end of the eighteenth century, for in 1799 a large English dealer in hornbooks found that orders for them came to a stop. In America the use of the hornbook was as widespread as in England, and declined at about the same time, the end of the eighteenth century. The hornbook of the English and American type is not found in Europe, although similar shaped alphabet boards without the horn were used, as e.g. in Holland (*AB boordje*), Germany (*ABC Tabella*), France (*tablette, carte, La Croix de par Dieu*), Italy (*un abbici, centuruola*).

Since the letters of the alphabet in hornbooks and primers were sometimes preceded by a cross, the first line and frequently the whole alphabet was called criss-cross (Christ's cross) row. It is known that the hornbook was sometimes made in the shape of a cross, although examples are difficult to find.

Gingerbread hornbooks were familiar in the eighteenth century, the pupil being allowed as a reward to eat the letter which he learned.

Derivatives of the hornbook were the cardboard and wooden battledores on which the letters of the alphabet were printed. In spite of the great vogue of hornbooks, very few still remain, and their value, once 1d or 2d, has now risen to \$100 or \$150.

See PRIMER.

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**HORNE, THOMAS** (1610-1654) — Headmaster of Eton College, 1648-1654. He was educated at Magdalen Hall, Oxford, 1624-1628. Between leaving Oxford and becoming headmaster of Eton, Horne had taught a private school (c. 1633) in London, had been master of the Free School at Leicester for two years and headmaster of Tonbridge School from 1638 to 1848. His son William became headmaster of Harrow. Horne was a translator of the *Janua Linguarum* — as drawn up by William Bathe or Bataeus (1564-1614), head of the Irish College of Jesuits at Salamanca. The book therefore is to be distinguished from the *Janua Linguarum* of Comenius (*qr*), who borrowed part of the idea from the *Salamanca Janua*. Horne's editorial work on the *Salamanca Janua* is more careful than that of John Harmar (*qr*). He revised the English of the former version of William Welde and John Harmar, edited the Latin text of the *Janua*, altered the order of the words, and added marginal notes. It is interesting to note that Thomas Horne was the last translator into English of the *Salamanca Janua Linguarum* (1645) and the first translator of Comenius' *Janua Linguarum* (said to have been published as early as 1634). In 1641, while headmaster of Tonbridge School, Horne published *ἡεραγωγία — sive Manuductio in Aedem Palladis*. This book discusses the most valuable method of reading good authors. It is one of the best works of the period for showing contemporary school aims in the teaching of classics. Horne realizes the place of observation and comparison of words and sentences, as well as phrases, and epithets, and the mental discipline involved in the attention to the minutiae, of composition, and insists, as Vives and Ascham had done, on entries in paper books of all that has been observed in the reading of authors, and he gives a full account of imitation in writing. (See COMMONPLACE BOOKS.) Horne also wrote *Rhetoricae Compendium (Latino-anglicé)*, 1651. F. W.

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**HORTICULTURE, EDUCATION IN.** — In North America, a group of subjects has been assembled in colleges of agriculture under the general name of Horticulture, including fruit-growing or pomology, flower-growing or floriculture, vegetable-growing or olericulture, and also ornamental gardening and the general glass-house and nursery subjects. It is not a homogeneous group, but it has so happened that persons have been trained to handle it as a coordinate to the group of general agriculture. The group of general agriculture has included the main or prevailing farm organization, the raising of staple foodstuffs and the rearing of animals, whereas horticulture has comprised many of the adjunct and amateur and semi-urban phases of farm life. The old pedagogical group of agriculture is being divided into its component parts, and in the most advanced of the colleges of agriculture, the word "agriculture" is no longer used as a name for courses, animal husbandry, farm mechanics, dairying, soil subjects, and others, have been separated out of it, and there is now a tendency to separate the farm-crops part into its units. Similarly, horticulture is in the process of division. In some institutions the three main parts are now separated or in active process of separation. Whether these and other parts of the subjects shall be treated as separate entities and be coordinated under one administrative unit known as horticulture, is mostly an institutional question, but there can be no doubt that now or in the near future the parts must be handled by different specialists. The horticultural industries have now become much differentiated and often highly specialized, and they frequently comprise entire farming schemes, and this calls for a very free handling of the subjects in the colleges.

In this country horticulture has developed as a college subject rather than as a common school or training school subject. Only very recently have we begun with much hope of success to found special separate horticultural schools on the plan of European establishments. The earliest special developments of horticulture in the colleges of agriculture appear to have been in Michigan under Tracy, Garfield, and successors (W. W. Tracy was assistant professor of botany and horticulture in the Michigan Agricultural College in 1867, and full professor of horticulture in 1869), New York (1874) and Ohio under Lazenby, Iowa under Budd, 1876. Probably the first full professorship in horticulture in a university, with no other name in the title, was that established at Cornell in 1888. Probably the first experiment station to employ a "horticulturist" was the New York Agricultural Experiment Station, at Geneva, 1882. At present, horticulture is represented by a department or in the title of an officer in practically all the American colleges of agriculture, and also in experiment stations, and the equipment in many cases is very large.

In most early professorships horticulture was associated with botany, forestry, or landscape gardening. As a separate subject or chair, it was often an offshoot of botany. Although it touches affairs at every point, horticulture is primarily a biological subject, and it must always have the closest associations with botany.

*The Field of Horticultural Education* — In the specialization in colleges of agriculture, some of the subjects that formerly were included in horticulture are segregated to separate departments. This is coming to be true of plant-breeding and of some of the other applications of botany. But the real field of the horticulture group still remains, sufficient in range and variety to attract the best effort of the very best men. In the applications, the colleges of agriculture must assuredly teach along the lines of public needs. The public needs in this field are well expressed in the kinds of horticultural societies that are now most prominent. The vigorous horticultural societies are of four kinds — pomological, floricultural, market-garden, and nursery business. These represent four great horticultural trades or occupations, persons who are expert in one of these occupations usually are not expert in others. Every highly developed horticultural department should have at least these divisions. If it is not desirable, in any commonwealth, to have a separate nursery sub-department, it will still be necessary to teach something of nursery practice as an underlying and co-ordinating part of all good horticultural work.

Each of these divisions must be in charge of a man who is expert in the trade, as well as thoroughly grounded in the science and philosophy of the occupation. The laboratory work should be abundant, and it should cover the whole theory and process of the given art. In the pomological division there should be a laboratory of, say, thirty acres of actual orchards, in which all phases of the work, from start to finish, may be in natural operation, and if these phases cannot be taught at the time of year when the students are in the habit of coming to college, the time of coming should be changed, for the seasons, and the operations that follow the seasons cannot be changed to suit a traditional college year. Similarly, in the other lines there must be ample areas that are used as teaching laboratories, — actual nurseries, actual glass houses of practicable extent, actual garden farms in operation. All the work, if it is to be of college grade, must be projected on a background of sufficient training in the natural sciences and the essential arts.

To meet the needs of rural civilization, it is essential that we build large and in such a way that the future necessities will expand our scheme rather than break it. In material equipment there must be (1) land, (2) a large area under glass, (3) orchards, nurseries, gardens, (4) buildings containing special scientific laboratories, libraries, classrooms, and the like, (5) museums.



The museums should be active teaching equipments. One museum might well contain cross-sections of all the kinds of greenhouses and all greenhouse appliances; another, all the spraying machines, and these machines might be used on occasion, another, the hand implements of horticulture, another, all the horticultural pottery, another, the horticultural products, and others will be needed. In addition, there should be living museums, — one containing the trees and shrubs (an arboretum), another containing the varieties of fruits, another containing the perennial and other herbs. There should be some one place in every state where all these various things are preserved and on exhibition for the information of students and the people.

There is another class of subjects that is yet undeveloped in horticultural departments. The dairy departments of agricultural colleges are largely manufacturing enterprises, they manufacture butter and cheese and other milk products. They cover a definite set of problems, and this is one reason why they are developing rapidly. There are also horticultural manufactures, — canning, preserving, evaporating of vegetables and fruits, the making of jellies and juices and other secondary products, — some or all of which should be investigated and taught by the colleges of agriculture. The utilization of the waste products of fruit growing and vegetable growing has scarcely begun to develop in this country, and the manufacture of the staple horticultural products is not yet taught.

*As a School Subject* — In the public schools horticulture is not likely to be taught, in general, as a separate subject or class. Pieces of agriculture are put together into some kind of educational plan or sequence, and some of these pieces are derived from horticultural subjects. In particular schools fruit growing or flower growing or other applications may be introduced to meet local demands. Gardening may be made a most useful adjunct to school work, but its purpose in most cases — particularly in the formal school garden — is to provide a base for the development of nature study and for general training rather than primarily to teach garden culture as such. The influence of plants and of planting on children is not yet sufficiently understood. Horticultural subjects will be increasingly important as means of putting the pupil in touch with the situations in life.

There is undoubtedly to be a demand for special training schools and trade schools of horticulture. Probably some of them will soon be differentiated as floricultural or other technical schools. The fact that so much of the horticultural work is manual and is accomplished under glass, makes it very useful as a training subject. In the horticultural industries there will probably be an increasing field for women, and horticultural schools for women (one of which has recently been estab-

lished in the United States) may be expected to arise near many of the populous centers.

*Amateur Gardening* — Gardening is the great outlet of the amateur. No other phase of land work offers such variety, covers so completely the progress of the seasons, is adaptable to so many situations and climates, or allows such complete expression of personality. Therefore the teaching of amateur gardening is of the greatest importance both for country and town. In the colleges of agriculture the commercial aspects of horticulture are chiefly emphasized, but the amateur side may be expected to become prominent as the country matures. A different order of abilities is required in the teacher of amateur gardening from that demanded in the handling of education for the great commercial specialties, and we cannot expect the subject to develop strongly in the colleges until special teachers are provided. These teachers must be highly skilled in the feeling for plants and well trained in the skill of plant growing. It is probable that the special schools of horticulture, that are very strong on the manual side, will largely meet these needs, particularly for town lot and suburban gardening.

*Literature* — There is a large American literature of horticulture, but there are no school textbooks among these writings (if we exclude school-gardening texts). All the texts on agriculture contain more or less horticulture, and horticulture is properly a part of agriculture. There are yet (1911) no books of college grade in the generalized horticultural field, that are prepared expressly as class texts, but many treatises on particular subjects are used as class books and reference books. Textbooks in fruit-growing, vegetable gardening, floriculture, and the like, will undoubtedly soon appear. They are particularly needed for college work. Manuals of various kinds will be helpful in the training schools. L. H. B.

**Horticultural Education in Europe** differs from similar work in America most conspicuously in the fact that it is never given as a part of a college or university course. Frequently there are given special courses of instruction, essentially like those provided in the several "short courses" of American agricultural colleges. The typical plan, however, is that of a special or "continuation" school, in which attention is focused directly upon the technical training, little or no attention being given to the questions or materials of general education.

One of the best of these institutions is the Horticultural Institute (*Königliches Gärtnerei-Lehranstalt*) at Dahlem, in the suburbs of Berlin. This institution is thoroughly typical, and a brief description of its organization will give a fair idea of how such work is conducted in continental countries. The institute owns a tract of approximately twenty acres of very excellent garden land inclosed by a high fence on all sides. Within the privacy of this in-

closure live the director and a few workmen who are directly responsible for the care of the place. The plant consists further of a large classroom building, a small greenhouse equipment, and a small experimental laboratory. No students live in the institute buildings, though in many other places the residence of students is an essential part of the plan. About the buildings is a small tract laid off in ornamental gardens, containing on a small scale the usual features of an arboretum and nursery. A large collection of plants is made unnecessary through the close proximity of the unrivaled Berlin Botanic Gardens. There are extensive plantations of dwarf and trained fruit trees and of small fruits. Garden vegetables are cultivated on a smaller scale. The course of instruction covers two years, and is divided into three principal vocational lines (1) garden art (landscape gardening), (2) fruit culture, (3) plant culture. Instruction is given chiefly by lectures, with occasional demonstrations and practicums. There is less field work, either required or voluntary, than in similar courses in American agricultural colleges. The reason for this lies largely in the fact that applicants for admission are required to present certificates showing one year of voluntary military service and three years of practical field experience. The work is designed, therefore, to meet the needs of men who have already entered upon their professions and who have a fairly substantial groundwork of experience upon which to build their theoretical education.

A number of the European schools are founded by particular societies or by local municipalities, in order to assist special industries. There is, for instance, a school for the canning industry in Brunswick, a district where large quantities of fruit and vegetables are canned, there is a school especially adapted to the needs of vine growers at Geissenheim, in the wine district; and so on. Similar local schools, some highly specialized and some more general in their scope, are to be found in Switzerland and Austria. The National School of Horticulture at Versailles is the most important one in France. In England there are several horticultural schools, mostly of a strictly local nature, the one at Wisley being perhaps the most famous. In this connection, however, the work at Kew should never be forgotten. Here many of the best gardeners have received their training. The apprentice system is, however, the most popular method of training gardeners in England, and is in general the typical method of horticultural education in that country.

F A W

See AGRICULTURAL EDUCATION; BOTANY; GARDENS, SCHOOL

For references to the general field see under the articles here referred to.

**HOSPITAL ECONOMICS.** — See NURSES, EDUCATION OF.

**HOSPITAL SCHOOLS.** — A hospital means primarily a guesthouse, and may be defined as an endowed inn or public house for the reception of guests gratis, whether they were travelers, poor, aged, children (especially orphans or foundlings), or sick. Hospitals seem to have been unknown to the ancients, Greek or Roman, in classical times. The Jews dispute their invention with the Eastern Christians, but the balance of evidence is in favor of the latter. The earliest hospital known to history appears in the middle of the fourth century A D, when Eustathius appointed a superintendent of the Hospital (*xenodocheron* or *ptochotropheion*) for the poor at Sebaste in Pontus. Epiphanius speaks of it already as a custom for bishops to maintain such institutions (*Hieres*, 75, c 1). One of the first acts of Basil the Great (*qv*) on becoming Bishop of Casarea was to include hospitals for travelers, the poor and the sick in the institutions which he founded. Julian the Apostate directed the establishment of state hospitals as rivals to those of the Christians. The Council of Chalcedon in 451 placed the clergy in charge of hospitals on the same footing as churches, and Justinian (*Codex* I, 42, 46) deals with the five classes of hospitals under the heading of "bishops and clergy."

From the first hospitals became connected with education. Among the earliest hospitals were orphanages and founding hospitals, owing to the prevalent pagan practice of exposing infants and deserting children. Constantine the Great himself established an orphanage at Constantinople, and formally sanctioned the gift of endowments to them. The warden of orphans (*orphanatropus*), a priest, was a high official. The orphanage became the song school (*Scola Cantorum*), and in Greek rituals the term "orphans" was used as equivalent to choir boys.

The earliest mention of hospitals in England is found in a letter written by Alcuin (*qv*) to his old pupil Eanbald II, in which he recommends to the newly made archbishop the establishment of guesthouses (*xenodocheia*), that is, hospitals (*hospitalia*), at the same time that he discusses the organization of the school. St. Peter's, afterwards called St. Leonard's Hospital, which has been imputed to King Athelstan, c 932, may well have been founded by Eanbald II on Alcuin's advice and augmented by Athelstan. By 1280 this hospital was used partly as a foundling hospital "ministering to the poor and sick and to infants exposed there." There were twenty-three boys in the orphanage under charge of a woman, and they, together with no less than thirty choristers, were educated, two masters, one of grammar and the other of song, being maintained to teach them. The dean and chapter of York attempted to close the school in 1340 because the master was unlicensed; but the King upheld the school as a royal foundation, and "free from all ordinary jurisdiction." The two schools were still being

maintained in the Hospital in 1535, and only ceased on the dissolution of the hospital, when the Cathedral Grammar School was put on a more substantial basis

At the Hospital of St. Cross, near Winchester, founded in 1132 by Bishop Henry of Blois, thirteen poor men were maintained, and dinners were provided for a hundred other poor. In evidence given in 1373 it appeared that among the hundred poor men had always been included "thirteen of the poorer scholars of the High Grammar School of the City of Winchester." There were also attached to the hospital four hired priests, and, probably a later addition, "thirteen poor secular clerks' scholars," and seven poor grammar (*litterati*) boys, two of whom were called choristers and the rest served in the church, "and the services finished, attended school in the same hospital." In the same manner three scholars of Durham school received food, drink, and beds in St. Cuthbert's Almshouse at Durham (1190). In the case of the Hospital of St. Katharine by the Tower, founded in 1147 for thirteen poor women, six scholars were added in 1272 to act as choristers in the Hospital chapel or church. The six poor scholars are now represented by two elementary schools, one for boys and one for girls, in Regent's Park, London, since 1826. At Norwich Bishop Suffeld founded in 1249 what is now known as the Great Hospital, originally God's House or St. Giles' Hospital, intended for the infirm, under a master, four chaplains, and four sisters. In addition to thirteen poor people who were daily to receive dinner, there were also seven poor scholars who were to be named by the master of the grammar school. By 1430 the seven poor scholars had become choristers in the Hospital church. The Hospital was dissolved by Henry VIII, who, however, provided for its reconstitution by his will, and in addition to the Hospital a grammar school was to be established with a "scolemaister" and usher "to teche frely without any reward other than their stypends of £10 and £6 13 4. and convent houses." At Bridgewater in Somersetshire the rectory of Wembdon was appropriated in 1285 to the Hospital of St. John, founded before the reign of King John, for maintaining six more chaplains and "thirteen poor scholars of ability to learn grammar, who should be maintained in the Hospital but attend the school of the town daily." Seven other poor scholars of the school were to receive daily pittance from the hospital kitchen, pottage, etc. These boys were still being kept in this way in 1535, the date of the *Valor Ecclesiasticus*. Precisely the same arrangement was made at York, where St. Mary's Abbey kept a boarding school for fifty boys who attended the cathedral grammar school.

Instances proved by contemporary documents of the definite endowment of university education in connection with a hospital are that of the Englishman Joyce or Joicey at Paris,

in St. Mary's Hospital, a room in it with eighteen beds being set aside and stipends provided for eighteen scholars or clerks. (See COLLEGE.) This arrangement was imitated in the first university college in England, the House of the Valley Scholars, founded at Salisbury, in 1262, by the Bishop Giles of Bridgeport, in connection with and apparently in the precinct of the Hospital of St. Nicholas there. (See Rashdall, *Universities of Europe*, Vol II, p. 766.) So Merton, the earliest college at Oxford, was in connection with a hospital for the poor at Basingstoke, Hampshire, to which the scholars might themselves retire when old or incapacitated. In like manner St. Bartholomew's Hospital at Oxford was annexed to Oriel College in 1325, and St. Julian's Hospital, Southampton, to Queen's College in 1340. The colleges maintained the poor, but took all surplus to themselves. The earliest Cambridge college was originally planted in St. John's Hospital there in 1280. But the brethren of St. John's were "regulars," and could not get on with the secular scholars, so in 1286 the scholars were removed to what is still called Peterhouse. St. John's Hospital was itself dissolved under a Papal Bull and converted into the present St. John's College in 1504, just as St. John's Hospital at Oxford had been dissolved by the Pope and converted into the present Magdalen College, Oxford, in 1480. Both were following many precedents in connecting scholars with hospitals, though not of actual dissolution and conversion of one into the other.

How much neglect and malversation there were in the management of hospitals may be seen from the decree, *Quia Contingit*, of the Council of Vienne (1310-1311), which appears in the *Corpus Juris Canonici* (Clement III, tit. XI, 2) under the misleading title of "Religious houses and their subjection to bishops." Most hospitals were then in the hands, not of secular clergy, but of the religious or regulars, particularly the Augustinian canons. By this decree the Ordinary is given power to investigate and reform hospitals, which were no longer to be conferred as ecclesiastical benefices. An exception was made in favor of the military orders, the Knights of St. John, and the religious, who were only to be subject to their own superiors. In England the first Parliament of Henry V at Leicester in 1414 investigated similar conditions and empowered the ordinaries to hold inquiries and reform the hospitals. There was a tendency more and more in the fifteenth century, with the disappearance of leprosy, to convert the funds of hospitals to other uses; many hospitals became almshouses, and many were connected with educational purposes. Thus Wilham de la Pole, Earl of Suffolk, founded an almshouse, in which he also planted a grammar school, at Ewelme, in Oxfordshire (the license being granted in 1437 and the foundation statutes made not earlier than 1448). The "Howse of almesse" or "Goddiss Howse"

was to consist of two priests and thirteen poor men; one of the priests was to be "apte and able to techyng of gramer, to whose office it shall longe and pertayne diligently to teche and informe childer in the faculte of gramer." The children of the lordship of Ewelme were to be admitted to the school without tuition. The Hospital remains almost intact, but the school has been sadly modernized and mauled to make it an elementary school and so save a few pounds in rates. This institution is of great historical importance, as the Earl of Suffolk was one of Henry VI's main agents and advisers in the foundation of Eton, which probably owed its being in part as almshouse to his influence and example. To the same influence may perhaps be attributed the school of St. Anthony's Hospital, in Threadneedle Street, for about a century and a half one of the most famous of London schools. In 1441 the rectory of St. Benet Fink was appropriated to the Hospital founded in 1253 for sufferers from St. Anthony's Fire, and later (1441) continued as a hospital for the poor merely. The endowment of the rectory was intended for the maintenance of "a master of fit Informers (*Informator*) in the faculty of grammar to keep a grammar school in the precinct of the Hospital or some fit house close by to teach, instruct and inform freely (*gratis*) all boys and others whatsoever wishing to learn and become scholars (*scholasticare*)."

It was a school precisely on the same lines as Eton (*q v*). A song school had been already established in the preceding year for the choristers of the hospital. New statutes were made for the hospital in 1446, and in 1447 the hospital was brought into connection with Oriel College, Oxford, by maintaining scholars studying there. In 1475 the hospital was annexed to St. George's, Windsor, and suffered thereby, for the canons, wishing to increase the surplus payable to themselves, cut down the salaries of the masters. The school, however, flourished in numbers, and according to Stow, who was probably a boy there, St. Anthony's Hospital "commonly presented the best boys and had the prize in those days" at the disputations held in St. Bartholomew's Midy on St. Bartholomew's eve (August 23). A regular feud existed between St. Anthony's boys and those of St. Paul's, the former calling the latter pigeons, because of the pigeons inhabiting then as now the churchyard, and the Paulines calling the Antonies "pigs," because all stray pigs were the perquisites of the hospital. In 1589 the school had sunk to little more than a parish school, but it continued till the Fire of London in 1666, after which it perished and was not rebuilt. The endowment was swallowed by the dean and chapter of Windsor. At about the same time the greatest of London Hospitals, then as now, St. Bartholomew's, was connected with education. In 1444 John Stafford, chaplain and citizen of London, left property to the

master of the Hospital, including among other things "for the increase of the clergy and of divine service" £1 13 4 a year more "for the diligent instruction of boys in grammar and song." This school has been left unnoticed by historians of the hospital, although it may well have contributed to the establishment of the grammar and song schools in Christ's Hospital, when a scheme was made for the four great London hospitals at the end of Edward VI's reign. While in the fifteenth century, far from a period of decadence in learning, schools were added to hospitals, in the sixteenth hospitals were boldly annexed and converted to educational uses, *e g* the Hospitals of St. John at Oxford and Cambridge. In 1501 John Stansbridge (*q v*) became master of the Hospital of St. John the Baptist at Banbury, which was treated as a school and the mastership as a schoolmastership rather than as a hospital and ecclesiastical preferment. The school seems to have ceased in 1558.

The *Valor Ecclesiasticus* of 1535 revealed the extent to which the hospitals were mismanaged. In one after another there were only one or two poor, and the master took nearly the whole of the revenues to his own use, and where there were none he took the whole. A large number of hospitals were still in the hands of the regulars. The acts for the dissolution of monasteries also included hospitals. So fell the Hospitals of St. Bartholomew and St. Thomas in London and Southwark, only to rise again in enlarged form.

The greatest of all hospital schools was that of Christ's Hospital, London, founded in 1553. This was the only educational institution really founded by Edward VI in the sense of creating a new school where none had existed before, and it was not founded as a school or for education primarily, nor was its site nor a penny of endowment given by Edward VI. His contribution to it consisted of a piece of parchment and some confiscated church linen, and the name of "the Hospital of Christ, Bridewell and St. Thomas, the Apostle." Christ's Hospital was the deserted monastery of the Grey Friars, the Franciscans or Friars Minor, one of the largest churches in the city next to St. Paul's. It was acquired by the city from Henry VIII in 1547, and in 1550 the Lord Mayor, Sir Richard Dobbs, brought before the Court of Aldermen a plan for the suppression of vagabondage and poverty by taking "out of the streets fatherless children and other poor men's children that were not able to keep them to the late dissolved house of the Grey Friars, which they decided to be a Hospital for them." In 1552 the Grey Friars was prepared as Christ's Hospital by the subscriptions and contributions of citizens and the common council. This was part of a general scheme to deal with every class of destitute poor, and the charter included the "Royal Hospitals" of Christ, Bridewell, and St. Thomas," which with

St Bartholomew's, which the city already had, made up the "Four Royal Hospitals." In November, 1552, 380 children were admitted into it. It appears from the evidence of a contemporary, an official of the Hospital, that it was a Foundling and Orphan Hospital for "gutter" children, and this is confirmed by the names on the admission book, which, however, only begins in 1556. In 1639 it was ordered that no child be admitted under three, but even as late as 1653 out of 218 children 120 were under four. In 1677 a rule was made excluding children under seven. Education is so far mentioned in this charter in that it says that one of its objects is that "neither children yet being in their infancy shall lack good education and instruction nor when they shall attain riper years shall be without honest callings and occupations, nor that the sick or diseased when returned to health may remain idle and lazy vagabonds but in like manner may be placed and compelled to labour." Grafton, the printer, however, who took a principal part in the establishment of the Hospital, and others were fully convinced of the necessity of educating their foundlings and orphans. They put in two "scholerausters for the petties in ABC" at £2 13 4 a year, 13s 4d more than the barber and not half what the porters got, a "teacher to wrighte" was paid £3 6 8 a year, a teacher of pricksong £2 13 4, a "scholerauster for musike" £2 13 4. But they also provided for a "Grammar Schoole mayster" at £15 a year and a "Grammar Usher" at £10 a year. Grafton was put into the Fleet prison in Queen Mary's reign because he allowed "the children to learn the English primer instead of the Latin abscies [A B C's]," the latter having the Paternoster and prayers in Latin. At first the children were clothed in russet (brownish red cotton), but at Easter, 1553, they appeared in the blue cloth which has made the "Blue coat boy" so famous throughout the world. But whereas of later years they have been noted for going about bareheaded, they originally had red caps. Queen Mary wished to suppress the Hospital and put back the Friars, but the Spanish Friars themselves advised against it. Only one endowment was given in her reign, but in Queen Elizabeth's subscriptions, bequests, and legacies poured in, and by Camden's time, about 1590, 600 children and 1240 pensioners were maintained. But of these not more than 200 were in the Grammar School, and only those who attained the two highest forms, "Deputy-Grecians" and "Grecians," were retained after the age of sixteen. In 1673 the above boys were increased in number by the Mathematical School of forty boys founded by King Charles II to prepare them for sea—one of the earliest institutions of its kind in recognizing that a classical education was not good for all boys. In 1774 the girls were moved to a separate establishment at Hertford, where a nursery, afterwards trans-

formed into a preparatory school had long been established. The number was then 800, of whom about 200 boys under twelve were at Hertford. Under a scheme of the Charity Commissioner in 1890 the boys' school was removed in 1902 to Horsham to an ample site and splendid buildings. For about 150 years before the scheme the Hospital was practically governed by those rich enough to pay £500 for the privilege of being governors and having the patronage of appointing the boys, with the result that the class of boy had been more and more raised in wealth and the class for whom it was intended was no longer found. A third of the boys are now admitted by competitive examination from elementary schools, and to that extent the original class has now been restored (See GRAMMAR SCHOOL, PUBLIC SCHOOLS).

The Blue Coat School, as it was commonly called, became a model for other foundations of the same sort, though none of them attained the size or fame or educational advancement of Christ's Hospital. The earliest of these was Emanuel Hospital, Westminster, in 1594, the Charterhouse, which combined an almshouse for decayed gentlemen with a grammar school in the old Carthusian Monastery of London in 1611, but this catered more for the lower classes like Christ's Hospital; the Blue Coat Hospital, in the old St. John's Hospital, Exeter, followed in 1632, the Green Coat Hospital, Westminster, 1633, Chetham's Hospital, Manchester, 1651, the Grey Coat Hospital for girls, Westminster, 1706. Scotland also in George Heriot's Hospital in Edinburgh, 1628 (see HERIOT, GEORGE), Gordon's Hospital, Aberdeen, 1732 (see GORDON, ROBERT), and diverse others, including Morgan's Hospital at Dundee, building in 1867, followed the example. (See also HUTCHESON EDUCATIONAL TRUST.) A new crop on a smaller scale sprang from the Charity School (*qv*) movement in 1705, of which one of the largest remaining is the Blue Coat School at Sheffield. These later ones aimed rather at training children for domestic service, and gave no more than a purely elementary education, and were strongly condemned by the Schools Inquiry Commission in 1867 as wasting large funds for no appreciable educational result or advancement of the children. Many of them, like Emanuel Hospital, Westminster, now the Westminster City School, have been turned into higher grade or technical day schools, meeting a much-felt want in large towns for commercial and technical education of the poorer boys. The connection of hospitals with general education has now practically ceased, except in regard to medical education and training, which are treated under a separate article (See MEDICAL EDUCATION.) A F L

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**HOSPITIUM** — See DORMITORIES; HALL; UNIVERSITIES; STUDENT LIFE.

**HOSTEL.** — See DORMITORIES; HALL.

**HOT AIR FURNACE.** — See HEATING OF SCHOOL BUILDINGS.

**HOT WATER SYSTEM.** — See HEATING OF SCHOOL BUILDINGS.

**HOUSEHOLD ARTS, HYGIENE OF.** — See MANUAL TRAINING, HYGIENE OF.

**HOUSEHOLD ARTS IN EDUCATION.** —  
**Terminology** — Various terms have been used to indicate the content of this broad subject, to signify its connection with the home, and to indicate the fact that science, fine art, and the technical arts are fundamental. The terms most in vogue at present are either home economics, household science and arts, household science, or household arts. The English Board of Education has introduced the term "housecraft" (1911). The term "economics" is perpetuated in the American Home Economics Association, and is used in a number of institutions. The term "household science and arts" would seem to include everything required, but it is inconveniently long. Household science does not include the art application. Household arts, on the other hand, while it seems to emphasize the practical or applied side, also implies a scientific and artistic basis. This last term is coming into common usage in both the elementary and secondary schools, and its use is spreading in higher institutions. Other suggested terms are "Eugenics" or "Euthenics" (freely interpreted, the art of right living). The term "household arts" covers all that has been included under the terms "domestic art" and "domestic science," together with other more recently developed industrial, economic, and hygienic aspects of home activities.

**Historical Development** — In certain forms, the subject has had a long history. In the theoretical treatises on education some phases of the subject are advocated in the sixteenth and seventeenth centuries, when Comenius (*q. v.*), and, in a more general way, Luther (*q. v.*), and many others emphasized the educational value of household activities. In the eighteenth century the philanthropists (*q. v.*) gave

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stronger expression to this belief, and at the opening of the nineteenth century Pestalozzi (*q. v.*) and other reformers began actual experimentation for educational purposes. Earlier than this the institutions of the philanthropists of Germany and the charity schools (*q. v.*) of England had emphasized such activities quite generally for practical purposes. The monitorial schools of Lancaster and Bell usually included some instruction of this character. Needlework was commonly found in all private schools for girls. Sewing especially had a high social status, and in the finer forms of lace making and embroidery was incorporated in the private schools for the well-born as a part of the "finishing education" of girls, so popular during the eighteenth century. The claims for recognition of the domestic arts of cookery, laundry work, housewifery, and needlecraft in the curriculum of school or college received sparse recognition in Europe before the middle of the nineteenth century. After that date their introduction into any scheme for the education of women or girls was for many years gradual, partial, and tentative. During the last twenty-five years, there has been developed a remarkable range of diversified and more or less highly organized courses of instruction in primary and secondary schools, technical institutes, training colleges, universities, and institutions working for social betterment. Peripatetic courses of instruction are arranged in many countries for rural districts; while post-school courses, residential or otherwise, provide for the needs of farmers' daughters or girls of the leisure classes. In the United States these subjects have received university recognition in the form of college courses for under and post graduate students. In Germany, the United Kingdom, and Ireland, and in Norway and Denmark, increasing attention is given to the study of the scientific principles which underlie the practical processes. In the United States about the earliest recognition of this field was given by Miss Catharine E. Beecher (*q. v.*), a pioneer in woman's education, who published (1840) *A Treatise on Domestic Economy for the Use of Young Ladies at Home and at School*. In England Hannah More (*q. v.*), in the late eighteenth century, had written on the subject. The local development of practical training relating to household arts subjects is given briefly in the sections on the separate countries. (See also BELGIUM, FRANCE; etc.)

**Aim of Instruction in Household Arts** — In its historical development the group of subjects may be looked upon as a part of the modern movement for an education that shall better fit for daily life, a so-called practical education. More specifically it is an effort to better the home life of the people, which originated everywhere outside of, rather than in, the school system. The movement in the schools was strengthened by the development of other handwork, the subjects formerly classed as

manual training, which included handwork for girls as well as for boys. The earlier realization that systematic school training in these home arts was desirable, and the later conviction that their importance justifies, if it does not compel, their adoption as school studies, are the outcome of. (1) the growth of preventive medicine and hygiene; (2) the desire to counteract the disintegrating influences upon home life and industry of modern industrial and social changes, (3) the recognition of women's needs in respect of technical and professional training, (4) attempts to solve the problems of domestic service.

If the fifteen or sixteen nations in whose educational institutions this teaching is now general are grouped into three divisions, the fact becomes apparent that the individual philanthropists or societies which started the movement in each country were prompted by one or more of these motives. State recognition and support is now invariably accorded with greater or less cordiality to this instruction, but the pioneer work has been uniformly carried out by philanthropic service and supported by private funds.

Three groups of countries may be made according to the underlying aims. (1) The amelioration of home conditions, and the improvement of existing domestic work and methods (United States, Great Britain, Ireland, Germany, Belgium, Finland, Denmark, Norway, and Russia). (2) The solution of the problem of domestic service, although there is now a tendency to move in the direction of the first group (Sweden, Holland, Austria). (3) Vocational and professional preparation (France, Italy, Hungary, and to some extent also Belgium and Switzerland). In Spain, Portugal, Greece, and Roumania the study of the domestic subjects is still in its infancy, and attention is limited only to one or two branches.

Much of the inspiration which led in 1889 to the simultaneous organization of cookery classes in Sweden, Norway, Finland, and Germany sprang from Great Britain, where the pioneer teachers in the first three of these countries secured their training. Though the standard of training varies very widely (from three years to six weeks), wholly untrained teachers are now permitted only in France and Austria, and in the rural districts of Switzerland, Norway, and Sweden. State inspection of classes is general throughout Europe. All teaching is gratuitous in primary schools, usually so in classes for factory workers, and occasionally for adults. Fees, when charged, are always low, necessitating heavy state and local subsidies. The urgent needs of the poorest classes dictated the utilitarian methods general in these courses; but in the girls' secondary schools of Norway, Belgium, Germany, Great Britain, and Ireland, the tendency is now to connect them closely with laboratory work in elementary science and with art studies in the studio. Contrary to the

usual custom, these subjects first found a footing in the secondary schools of Russia, Germany, and Denmark, but they are not yet generally adopted into primary education in these countries. Special training for matrons in institutions, asylums, etc., exists in Russia and Italy, Norway and Holland provide special instruction for soldiers and sailors. Efforts to solve domestic service problems by special training though attempted in several countries have had but moderate success.

**General Content** — When household arts began to form a subject of study in the United States, cookery, sewing, and housewifery were prominent. The need of scientific and artistic foundations was soon felt. Chemistry, physiology, and physics were early required in the course of Domestic Science. The science required was, however, elementary, but requirements have since been raised. Since the importance of the home for individual and social welfare has been recognized, emphasis has been placed on the principles and practices that have to do with the proper conduct of the home. The training of a better class of wage earners is considered on the industrial side, so that from this point of view household arts may be classed as a social science and as a branch of economics. Thus the subject has passed through three stages of development, all of which must now be given weight: (1) practical, (2) scientific and artistic, (3) economic and sociological.

The general divisions of these fundamental problems are as follows: (1) The food supply: its production, manufacture, transportation, and cost; good quality in food, food sanitation, pure food and inspection laws, how to buy, composition and nutritive value, dietaries and menus, preparation and serving. (2) Clothing and other uses of textiles: textile fabrics, their primitive beginnings, their connection with the development of civilization, textile arts and crafts related to clothing and shelter, modern manufacture and cost of textile materials, textile adulterations, functions of clothing and costume in health, beauty, and ethics of life, the wardrobe, its repair and care, the making of garments, hats, household articles and furnishing, design in textile garments and household furnishing. (3) Shelter: the cost of building, rentals, and taxes and insurance, house architecture, sanitation, and mechanics, household furnishing, for convenience, economy, and beauty. (4) Housewifery: processes of cleansing, preserving, and renovating all household materials, including laundering. (5) General management: the budget, accounts, savings, insurance; system in purchasing, inventories of household goods; household labor, relations of employer and employee; division and order of work; labor-saving apparatus. Town and state laws that affect the householder. (6) Care of the family: special needs of individual members, as infants, children, the elderly,

home care of the sick; family needs and duties; mutual occupations and recreations, hospitality; municipal and state responsibilities of the householder in connection with city and state sanitation (7) The employment of women in industries, their occupations, wages, clubs, settlements, pleasures, education, plans of betterment, woman as a citizen, and her relation to civics and the government

*Household Arts in the Elementary Schools* — Under the influence of the culture epoch theory (*q.v.*) many of the simple industrial and household processes have been introduced into kindergartens and the early grades of school. Courses in sewing under special teachers seldom begin before the fifth or sixth grade, and in many schools they are connected with lessons in design and discussions on textiles. The handwork in the better class of schools is on interesting articles connected with the home or the school. Previous practice of the stitches is given, but the "model system" requiring perfect work has long passed away. Organized courses in cookery and other forms of home work are not usually given before the seventh or eighth grade, although in view of the fact that many pupils are then likely to leave, they are advisable in the sixth grade. The subject usually includes lessons on nutritive values and buying. With the present tendency to give vocational training in the last few grades of the elementary schools, cookery, sewing, millinery, and dressmaking have been given an industrial bias, and are broadened and strengthened by academic and art work, as they apply to the occupations. To meet the exodus from the sixth and later grades many cities have organized special household arts' work in the afternoons. With this vocational preparation is also growing up very slowly a system of vocational guidance (*q.v.*).

The courses are still tentative, and need a further working out in practical correlation with academic work and art and with determination of the length of time which should be devoted to the different subjects and the elimination of unnecessary material. The domestic art work in the higher grades is usually conducted in the schoolrooms, although a special laboratory is provided in a few schools. Domestic science requires a special kitchen. Much discussion is centered about the use of individual equipment with small quantities of food and the group system around a large range or stove. Most school kitchens are now equipped for individual work on the part of each pupil. It is felt that this method helps to economize material and tends to develop the pupil's initiative, but it does not always give the ability to deal with the practical problems of cookery in the home as well as does the group method. Where the pupil cannot have enough material to make the process really practical, the best practice should include both individual and group work.

There are many practical questions of time

division and laboratory management and equipment, but at the present there is much divergence of opinion in different parts of the country. Definite results, therefore, cannot be given. In general it may be said that in the lower elementary grades the time allotted is usually from twenty minutes to one half hour. The processes and manipulation are simple, and are conducted by the regular teachers in the grade rooms. In the sixth, seventh, and eighth grades the common practice is three quarters of an hour twice a week for two years for sewing and one and one half hours once a week for one year for cooking. It is felt, however, for the latter subject that two periods per week would be better.

*Household Arts in the Secondary Schools* — Here the work in household arts is too new to have evolved an ideal course. There are different points of emphasis, in some cases there is an attempt to organize courses to secure college credit; in some the courses vary according as the previous training of the teacher concerned was in art or science, in other cases the previous training and the future of the pupils is taken into consideration. There is also considerable variation according to the type of school, thus the classical high schools, if they do not neglect the subject, offer it as an elective or require it for one year, perhaps with electives in later years, the manual training, technical, or practical arts high schools and the recently organized trade schools offer extensive work, often in close connection with business methods, when the students expect to become wage earners. The tendency is now not to leave the different subjects, *e.g.* sewing, dressmaking, millinery, cooking, etc., isolated from the rest of the curriculum, but the controlling aim is to give the students insight into the industries as they affect home and national life, into possibilities of greater economy in living, as well as higher ideas of woman's municipal responsibilities. Thus the courses are being gradually related to instruction in art, science, industrial history, geography, and arithmetic, and courses in home sanitation, chemistry of foods, nutrition, dietaries and menus on the one side, and household management, house furnishing and a study of costume on the other.

In the secondary school the method and organization are essentially the same as for the elementary, but longer time is given to discussion. The same principle holds good in regard to the number of lessons and the length of laboratory periods. In both domestic art and domestic science from thirty to forty-five minutes a week are necessary for the best development of the subject through discussion, which would include a review of the past laboratory work, plans for that which is to be undertaken, and the development of economic and social ideas. The teacher is much hampered by the lack of suitable textbooks, since those that are written accurately are usually too advanced for high



school pupils. The *Bulletins* of the United States Department of Agriculture, of the various associations of Textile Growers and Manufacturers, and the *Bulletins for Farmers' Wives*, published by Cornell University, afford material from which the teacher can assign some work to be discussed in class. Laboratory methods in the practical work in cookery and garment-making and in the housekeeping of the cookery laboratory do not differ essentially, although in some places the experimental method may be used to a greater extent and the pupils trained to work with a larger degree of independence.

In a technical or trade school, however, where preparation for a livelihood is given in the fourth year, a large amount of practical work, requiring at least four hours daily, should be included. The content of a course that counts for college entrance should be more intensive along scientific lines than one training for home work or for a livelihood.

*Household Arts for General Training in College and University* — Since the secondary schools frequently offer little or no preparation, the college courses in household arts are necessarily elementary. Domestic art offers a study of textiles including microscopical work on fiber, chemical testing, dyeing and weaving, art in the design of costume, interior decoration, household furnishing, household economics, and craft work in dressmaking and millinery. Many colleges now offer courses in foods and in the chemistry of nutrition and sanitation, which require not only elementary but organic chemistry and biology as prerequisites. Practical courses are given, but usually in the freshman year and sometimes not for college credit. Most of the colleges agree in placing a course in household administration in the senior year, presupposing a study of nutrition and some of the domestic art subjects. History of industry and at least one course in economics or sociology are also required in connection with the household arts' work. Where the subject counts for credit about one third of the students' time may be devoted to household arts.

*Normal Courses* — The content of these courses varies with the institution, but where diplomas, or degrees, or both are granted, there are given courses in art as applied to costume and house decoration, chemistry as applied to food and textile tests, biology, bacteriology, and sanitation, dietetics, practical work in cookery, millinery, and dressmaking, and housewifery, laundering being sometimes included. Courses in the study of textiles as applied to the economic training of the consumer are rapidly developing, and in addition, courses in pedagogy and practice teaching. The chemistry covers elementary (sometimes a prerequisite) and frequently organic chemistry of foods and nutrition, and in a few instances physiological chemistry.

In college, university, and normal schools the

method is parallel with the teaching of other college subjects. Lectures, discussions, and notebook work may be as accurately and scientifically conducted as in any of the natural sciences or academic studies. There is no dearth of sound reference books, so that readings may be assigned and required, although the majority of those dealing with textiles are written from the point of view of the mill and those on art in dress and home decoration are rather trivial. Here, and especially in advanced work, the opportunity opens up for individual research, with all the possibilities of exact training that such work affords.

#### Equipment and Cost of Maintenance —

These of necessity vary from country to country, from region to region, and from school to school. In some instances equipment runs to the extreme of expense and elaborateness, in others an effort is made to produce results with the simplest possible equipment, or at least that which approximates the home conditions, possible or actual, of the children. Equipment ranges from the simplest materials furnished by the child to whole buildings expensively furnished. Any statement of details would of necessity be of suggestive value only and can be obtained from much of the practical literature bearing on the subject, to which reference is given in the appended bibliography.

#### United States — Historic Development —

Instruction in the household subjects originated outside of the school system and in its modern form sprang from the renewed interests in all these lines at the time of the Philadelphia Exposition in 1876. The work was started in the eastern cities and was supported by private funds in classes outside the schools. Less successful attempts had been made earlier. In Boston an attempt was made to introduce sewing into the lower grades as early as 1854. This met with little success until 1865-1866. Special schools of cooking were established in the two cities. Public demonstrators and lecturers aroused public interest, and later a demand followed for the training of teachers. Cooking schools were begun privately in Boston, e.g. by Miss Joanna Sweeney in 1874, in 1877 by Miss Maria Parloa, later a teacher in the Fessenden Institute, whose president had been interested in the teaching of cookery in the South Kensington School. In 1879 the Woman's Educational Association of Boston voted to support a cooking school and made a contribution towards it, and on March 10, 1879, the Boston Cooking School was opened, in which demonstration lessons were given to young ladies, cooks, and girls. The school was put on a permanent basis in 1883, and in 1903 was incorporated with Simmons College. Cooking classes and kitchens were gradually provided in Boston schools and were taken over by the public school system in 1885. A normal class was held in the Tennyson Street School in 1886, and the Normal School of Cookery, which later

became the Mary Hemenway Department of Household Arts in the Massachusetts State Normal School at Framingham, was opened in 1888. The School of Housekeeping, which was incorporated with Simmons College in 1902, was opened as a private institution in 1897.

In New York City in the early seventies, the churches opened sewing schools. In 1876 the New York Cooking School was opened and was incorporated in 1878. It is now conducted in the United Charities Building. The Kitchen Garden Association of New York was incorporated on April 10, 1880, and included in its objects the promotion of the domestic industrial arts among the laboring classes. In 1884 this association became the Industrial Education Association. To meet the demand for teachers of sewing the first normal class was begun in 1884 as a part of its work. Instruction consisted of technical sewing alone, for methods of teaching the subject had not yet been completed. Classes in cookery and domestic art were held for public school children, and classes where girls could be trained for domestic service were also opened. In the winter of 1886 a children's industrial exhibition was held, representing sixty schools and institutions from different parts of the Union. This brought children's handwork before the public and had a direct influence in the development of the work in schools. In 1888 the College for the Training of Teachers, with a model school, was organized out of the Industrial Association, the name being changed to Teachers College in 1892. In 1911 the School of Practical Arts was differentiated from the other pedagogical departments and thus the household arts subjects again became a central object of instruction. As early as 1888 both cookery and sewing were introduced as regular subjects into the New York City public schools, one teacher being employed for each subject. Pratt Institute, Brooklyn, N. Y., founded by Mr. Charles Pratt, was opened in 1887, and science and domestic arts were included at the beginning.

In Philadelphia classes in cookery were offered by the New Century Club in 1878. These classes developed into a cooking school under the direction of Mrs. Rorer, which continued for twenty-five years. Drexel Institute, Philadelphia, was founded in 1891, and instruction was begun in 1892. Domestic science and art were important departments at the outset. Cookery and sewing were introduced into the elementary public schools of Philadelphia in 1885, and had found a place in the Girls High and Normal School in 1880.

The World's Fair at Chicago (1893) with exhibits from Sweden and other European schools gave an impulse to sewing as a school subject. In the fall of the same year the New York Association of Sewing Schools was formed and served as a center of information concerning courses, methods, and training, held conferences and exhibits, and issued publications; it grew

into a national society and had great influence in the introduction of sewing as an educational subject into schools of various rank in the United States. In 1901, the society, considering its work accomplished, was disbanded, for domestic art had become a part of instruction in educational institutions throughout the country.

In the West the movement began in the state institutions, Illinois, Iowa, and Kansas being the pioneers. Iowa seems to have been the earliest in domestic science, for at its opening in 1869 the young women students were required to work each day in the dining room and kitchen. Kansas Agricultural College reports the teaching of sewing as early as 1873-1874. In 1875-1876 lectures on food were given in the department of chemistry and a kitchen was fitted up in 1877. Women were admitted to the Illinois Industrial University (the State University) in 1870. The catalogue of 1871-1872 announced a School of Domestic Science and Art. In 1874 an instructor was appointed for this work. In 1875-1876 a well-organized course was printed in the catalogue.

*Present Status* — According to compilations made by the United States Bureau of Education in 1909 and 1910 sewing and cooking are taught in 95 elementary school systems, 207 high schools; and 142 higher institutions.

The most complete list is published by the *American Journal of Home Economics*, 1911, as follows: (a) Collegiate Institutions receiving aid from the Federal Government, 32; (b) Collegiate Institutions not receiving aid from the Federal Government, 102; (c) Normal Schools, 102; (d) Secondary Schools receiving State Aid for Agriculture and Domestic Science, 64; (e) High Schools giving courses in Home Economics, 632. Special Institutions (a) Schools of Domestic Science and Arts, 12; (b) Industrial Schools, 24; (c) Institutions for Defectives and Dependents, 26; (d) Part-time Schools, 26; (e) Institutions for Negroes receiving aid from the Federal Government, 17; (f) Institutions for negroes not receiving aid from the Federal Government, 69; (g) Institutions for Indians, 137. Total, 1243.

*State Universities*. — (The statistics quoted are taken from the *Organization List of Colleges and Experiment Stations*, 1900-1905, see Bevier and Usher, *The Home Economic Movement*. Those of later date were obtained through correspondence.) Arizona, 1900; Florida (State College for Women), 1906; Idaho, 1897 (dropped in 1899; two years' course added in 1903); Illinois, 1900; Indiana (Purdue), 1905; Kansas, 1910; Maine, 1909; Minnesota, 1900 (work for a degree, 1903); Missouri, 1901 (dropped in 1904; reorganized, 1906); Nebraska, 1898; Nevada, 1901; New York (Cornell), 1908; Ohio, 1896; Pennsylvania (State College), 1907; Tennessee, 1903; Utah, 1901; Vermont, 1908; Washington, 1909; West Virginia, 1899; Wisconsin, 1903; Wyoming, 1907.

*State Agricultural Colleges.* — A list of agricultural and mechanical colleges in the United States, published by the United States Department of Agriculture, Jan. 1, 1910, mentions sixty-seven institutions. Of these forty-seven are stated as having courses in Home Economics. Two more offer courses in Dressmaking. Of the forty-seven, thirteen are connected with state universities and appear in the list of those institutions in the preceding paragraph. This leaves thirty-four state institutions which offer such courses.

*Private Colleges.* — Well-organized courses are now offered in many of the endowed colleges and technical schools of the middle west. The work in the South has developed well in the normal and industrial colleges. In the East, Brown University has included work in home economics since 1903 in the Woman's College. Simmons College, Boston, incorporated in 1899, opened in 1902, to aid young women to self-support, numbers the School of Household Economics among its four schools. The Women's colleges of the East, Bryn Mawr, Mt. Holyoke, Smith, Vassar, and Wellesley, do not offer it, although they give courses in applied science, economics, and sociology that would be included in the home economics subjects in those colleges where such departments exist. Vassar, for instance, offers a course in household sanitation and in the chemistry of foods, Bryn Mawr a course in methods of social research, and a graduate course in problems of nutrition (1909-1910).

In the colleges and universities most of the courses offered count for the degree of B.S. Graduate work leading to the M.A. is also offered. In the University of Chicago the home economics course counts for either A.B., B.S., or Ph.D. The subject counts for college entrance to a very limited extent. Chicago and Illinois give two points credit each. At the University of California domestic science under certain conditions counts from one and one half to six units.

In 1907 the North Central Association of Colleges and Secondary Schools accepted household arts and sciences under the manual training group, the subjects to count as follows: plain sewing, one unit, sewing and millinery, one unit, cooking, two units. The revised Regent's Syllabus for the state of New York, 1910, includes syllabi of sewing and textiles and foods, which may prove a step toward the counting of the subject for college entrance. A number of committees are at work on this subject, but progress is of necessity slow.

*Secondary Schools.* — The growth of the work in the high schools was at first somewhat slow, but with the opening of the manual training high schools in different parts of the country, the number of schools giving household arts increased notably. Among these were the manual training high schools, Saginaw, Mich., Los Angeles, Cal., Providence, R.I. The

establishment of the technical and vocational high schools has more recently added many to the list of high schools, as, for instance, the technical high schools of Cleveland and Cincinnati, Ohio, Newtonville and Springfield, Mass., the Cosmopolitan High Schools of Toledo, the Washington Irving School of New York City, and the William Penn of Philadelphia. Others to be noted are the Practical Arts High Schools of Boston, and New Bedford, Mass. Other cities are following the lead of these schools and in a few years every city will have its high school of practical training in which household art has an important part. Night schools in all of the large cities also offer technical courses of high school grade, which aim to affect the art of everyday living and the organization and management of the home. For fuller discussion of this movement, see INDUSTRIAL EDUCATION.

*Special Institutions.* — Notable among the schools that may be classed as philanthropic are the schools or classes connected with the Young Women's Christian Association throughout the country. In larger cities there are well-developed departments which are also beginning training for domestic service.

Courses in the household arts are now given in a number of summer schools. One of the pioneers in this field was the Chautauqua Summer School, where demonstration lessons in cookery were given as early as 1879. In 1900 well-organized courses were offered, the work now covering a period of six weeks. The American School of Home Economics is a correspondence school of good standing having its headquarters in Chicago. This school has been valuable not only to housekeepers, but its publications of twelve volumes have been helpful in school work. The Lake Placid Conference of Home Economics, founded by Mr. and Mrs. Melville Dewey in 1899, has developed into the American Association of Home Economics, organized in Dec., 1909, with a magazine, the *American Journal of Home Economics*. Various branches of this Association exist in different parts of the country. The subject, too, is discussed in other associations of teachers and is becoming a prominent feature in the farmers' institutes and granges. New York City organized the Manhattan Trade School for Girls in 1902 and Boston followed in 1904 in the Boston Trade School. Both were at first under private control but were later taken over by the Board of Education. These schools attempt to reproduce trade conditions in their instruction; consequently they are organized as small factories. To aid the trades and to develop a higher class of work, art, and academic courses adapted to the specific needs of each of the trades represented in the schools are given. Wholesale and custom work are taken in all departments. A system of business shops headed by trade workers who can teach as well as conduct workrooms

gives the students real business organization under which to work. The results in both schools show that such practical instruction enables the workers to enter better positions, to gain higher wages, and to continue to rise to more influential situations.

*Training of Teachers* — The training of teachers of domestic arts for elementary and secondary schools now finds a place in many normal and in many university schools of education. The training for trade school teachers is not at present as well organized as in Europe but has been begun at Simmons College, Boston, and at Teachers College, Columbia University.

The formal training of teachers was begun in the Boston Cooking School, the Boston Normal School of Cookery, the New York College for the Training of Teachers, Pratt Institute, and Drexel Institute. From these centers, and from the Kansas Agricultural College, teachers were supplied for the new work all over the country. A one-year full time normal course was offered by the Teachers College in 1890, the course leading to a diploma. Up to this time a three-months' course with a certificate was all that had been offered by this institution. At the present time the University of Chicago and Columbia University train teachers of the household arts, the former in the School of Education, the latter in Teachers College. Several of the state universities and agricultural colleges afford such opportunity. Pratt and Drexel Institutes continue their normal departments. Of 147 public normal schools in 1910, 103 schools offered one or more branches of household arts. Of the 42 institutions listed in the *Lake Placid Report* as training teachers (1907) only seven were state normal schools or colleges. The demand for household arts in the state normals is on the increase, however. This is due probably to the awakening in regard to rural schools and the quickening interest in household arts teaching.

*Training for Professional Service* — The training in America for higher professional teaching is helping to develop still other vocational positions for women. Leaders of culture, artistic knowledge, executive ability, social and industrial intelligence and business knowledge, are needed for such positions as institutional directors, managers of settlements, welfare workers, social secretaries, costume designers, interior decorators and craft workers. There is also an evident inclination to consider that highly educated and trained women can be successful as heads of large business houses for dressmaking, millinery, and embroidery, or for foreign buyers. These demands may lead to the offering of degrees for women corresponding to those in the engineering courses for men.

Domestic art has become an important factor in the medical profession and is used increasingly in work for epileptics, insane, and feeble-minded. Orthopedic hospitals, insane asy-

lums, blind asylums, orphanages, workhouses, and reformatories find in it a valuable subject which while offering practical help also has an ethical and hygienic bearing. Settlements, churches, and social clubs are also using the various subjects to help them in their work of betterment and in fostering a wise enjoyment of life.

M. S. W. AND H. K.

*Great Britain and Ireland* — References to the importance of attention to domestic economy in the education of well-to-do girls are found in the writings of Hannah More, Erasmus Darwin, and other educationalists in the eighteenth century. In 1840 needlework was "expected" in national schools for girls and infants; it became compulsory in 1862. In 1846 also the Privy Council Committee on Education considered the propriety of granting a gratuity to schoolmistresses who taught domestic economy successfully in these schools, the reports of various Royal Commissions having drawn attention to the appalling home conditions of the laboring classes. School kitchens and washhouses were equipped in certain "industrial" schools, and during the next fifteen years frequent reference is made to the instruction of the female apprentices (pupil teachers) in "domestic industry." The Privy Council concluded, however, in 1860, that as school laundries and kitchens were "expensive to establish, expensive to maintain and difficult to conduct," they would no longer "press for them," but directed that attention be concentrated upon needlework. Henceforward until 1875, domestic economy was taught sparsely and by theory only. In that year practical instruction in cookery under trained teachers was "recognized" by the Board of Education, and in 1878 the plan of cookery "centers" was started for primary schools, government grants for such classes in day and evening schools were first made in 1882-1883. A few years later experimental classes in school laundry work were held in London under a joint and most representative committee; but the subject was not admitted into the code until 1889-1890. Eight years later "practical housewifery" was officially "recognized" by the Board of Education. Another ten years, and domestic science was introduced viz the experimental study of definite problems in hygiene and domestic economy. All these terms were superseded in 1905 by that of "domestic subjects" (cookery, laundry work, household management, dairy work, needlework, elementary dressmaking). At this date the curriculum was recast and household subjects were definitely regarded as a part of the program in all public elementary schools, including special schools for mentally and physically defective children. A circular was issued in 1911, and the new term, "housecraft," was introduced. Domestic classes for adults, directly designed to improve the conditions of home life, were established all over the country in 1890, as a result of the

money made available through the Technical Instruction Act of 1889. These stimulated the provision by numerous private schools of courses, residential and otherwise.

Women inspectors of domestic subjects were appointed by the government in 1889. The official recognition of domestic subjects in secondary schools is relatively recent (1906); admirable courses are now becoming general, in which laboratory and art work are correlated with the practical domestic arts. Post-school courses increase in popularity, while the example set (1908) by King's College for Women (University of London), in its post and under-graduate courses in household economics, is soon to be followed by other universities. Scholarships for the residential housewifery centers and trade school courses for girls on leaving the primary schools indicate other lines of progress in large cities. Boys are taught cookery in the seaports of three counties. The provision of instruction for girls over eleven in primary schools remains quite inadequate, though in 1909-1910 instruction in cookery was given to 316,233 pupils, in laundry work to 118,040, and in combined domestic subjects to 6707. Needlework remains obligatory for all girls, but is now discouraged in infants' schools.

The revival of interest in 1875 was due to the lectures on the art of cooking given by Mr. Buckmaster at the International Exhibition, London, 1873, 1874 saw the foundation of the National Training School of Cookery, the first of these "recognized" by the Board of Education for the training of teachers, as well as for the instruction of the public. Though some of these schools are now under the management of public education authorities, they were all founded by private effort. Their union for examination purposes dates from 1876, it developed in 1889 into the influential National Union for the Technical Education of Women in the Domestic Sciences, to whose persistent efforts much progress is due. So great was the demand for teachers that many more training schools were opened in the nineties (thirty were "recognized" in 1897), when new subjects were added. Each training school issues its own diploma in cookery, laundry, housewifery, needlework, and dressmaking, under specially defined conditions, the requirements in general education and special training are being steadily raised, in spite of financial difficulties which have crippled their efforts. None but trained teachers have ever been sanctioned, their Association, with a membership of 1100, was founded in 1896.

**Wales** — In the Welsh primary schools domestic art classes are on much the same lines as those in England. Twenty-nine out of thirty-three local authorities made provision for 90,000 girls from these schools (1907-1908). The first training school for the domestic arts was established at Cardiff, 1892. Cookery and laundry work are now taught in most of the

girls' secondary schools in Wales, and a new three years' home-making course (four hours a week) appears in the program of the "mixed" higher elementary schools at Glamorganshire. This county has by its enterprise in the initiation of new developments in these subjects exercised great influence for good on adjoining local educational authorities. These include a wider (*e.g.* carpentering, care of children) and reorganized curriculum, a greater emphasis on the scientific and educational aspects of the domestic arts, with no loss of the practical spirit; a more consistent and closer connection with general education and home life. Special rooms to facilitate these methods are a feature in new schools. A short course is now offered to students at the University College of North Wales.

**Scotland** — Needlework is obligatory in girls' primary schools in Scotland, otherwise cookery, of which the organization now corresponds generally with that in England, is the only domestic subject taught. At first (1884) demonstration classes were frequently given to a hundred pupils, though practice was always limited to twenty-four. Peculiar to Scotland are the "supplementary classes," entered, after a qualifying examination, by girls over twelve, from the primary schools. Nine hours a week for from two to three years are devoted to domestic science, while the general education is also proceeding. There are twenty-six such supplementary centers in Glasgow alone, with an attendance of over 2000 girls. The first Training School for Cookery was founded in the early eighties in Edinburgh, as a result of Mr. Buckmaster's lectures, though official efforts to give a more practical character to the examination in domestic economy of female candidates for the teaching profession date from 1859. No recognition is yet accorded to the domestic arts in the secondary schools for girls in Scotland.

**Ireland** — No decided interest in domestic subjects was taken in Ireland before 1886. The City of Dublin Technical School organized classes in cookery, dressmaking, and laundry (the latter unsuccessfully) in 1887. The Dublin School of Cookery, Laundrywork, and Dressmaking, which owes its initiation to the Royal Irish Association for Promoting the Training and Employment of Women, in connection with the Association for the Technical Training of Women and the enthusiasm of private individuals, dates from 1893. It was taken over in 1903 by the Department of Agriculture and Technical Instruction, with the object of training teachers, though short courses are given to women of all classes. It is now described as the Irish Training School of Domestic Economy, and considerable attention is given to the sciences fundamental to the arts of cooking and cleaning. A residence house was opened in 1909, where students undergo a period of preliminary practical instruction, before the two-years' course for teachers. A special one-

year course in housecraft was organized in 1910 at Alexandra College, Dublin. Three residential schools for well-educated girls were established at the Ursuline convents at Waterford, 1904, and Shgo, 1908, and in Londonderry, 1908, under the management of Victoria College. Eight corresponding residential schools for working class girls are scattered over the country. Domestic subjects are also taught (1909) in sixteen municipal and thirty-seven technical schools in Ireland. Courses in every branch of domestic economy, which admirably combine the practical with the educational, have been carried on since 1901 in fifty-eight girls' secondary schools, under the Department of Agriculture and Technical Instruction. They are described respectively as "auxiliary" (two years) or "special" (four years), and are obligatory on all pupils. Needlework has always entered into the primary school program. Cookery, laundry, and hygiene classes were introduced in 1896.

**Denmark** — A few advanced educationalists advocated the introduction of domestic economy into primary schools between 1870 and 1880, but needlework and hygiene only were taught. The first school for the training of servants was started in 1872 by the Crown Princess Louise, and has remained the most important among its successors. In the nineties several housewifery schools were started by private individuals at Copenhagen and in a few provincial towns, of these some are residential courses, two to nine months. All have very moderate fees. A tentative plan for introducing cookery and laundry work into the primary schools of Copenhagen was adopted in 1893, but it was 1898 before voluntary classes were opened for the elder girls. Continuation classes were organized for workers from fourteen to twenty years of age at the same date.

The domestic arts are now compulsory (four hours a week) in the primary schools of Copenhagen and Frederiksberg, for girls in Class VII, age twelve to fourteen years, and in a very few provincial towns, nowhere in the country. Copenhagen and Frederiksberg have twenty-three centers — provincial towns twelve. These subjects are taught in eight secondary schools in Copenhagen and at seven in the provinces. Peripatetic teachers are employed in rural districts by various associations of women. Sixty to one hundred and sixty hours of instruction are given to women and girls for a nominal fee. Little provision is made for the technical training of girls in Denmark, though the State subsidizes a school for professional dressmakers in Copenhagen and another for seamstresses. University courses on the allied subjects of hygiene, chemistry, biology, etc., are accessible to women, and a state grant for further experimental work in domestic science was voted in 1905 to Fru Berg Nielson, one of the earliest advocates of housewifery teaching in schools. Practical demonstration courses

in dietetic cooking have been also organized at the university for young medical men.

**Sweden** — A school of household training for girls was opened by a committee of ladies at Gothenburg in 1865. The first of a series of schools for servants was started in 1870 at Stockholm by Froken Hedda Cronius, to which shops were attached for the sale of cooked provisions; but the first cooking classes in Sweden date from 1882 and are due to Fru Hierta Retzius, whose name will be always honored in connection with the great work she pioneered in that country. The school was self-supporting in two years. It was presented by its founder in 1893 to the Higher Training College for Women Teachers, with the sanction of the government, to secure trained teachers in secondary schools for girls, with the result that in 1908 twenty-eight out of thirty-seven such schools were eligible for the government grant in this subject. The instruction is carefully correlated with lessons in natural science, hygiene, bookkeeping, etc. Courses last one to three years, with one lesson a week. The State subsidizes four other training colleges for teachers in primary schools in towns and one for those in rural districts, the courses last about eight to twelve months, fees vary, but are all low. A union of Swedish teachers was formed in 1906. A bill was passed in that year making an annual government grant of 60,000 kr., to promote this instruction in primary schools, higher primary schools, and people's high schools. No fees are permitted, classes are limited to twenty, the bare cost of the food is charged for the dinners, etc. School courses usually cover two terms — four hours a day — one day a week. Boys learn cooking in some of the seaport towns and in one agricultural school, they also help the girls in the kitchens of the twenty "children's workshops," organized in Stockholm. Forty peripatetic courses are at work in twenty-one of the Swedish provinces, giving from five to seven courses of six weeks' duration each year to from fifteen to twenty pupils at each course. A large number of private *écoles de fiancées*, with very complete courses, also exist in Sweden. Courses are provided for work girls in some factories. The rapid development of this teaching in Sweden is sometimes attributed to the admission of women to the administration councils of schools.

**Norway** — Great efforts to improve the education and general conditions of the people were made after 1814. Public opinion was educated by means of books and of a journal, concerned with the need for greater efficiency in daily life, which appeared 1860-1870, under the auspices of the Society for Promoting Popular Education. Fru Mina Weltesen founded the first school for domestic training at Abildso, near Christiania, in 1865, and carried it on successfully for sixteen years. The movement grew rapidly after the establishment of the first school kitchens at Christiania.

in 1889. Now cookery courses are given in the primary schools of every town. The system is a combination of the English and German. Instruction is closely correlated with science work. Housekeeping appeared in the program of girls' secondary schools in 1896, and is now a subject for examination at the age of fifteen to sixteen. Needlework is compulsory in all schools. Trained teachers were employed from the first in all state schools, special short courses being arranged for ordinary staff teachers. Two years' courses in housekeeping were introduced into training colleges in 1902, and the government grants include traveling scholarships for selected students. Chemistry and physiology must be studied at a university, and the domestic arts at a training school of domestic economy. General pedagogical training is also insisted upon, in order to utilize the educative value of these practical subjects, to permit of correlation, and to dignify it in the popular estimation. Excellent private housekeeping schools have been organized in different towns by private individuals or by societies, such as the Society for Furthering the Interests of Women. Some of these are self-supporting, others receive grants from the government, municipalities, benevolent societies, etc. They are largely frequented by young ladies. Courses adapted to the needs of working women are also provided. Free instruction is provided for one third of the pupils in the provincial residential housekeeping schools, with a nine to ten months' course. The province defrays one quarter total expense, government defrays three quarters. The subjects of instruction are cookery, garden, laundry, dairv, needlework, chemistry, physics, biology, hygiene, etc. Short peripatetic courses of cookery and household management given by trained teachers are organized in some country districts by the Agricultural Society. Residential schools for the training of girls as domestic servants exist in Bergen and Christiania, with a two years' course. Cookery courses have also been carried on for soldiers since 1900, while the first school for the training of ships' cooks and stewards dates from 1893.

**Finland** — The movement was distinctly educational from the first, and well supported by trained teachers, many of whom took the course in *Ménagère Pédagogique* provided by the people's high schools, others being trained for shorter or longer periods at the training schools now available for the purpose. The interest of the Association of Finnish Women was first aroused in the subject in 1889, when the organization of training upon educational lines was determined upon. Subscriptions sufficed to send Mlle Anna Olsoni (Mdm. Quist) to study the subject in Sweden and Great Britain. After taking her diploma at Glasgow in 1890, she returned, and in 1891 became superintendent of the Helsingfors

School of Training in Housewifery, at first supported by private subscriptions, the pioneer of many successors at, e.g., Kripio, Tannefors, and Niborg. Courses were and are offered to teachers (for whom employment in schools of different grades is subsequently insured), for girls on leaving school, for young peasants, and in high class cookery for ladies. In 1907 this society organized no less than twenty-three peripatetic courses, with 293 pupils, from fifteen to forty years of age. The fees, five to fifteen francs, are supplemented by grants from the State. In 1892 a great impetus was given to the movement by the formation of a new union between men and women to work, in concert with the Martha Society, for the advancement of women's education, with the assistance of grants from the State (3000 francs per annum). Courses, varying in length from four days to six weeks, have been organized by forty of its branches all over the country, and a residential school for twelve pupils has been opened at Kolaris in Lapland. Cooking is not generally taught in elementary schools, though the instruction of girls has always included needlework and knitting, to which the use of the sewing machine is now added. Ample provision for its acquirement is provided in higher grade schools or by means of classes for adults.

**Russia** — The first cookery school in Russia was opened in 1880 by the Society for the Protection of Public Health in St. Petersburg. In 1888 a technical school for girls and women was founded, which has now over 200 pupils. In 1890 a second cookery school was founded in Moscow by the Society for Propagating Practical Knowledge among Educated Women, from which eight professional schools have sprung. It supplies matrons for asylums, hospitals, etc. Four years later the Society for Encouraging the Professional Training of Women opened a similar school in St. Petersburg. Over 1200 students gained appointments in the first six years. Large numbers of scholarships are given by private individuals and societies of importance.

The teaching in the Russian training schools is of three types, and generally is associated with training in agriculture. (1) courses in St. Petersburg for the higher study of these arts, designed for girls who have completed their secondary school course, to prepare them for independent work in agriculture and farming (1907, 255 students). (2) So-called "Stebut courses," from the name of their originator, of which there are three near Moscow and Skov, designed for girls from higher elementary schools, these give both theoretical and practical instruction in both branches of knowledge (1907, 120 pupils). (3) Schools of a more technical character, of which there are twenty-one dispersed over the country under the Department of Agriculture, which give very full and thorough courses of two to three or four years, mostly free for the farmer class. All these



schools are subsidized by the government to a total sum of 36,000 roubles. There are also a few similar schools under the Ministry of Public Instruction. Schools of cookery exist at Kiev, Odessa, Tiflis, and other large towns. So far the subject is not taught in the public schools, but it is required in institutions for orphan girls of noble birth.

**Holland** — Great attention is given in Holland to the training courses for teachers and others. These are comprehensive, and include physics, chemistry, physiology, hygiene, book-keeping and laundry work, as well as cookery and dietetics. Diplomas are granted after examination by the Union of Teachers of Household Arts (founded in 1900), which is subsidized by the Dutch government. This union organizes vacation courses for its members by specialists; possesses an excellent library, publishes an annual report upon the teaching of housewifery in Holland, and is associated with a Bureau of Women's Employments. The Departments for Army and Navy require that a proportion of soldiers and sailors shall attend cooking courses, specially adapted to their requirements, while other courses are arranged for recruits to the colonial army. Members of the Association of Nurses and Sisters of Charity have their special courses also. The new Housewifery School at Amsterdam has further organized successful courses in dietetics for doctors and medical students, the lectures on biological chemistry and invalid diet being given by university professors and supplemented by practical work under the supervision of the school staff. There is a municipal school for training domestic servants at Amsterdam, as well as corresponding courses at the Hague and elsewhere, these last being due to private initiative. Twenty-one housewifery schools have been founded since 1888, which are kept in close touch by their monthly journal. Nine prepare girls for examination in handicrafts, domestic and otherwise, accounts, bookkeeping, cutting-out, dressmaking, and the care of children. The remainder grant diplomas of various grades, professional or otherwise, in housewifery and cooking only. The majority of these schools receive grants from the State, the province, and the city, where they are situated. The numerous classes for working girls and women owe their origin and spread to various societies concerned with the public welfare, as well as private individuals, and to these sources is due the provision for the training of philanthropic workers. School instruction in practical cookery and laundry work is, so far, confined to a few primary schools in Leyden, the Hague, and Amsterdam; but twelve of the chief cities offer useful courses on leaving schools to girls who have gained their certificates, and the training schools provide evening classes and others for the general public.

**Belgium** — The first administrative measures to promote the teaching of needlework in schools

were taken in 1874, though the subject only became compulsory in 1879. Technical training for women, designed to relieve the poverty and unemployment brought about by industrial changes, originated in 1844, and cookery classes for their work-people were organized from 1871 onward by one large firm after another, but the ample provision for training in the domestic arts by which Belgium is distinguished, is the direct outcome of a grave social crisis — the strike of 1886 — to which the inefficiency of housewives was believed to be a contributory cause. Organized instruction, broadly speaking, dates from the year 1887. Public institutions for the necessary instruction of adults were soon opened by wealthy governors of provinces or societies, and after the experimental stages were passed received grants from the State, which subsequently imposed its own regulations (1889). Great elasticity is permitted to meet local needs, and every effort is made to fix hours convenient to young workwomen. A complete course usually extends over two years. These classes are considered the continuation and rational completion of the primary school course. Great impetus was given to this movement in primary schools by the central and provincial committees of influential women instituted for the purpose by the Royal Decree in 1880, it spread in 1881 to fifty secondary schools for girls, where three years' courses, essentially experimental and practical, now lead up to a diploma of capacity (instituted 1893), granted upon a syllabus and examination defined by the State. At the same time provision was made for the training of the necessary teachers at Brussels and elsewhere, at first by short temporary and holiday courses, until time permitted their more complete preparation. Hygiene, domestic economy, and needlework are taught in three out of the four years spent at a training college, by inductive, experimental, and practical methods. All instruction is under the direction of the Ministère de l'Intérieur et de l'Instruction, or of the Ministère de l'Agriculture, de l'Industrie et des Travaux Publics, according to whether it deals with adults or pupils still at school. The courses in housewifery are usually brief, limited, and theoretical, for the State does not advocate teaching the practice of these arts at this stage. Inspectors find that adults profit from the teaching far more than do children, though the system of instruction at centers is being introduced at Brussels, Bruges, etc., and is developing in connection with the *cantines scolaires*. Admirably organized work is carried on by the *écoles professionnelles et ménagères*, which provide courses of from two to three years, and the *écoles ménagères*, which have courses of from one to two years, for girls from fourteen and upwards of varied capacity and social standing — chiefly lower middle class. About 300 of these schools existed in 1901, and their number is reported to have largely increased, while their pupils



number many thousands. In each *école professionnelle* (trade school), domestic economy and gymnastics must be taken in the general course; but in the other two types of schools mentioned, one half or the whole time respectively is devoted to every branch of the domestic arts. Grants are given for outfit, and an annual subsidy of two fifths the expenditure is made to those schools which fulfill state requirements. These trade, agriculture, or domestic schools may be under private or municipal control. Many bursaries are given, and fees vary widely, according to the means of the pupils. No peripatetic teachers or ambulatory schools are permitted in Belgium.

**Germany** -- In 1792 Hippele, the friend and disciple of Kant, when advocating the higher education of women, drew attention to the need for special training in domestic methods, on account of their influence on human well-being, but the first efforts made, a century ago, to arouse interest in the subject, resulted chiefly in the establishment of schools for training servants, of which many were founded between 1815 and 1875. In Germany, the movement is the outcome of private initiative, and is warmly supported by Women's Societies, large employers of women's labor, etc. These societies, of which the *Lette Verein* at Berlin was the first, sprang into life between 1850 and 1860, though it was 1873 before the Grand Duchess Louise of Baden, with the support of the Women's Association, founded the first housewifery school at Karlsruhe, cookery classes for adults were started in Berlin in 1885, at the instigation of the Crown Princess of Prussia, who, also, in 1888, secured some housewifery instruction for working girls. Fraulein Foester pioneered the first cookery classes in a girls' primary school in 1889. Munich, Nuremberg, and Augsburg followed the example of Cassel, and added an optional eighth class, devoted chiefly to a very complete course in housewifery, which is closely correlated with general education -- no special teacher being employed. Thus organized instruction in domestic subjects came into being relatively late, though great strides have been made in the last twenty years, witness the *Official Code for Higher Girls' Schools in Prussia*, 1908, which requires that at least one year's training be given to each girl in housecraft, the rearing of children, and kindred subjects.

So great a variety of agencies are now engaged in the promotion of this instruction, that, in the absence of imperial reports and statistics, it is difficult accurately to describe their work. Sewing schools of a high standard were the first technical schools for women to get a firm footing in Germany, needlework is taught in every grade of school, classes being provided also for adults. The state and municipalities have only quite recently founded technical or industrial schools for girls, such as are found in Berlin, Leipzig, Dresden, Munich, Stuttgart, etc.

They owe their existence to private enterprise, and have, unfortunately, no common standard. The *Fortbildungsschulen*, which now cover the country, and the *Fachschulen* (see INDUSTRIAL EDUCATION) include domestic art courses for teachers as well as pupils. Many teachers are trained locally, or in Berlin at the Lette Haus and the Pestalozzi-Froebel Haus (*q v*). Since no national regulations exist for this purpose, great diversity of requirements are found. State grants are made chiefly by the Departments of Commerce and Agriculture. The former founded model state housewifery schools at Rheudt, Potsdam, and Posen, 1902. Great opposition exists to making these subjects compulsory in primary schools, but many private societies endeavor to supplement the omission. When given, school authorities are responsible for all the arrangements made. The chief distinctive characteristic of Germany is the large development of residential home-making schools (those of the *Diakoniewerein* give all lessons in relation to the practical needs of life). They are frequented by middle-class girls, who pay good fees for one and a half year courses. Reference must be also made to the Society for Country Housewifery Schools (1897), founded by Frau von Kortzfleisch and assisted by the Minister of Agriculture; also of the traveling cooking schools for rural districts, now at work in Baden, Bavaria, the Palatinate, Lower Franconia, and the Rhine provinces.

**Switzerland** -- The most striking features are the rapid spread of such instruction, which is taught entirely as an applied art, not as science, during the past ten years, and the accessibility of the classes. Courses are given in the primary schools of a few towns and communes, but are universal in *Fortbildungsschulen* (continuation schools), *Arbeitschulen* (trade schools), *Haushaltungsschulen* or *écoles ménagères* (housewifery schools) -- resident and non-resident. Short courses are provided for factory and other workers, in urban and rural districts. A close alliance between private societies and governing authorities does much to forward the movement, which sprang, in 1881, from the desire of a group of private individuals to improve the teaching of needlework. This became obligatory in schools in 1878, and is now carried to great perfection in the trade schools at Zurich, Geneva, etc., which confine their training to needlecraft, housewifery, and commercial work. 1881 saw the foundation of the first of many succeeding *écoles ménagères*, by *La Société d'Utilité publique des Femmes*. There are many of these residential housekeeping schools offering courses from three months to one year; their fees vary, but are very low.

In 1895 the federal government decided to make grants to these and similar institutions, for training women in trades for the domestic arts, which from the first had received liberal subsidies from the cantonal and local authorities.

Trained teachers were drawn at first from Germany; now training schools exist at Berne, Zurich, Fribourg, Geneva, etc. No general syllabus is yet imposed. There is inspection by the federal inspectress, but a good deal of freedom is sanctioned. In Geneva girls must proceed, at the close of their sixth year in the primary school, either to a secondary school, where there are now optional courses in the domestic arts, or to an *école professionnelle et ménagère*, for at least two years, where one half of the time is given to these subjects. Other towns are imposing similar regulations. The training of servants continues at Berne, Fribourg, and Winterthur, but has not so far effected a solution of the domestic problem. Elaborate courses, domestic or professional, in every branch of needlework, are offered at a large number of special schools throughout the country; they vary in length from a few weeks to four years. Very few of these classes are free, as is constantly the case with those concerned with cookery only.

**Austria and Hungary** — In the eighteenth century the Empress Maria Theresa (*qv*) issued a general ordinance, requiring that girls be taught the best methods of sewing, knitting, and domestic economy in every school, but a century elapsed before the two former were introduced into elementary education. The whole group of subjects was made obligatory in 1869, but the regulation as to housewifery remained a dead letter and was suppressed in 1883. Opportunities for instruction in cookery are still chiefly the result of private enterprise, though latterly some education authorities have recognized the movement. In Hungary, especially, this has occurred, and instruction is given to the girls in the *Repetition*, or higher grade schools. In Buda-Pest there are thirty-six such schools, numbering 4000 pupils. Cookery is also taught in the technical schools of that city, and in the normal colleges for women teachers, but nowhere yet in elementary schools, though, through the persevering efforts of private and educational societies, courses are in some instances provided in an annex to the schools, supported by fees and subscriptions. Austria and Hungary are chiefly responsible for (1) the schools for servants and others attached to restaurants for the sale of the food cooked, started in 1883 by the Society of Housewives, taught by expert but untrained teachers. In 1906 the Union of Hotel Keepers combined with the country housewifery schools to provide a one-year course of training for teachers, from which much stimulus is expected. (2) The local farm or housewifery schools, founded by agricultural societies in the various provinces, for the daughters of better-off peasants after leaving school. These include in their very practical curriculum the care of children and sick nursing. (3) The general provision by factory owners and philanthropists of free cooking

classes for working girls (three months' courses, five evenings a week), which now number over 2000 — twelve pupils to a course. Untrained teachers are the great obstacle to progress, as well as the absence of state interest and aid. Both are probably due in part to the peculiar racial conditions and difficulties of the Empire. Official attention has been concentrated for years upon technical as well as school and normal college training in every branch of the finest needlework for women and girls. In the large and efficient trade schools and technical institutes scattered all over the Empire, general and special instruction is given in lace work, lingerie, dressmaking, millinery, embroidery, design, drawing, and painting.

**France** — Needlework was recommended as a school subject in 1850, and made obligatory in 1882, when practical teaching of the domestic arts was officially, though not actually, introduced into primary and secondary schools, an *école de ménage* was instituted at Rheims in 1873, with a three years' course for girls on leaving school, similar *cours complémentaires* were organized more generally in 1884-1887. But the practical teaching of cookery and housewifery has been generally brief, restricted, and theoretical, attention being concentrated upon elaborate needlework. The movement to perfect girls in this art was begun in Paris in 1842, a society to cope with its rapid development was formed in 1856. Since 1886 these *écoles professionnelles* have steadily grown in scope and importance. The mornings are devoted to general education, the afternoons to technical training in every branch of needlecraft, dressmaking and cutting, millinery, etc. There are eight such municipal technical schools (*écoles pratiques de commerce et d'industrie*) in Paris, with an average of 300 pupils each. Instruction is free, scholarships being granted for clothes and meals. In the *écoles professionnelles ménagères* (technical schools), each pupil must have eight weeks' practical cooking, laundry work, and housewifery during her three years' course; but in part as the result of the relatively high level of cookery in France and the belief that such training should be given in the home, practical teaching in these arts is still far from widespread. The *Orders* of 1887-1888-1889 remained dead letters, but a great extension of the movement dates from 1897, when the establishment of a training school was required in every town of over 50,000 inhabitants, and *classes ménagères* became obligatory for girls over thirteen in every urban school numbering over 250 pupils. Considerable incentive was given by the conclusions on the subject formulated at the International Congress on Primary Education held in Paris, 1900. *Cours complémentaires manuels et ménagers* for girls holding certificates from the primary schools were established in 1901, which cover two years, with a weekly total of thirty-seven and a half hours; and a three years' course pro-

vided for girls up to sixteen or seventeen in the *écoles primaires supérieures*, in which needlework, dressmaking, millinery, and hygiene are included. Though students in the training colleges for primary teachers do their own housework, training is only given in needlework and dressmaking, two to three hours weekly for three years. In one or two cases in the *lycées de jeunes filles* (public secondary schools for girls) optional demonstration courses are offered, given by the cook of the establishment, they are attended chiefly by girls who have left school. In 1903 the University of Lyons offered a two years' course to women, six hours a week, on applied biology, bacteriology, the rôle of women in the family, hygiene, etc. The subject is slowly gaining recognition in the primary schools of Paris, chiefly in connection with the *cantines scolaires*, for which the elder girls prepare the food. No provision is made for the adequate training of teachers. Great credit is, however, due to the work of *La Ligue Patriotique des Françaises*, for the promotion of such teaching as does exist among women of all ranks in France.

**Italy** — The state and municipal recognition and support now accorded to the domestic arts is due to the influence of Queen Margherita at the end of the nineteenth century, as well as to that of the venerable "apostle of training in the domestic arts," Signora Adèle Levi Della Vida. The parent institution of the numerous *scuole professionali* established at Rome, Turin, Venice, Milan, Florence, Naples, Parma, Bologna, Palermo, etc., for boys and girls of the working and artisan classes, was started by the municipality of Rome in 1876. The Minister of Public Instruction (Signor Boccechi) introduced manual instruction into the primary schools in 1889, the teaching of housewifery followed in 1904 and became obligatory in the *scuole professionali* in 1907. These schools aim, with every evidence of success, at the preservation of educational advantages, while stress is coincidentally laid on the acquisition of practical skill. Pupils are admitted, with a nominal entrance fee, at ten years of age, there to finish their elementary education and then to proceed to some special line of handicraft. All girls must learn drawing and cooking, while choice of three subjects must be made from needlework, lace, white embroidery, dressmaking, ironing, hairdressing, artificial flower making, geometrical and ornamental drawing and design, or bookkeeping, etc. The wages earned on leaving average double those of untrained girls. These schools are subsidized by the State and municipalities. Several schools for the training of matrons for factories exist in North Italy. Classes have been formed at Milan and other cities for the training of young girls of the working classes, while training for girls of the upper classes are provided at Rome in 1907. These private efforts receive state aid.

**Australia** — Cookery has been taught in

New South Wales since 1890, by 1905 both sewing and cooking had been introduced into the public schools. Centers to which children from neighboring schools are sent have been established throughout the State. The courses extend over one half year, with one meeting of an hour each week. The work is simple and practical, relating to duties of the home. Provision has been made for the training of teachers for the subject. In Victoria there are some twenty-five fully equipped centers for cookery throughout the State, the State is prepared to double any local expenditure for the erection of suitable kitchen and dining room. In Western Australia there is a similar system of centers attended by children from definitely assigned schools. The subjects taught are cookery, laundering, sewing, and housewifery. Perth is the first town in the commonwealth to establish housewifery and a complete cottage. Here cookery, laundering, care of sick, infants, and young children, besides house care and management, house furnishing, and decoration, marketing, and cleaning. In Queensland many branches of the subject are taught in the numerous technical colleges and in "branch classes" (extension) where no technical college exists.

**South America** — The girls of the upper classes are taught mainly in convents, in which the domestic arts include sewing, embroidery, flower making, and lace making. In the Argentine Republic there are so-called "professional" schools in which domestic science and needlework are taught. At Buenos Aires three trade schools for girls are maintained, while there is also a commercial school for women. Girls from seven to thirteen in the primary grades of Brazil have needlework. Higher work is provided in manual training schools, normal colleges, polytechnic schools, and schools of arts and trades. At Montevideo, Uruguay, some branches of household arts are taught in the school of arts and trades.

**Canada** — At present domestic science and art are taught in a great number of the large public school systems throughout the country, usually by peripatetic teachers. For advanced work provision is made in many agricultural colleges and special schools of household arts or science, the best known being the Macdonald Institute at Guelph, Ont., and the Macdonald College at Ste Anne de Bellevue, Que. (See CANADA, EDUCATION IN.) A. R.

In general see the article on INDUSTRIAL EDUCATION

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**HOUSES, SCHOOL.** — See ARCHITECTURE, SCHOOL.

**HOUSTON COLLEGE, HOUSTON, TEX**  
— An institution for the education of colored men and women, established in 1845. Elementary, college preparatory, normal, industrial, and theological departments are maintained.

**HOVEY, CHARLES EDWARD** (1827-1897)  
— Normal school principal; graduated at Dartmouth College in 1852. He was principal of the High School at Framingham, Mass., 1852-1854, superintendent of the schools at Peoria, Ill., 1854-1857, and first principal of the Illinois State Normal School, 1857-1861. He was editor of the *Illinois Teacher*, 1856-1861.  
W. S. M.

**HOW, SAMUEL BLANCHARD** (1790-1868). — Sixth president of Dickinson College, was graduated from the University of Pennsylvania in 1810 and the Princeton Theological Seminary in 1813. He was president of Dickinson College from 1830 to 1832. He was the author of several works on religious education.  
W. S. M.

**HOWARD COLLEGE, BIRMINGHAM, ALA.** — An institution founded in 1842 under the auspices of the Alabama Baptist State Convention. Academic and collegiate departments are maintained. Ten units are required for entrance to the college, which grants the degrees of A B and A M. There is a faculty of thirteen members.

**HOWARD, JOHN** — See PENOLOGY, EDUCATIONAL ASPECTS OF

**HOWARD PAYNE COLLEGE, BROWNWOOD, TEX** — A coeducational institution under the control of the Baptist General Convention of Texas, founded in 1889. Preparatory, college, normal, business, music, expression, and art departments are maintained.

**HOWARD UNIVERSITY, WASHINGTON, D C** — A coeducational institution for all races. The university buildings, with the exception of the medical and law schools, stand on a campus of twenty acres. The institution maintains a college of arts and sciences, a teachers' college, a school of manual arts and applied sciences, an academy and commercial college, as well as the schools of law, medicine, and theology. The entrance requirements are fifteen units of work. The degree of A B is conferred on the completion of a college course or a four years' course in the teachers' college. The entrance requirements to the school of medicine are those of the Association of American Medical Colleges, and a four years' course is offered. The New Freedmen's Hospital affords

clinical facilities to the medical college. The school of law which is situated in the city offers a three years' course, the requirements for which are a four years' high school course. There are 121 members on the faculty

**HOWE, SAMUEL GRIDLEY** (1801-1876).

— Founder of American institutions for the education of the blind, was born at Boston on Nov 10, 1801. He was educated at the Boston Latin School and Brown University, graduating in 1821. Three years later he completed the course at the Harvard Medical School. He served for six years in the Greek war of liberation, and for a time gave his services to the cause of liberty in the ill-fated kingdom of Poland. At the suggestion of Dr. John D. Fisher he went to France in 1831 to study the methods of educating blind children, and in the following year he opened at South Boston the Perkins Institution and Massachusetts School for the Blind, and during the next forty-four years he trained the teachers and shaped the policy of practically all the schools for the blind in the United States. (See the article, **BLIND, EDUCATION OF**.) One of his notable triumphs was the education of Laura Bridgman (*qv*), a deaf-blind girl, and through her education the development of a system of touch training now widely used in the education of deaf-blind children. In 1846 he was chairman of a commission for the study of idiotic and feeble-minded persons, which resulted in the establishment of the Massachusetts School for Feeble-Minded Children. In cooperation with his wife, Julia Ward Howe, he founded the *Daily Commonwealth* in 1851. He originated the Massachusetts State Board of Charities and Corrections in 1863, — the first of its kind in the United States, — and was its first president. He was intimately associated with Horace Mann (*qv*), in the establishment of the Massachusetts common school system. He wrote numerous papers on the education of the blind and feeble-minded, several works on Greek modern history, and a number of textbooks for the use of the blind. W S M

See **BLIND, EDUCATION OF**; **DEAF-BLIND, EDUCATION OF THE**

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**HOWELL, JAMES** (1594?-1666) — Historiographer Royal of England (1661), and educationally of importance from his interest in advancing the study of foreign languages both by study in England and by his advocacy of travel abroad as a means of education. He is now best known by his letters from abroad.

Howell was of a Welsh family, educated at Hereford Grammar School, whence he was entered at Jesus College, Oxford, and graduated B A in 1613. With foreign missions and secretariats he lived until 1642, when he was appointed as clerk of the Council, an arrangement upset by the Civil War. He turned to writing for a livelihood, and, as Mr. Arber says, "he is one of the earliest instances of a literary man successfully maintaining himself with the fruits of his pen."

In his *Instructions for Forreine Travel* (1642) he claims to show "by what course and in what compass of time, one may take an exact survey of the kingdoms and states of Christendom, and arrive to the practical knowledge of the languages to good purpose." In this short treatise he points out the educational use of travel, "which may be not improperly called a moving academy, or the true Peripatetic School." More direct contributions of Howell to educational progress are to be found in the direction of linguistics. (1) He published a new edition of the French-English and English-French *Dictionary of Randle Cotgrave* (*qv*) in 1650, adding his "Animadversions." The book is addressed to nobles and gentry, and to merchant adventurers both English and the "Dutch here resident" for commercial purposes. (2) The *Polyglot Dictionary* of Howell marks the highest development, up to 1660, of polyglot dictionaries, from the point of view of the English people. The comprehensive nature of the work was intended to meet the needs of nobles and gentry, of commercial people and of scholars. Howell not only produced his modern languages lexicon, but did for adages or proverbs generally in England what Erasmus had done for classical adages in Europe. Still further, he brought his native Welsh language in line with other languages as worthy of knowledge and study by other nations. (3) *Howell's Grammar: A New English Grammar, Prescribing as certain Rules as the Language will bear, for Forreiners to learn English.* There is also another *Grammar of the Spanish or Castilian Tongue, with some special remarks upon the Portuguese Dialect etc.* Whereunto is annexed *Discours or a Dialog containing a Perambulation of Spain and Portugall, which may serve for a direction how to travell through both Countreys, etc.* For the service of Her Majesty (i.e. Queen Catharine of Braganza) whom God Preserve 1662. This contains the English grammar on one page and the same rendered into Spanish on the other. Howell attempts "a grammar of English in itself," not an English grammar, "to learn another language as Lily for Latin and Littleton for French" (See **HOLYBAND**.) Accordingly (p. 83) Howell writes an account of *Divers superfluous letters in English Orthography*, and advocates phonetic spelling as much as possible, his maxim being *Frustra fit per plura quod fieri potest per pauciora*. F. W.

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**HOWLAND, GEORGE** (1824–1892). — School superintendent, was educated in the public schools of Massachusetts and at Amherst College, graduating in 1850. He was tutor in Amherst from 1850 to 1853; instructor in the Chicago High School, 1858–1860; principal of the same from 1860 to 1880, and city superintendent of schools in Chicago from 1880 to 1892. His educational publications include *Practical Hints for Teachers of Public Schools* (1889), a grammar, several Latin texts, and numerous addresses on educational subjects  
 W. S. M.

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**HRABANUS, MAURUS.** — See **RABANUS MAURUS**

**HROSWITHA.** — See **ROSWITHA; WOMEN, EDUCATION OF**

**HUARTE NAVARRO, JUAN DE DIOS** — Physician, psychologist, and educationist, born at Saint-Jean-Pied-de-Port, in Navarre (Basse-Navarre) about 1536. Though French by birth, he was Spanish by training. Huarte's name lives on account of his book, in which the mental activity brought to bear on the greatest educational problems affords ground for naming it one of the most remarkable original works issued by the press in the sixteenth century (1575). This work was translated from an Italian version by Richard Carew (*q.v.*) in 1594, with the title *Examen de Ingenios, The Examination of men's Wits*. In which, by discovering the varietie of natures, is shewed for what profession each one is apt, and how far he shall profit therein. By John Huarte Translated out of the Spanish tongue by Mr. Camillo Camilli. Englished out of his Italian, by R. C. Esquire. Insisting on the essential differences in individual abilities, Huarte points out that it is thus necessary educationally to make an examination or trial of minds to see the diverse natures or "wits" and from such an inquiry to determine the special directions from which they are to find suitable nutriment in the material of knowledge.

Huarte suggests classification of pupils on the basis of temperament or of psychological characteristics, rather than on common possession of the same details or bulk of knowledge; and claiming the authority of Galen, Huarte would wish state officials to sound the wit and

natural application of children so as to set each to learn the art most suitable to each, and "not leaving it to them to act of their own choice." There is much that may be regarded as antiquated about Huarte's views of temperament and the soul in its three aspects. But Huarte is certainly in accord with later educational writers in his emphasis on self-activity as the principle of the human soul, in his theory of the effect of climate on character, in his idea of heredity and the influence of dieting on temperament and thence on educational processes. Huarte also takes up questions of parentage, on the physical side, discussing the birth and prenatal conditions of "wit" in children.

Huarte has taken ideas from Plato, and still more from Aristotle. Yet his debt is greatest of all to Galen (see Dr Guardia's *Essay*, p 253). Huarte cites from classical authors and from the Scriptures in the manner of post-Renaissance writers. Dr Guardia has given a full account of the critics of Huarte.

Besides Richard Carew's translation in 1594, another was undertaken in 1698 by Edward Bellamy, who describes the book as "useful for all Fathers, Masters, Tutors, etc." It will thus be seen that the suggestions of Huarte logically led to the advocacy of child study, and he deserves recognition as one of the most important of the pioneers of the subject.

Huarte was adversely criticized by Antonius Possevinus e Societate Jesu, *Cultura Ingeniorum*. . . *Examen Ingeniorum Io Huartis expenditur* (which first appeared in Possevinus's, *Bibliotheca selecta de ratione studiorum*, Rome, 1593; and afterwards was separately published, e.g. 4th ed, Venice, 1604), and by Jourdain Guibet (Docteur en Médecine), *Examen de l'Examen des Esprits* (Paris, 1631). F. W.

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**HÜBNER, JOHANN** (1668–1731). — German schoolmaster and author of textbooks in scripture, history, and geography. He graduated at Leipzig, and for a time lectured there, in 1690 he became rector of the gymnasium at Merseburg, and in 1711 rector of the Johanneum at Hamburg in succession to Fabricius (*q.v.*). His success, however, lay more in his textbooks, especially *Kurze Fragen aus der alten und neuen Geographie* and *Zweimal zwei und fünfzig auserlesene biblische Historien und Fragen* (1714). Both works were translated into many foreign languages, and the

latter at any rate had a great vogue for many years. The biblical stories were short, and Hubner's method was to have pupils read them two or three times and then be ready to answer questions on the text. Hubner's book furnished the questions without answers. Hubner also issued a number of school atlases and maps. Just before his death he published *Die ganze Historie der Reformation in funfzig kurze Reden nebst einem Schauspiele von Bekehrung der Sachsen zum Christentum* (The complete history of the Reformation in fifty brief Addresses, with a Play on the Conversion of the Saxons to Christianity, 1730).

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**HUE**—This term refers to the specific qualitative difference between colors, which may, however, possess equal saturation (*q v*) and brightness (*q v*). The *hue* and the *tone* of a color are distinguished by reserving the latter term for monochromatic lights (see **COLOR**), while "hue" refers to mixed lights as well. Thus, red, yellow, blue, etc., are tones, scarlet, purple, crimson, etc., are hues. Buff and yellow, lilac and lavender, on the other hand, would not differ so much in hue as in saturation, or, to use the artist's terminology, in chroma.

R. P. A.

**HUGH OF ST VICTOR** (1096-1144) — A twelfth-century scholastic theologian, philosopher and mystic; was born at Blankenburg in the Harz, and at an early age took the habit of the Canons Regular of St. Augustine at Hamerleve, near Halberstadt. There he received his early education. In 1115 he went to the house of his order, the celebrated monastery of St. Victor, near Paris, where the entrance seven years previously of William of Champeaux marked the foundation of the Victorine School of mysticism. From 1133 to his death in 1144, Hugh was head of the school. Besides works on general theological subjects and on sacramental theology which earned him the title of *Alter Augustinus*, he wrote a number of important treatises on mystical theology, namely, *De Arca Noe Mystica*, *De Arca Noe Morali*, *De Vanitate Mundi*, *De Arrha Animæ*, *De Amore Sponsi ad Sponsam*. These are published in Migne's *Patrologia Latina*, Vols CLXXV-CLXXVII.

As a mystic, Hugh did not go to the length of condemning all rational philosophy. On principle, he avoided the discussion of questions which, though they occupied almost exclusively the minds of his contemporaries, seemed to him to be futile. Such, for instance, was the question of Universals. He himself, especially in the work *Eruditionis Didascalæ*, developed a system of philosophy in which he

attached paramount importance to psychological introspection. But while he appreciated philosophy, he maintained that all rational knowledge must be supplemented, and in a sense superseded, by mystic contemplation. He taught that knowledge is not to be valued for its own sake, but as a means of attaining a contemplation of higher spiritual truths. In the treatise *De Contemplatione et ejus Speciebus* (pub by Hauréau in 1859) he distinguishes three stages in the mystic life of the soul. The first is the preparatory stage, in which the soul by thought (*cogitatio*) seeks God in the material world, the second is the meditative stage, in which the soul by reflection (*meditatio*) seeks God in itself; the third is the contemplative stage, in which the soul by intuition (*contemplatio*) seeks God Himself. The faculties by which truth is perceived in these successive stages are called respectively "the eye of the flesh," "the eye of the intellect," "the eye of the contemplation." It was by means of this doctrine that Hugh exerted a very widespread influence among mystical writers and teachers all through the Middle Ages. W. T.

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**HUGHES, JOHN** (1797-1864) — Leader of the Roman Catholic movement for the division of the public school funds, and founder of St. John's College, was educated at Mount St. Mary's College, Md and attained distinction as an ecclesiastic in the Roman Catholic Church. He founded St. John's College at Fordham (*q v*), and conducted the campaigns (which failed) during 1840-1842 in the municipal elections of New York City and the legislature of New York State for the admission of Roman Catholic schools to a participation in the common school funds. W. S. M.

See PAROCHIAL SCHOOL SYSTEM.

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**HUGHES, THOMAS** (1823-1896) — Author of *Tom Brown's School Days*, born at Uffington, Berks., and educated at Rugby and Oriel College, Oxford. At Rugby he came under the influence of Thomas Arnold (*q v*), of whom he has drawn such a reverent picture in the story of the school. By profession Hughes was a barrister, but his interests were mainly in the social questions of the day. He took up the cause of trades unionism, cooperation, and the relations between employers and workmen.

He was intimately associated with F. D. Maurice (*q.v.*), the Christian Socialist movement, and the Working Men's College in Great Ormond St., London. Here he conducted a Bible class, out of which came his work, *The Manliness of Christ* (1879). He was principal of the college from 1872 to 1883. His interest in social reform influenced him to enter politics, and from 1865 to 1874 he sat in the House of Commons. His admiration for Lowell prompted him to visit New York and Boston, where he was received with enthusiasm as the author of *Tom Brown's School Days* and as a sympathizer with the North during the Civil War. In America, too, at Rugby, Tenn., he established a colony on a cooperative basis, which, however, was financially a failure.

In addition to *Tom Brown's School Days*, which he wrote in 1853 and published anonymously in 1857, Hughes was the author of *Tom Brown at Oxford* (1861); *The Scouring of the White Horse* (1889), *Memoir of a Brother* (1873), *Vacation Rambles* (1895). But his fame will always rest on *Tom Brown's School Days*, which, more than any other work, spread far and wide the fame of Rugby, the reforms of Arnold, and the spirit of the public school. For some time it was thought that the prototype of Tom was Hughes himself or his elder brother, George, and that Arthur was Dean Stanley, but the author denied this strongly in the preface to *Tom Brown at Oxford*.

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*Dictionary of National Biography, Supplement*

**HUGUENOTS IN EDUCATION, INFLUENCE OF** — See CALVINISTS AND EDUCATION, FRANCE, EDUCATION IN

**HULL HOUSE** — See SOCIAL SETTLEMENTS AND EDUCATION

**HUMANE EDUCATION.** — This form of education is a product of the humane movement of the past century, which began in a distinctive way in England in 1822 with the passing by Parliament of the first law for the prevention of cruelty to animals and with the organization of the Royal Society for the Prevention of Cruelty to Animals. In the United States its beginning was marked by the organization of the American Society for the Prevention of Cruelty to Animals in 1866. The movement has since spread so rapidly that organized protection of animals against cruelty and neglect is now world-wide.

The term "humane education" might fittingly be applied to any effort aimed at the inculcating of humane ideals or the furthering of humane practices by precept or rule of action. Such effort would include at least three aspects: (a) the instruction of children along humane lines, (b) the educating of teamsters and others dealing with animals in best methods of care and treatment, (c) the forming and

stimulating of public opinion — through press and pulpit, through special literature and through exhibitions — to a more humane attitude and practice. Only the first of these phases will be dealt with here.

The philosophy underlying humane education varies among its advocates. As a rule the basis is emotional rather than rationalistic. This basis finds its most consistent expression in the view of an equality of absolute rights on the part of all sentient creatures. It is regarded as a mistake to suppose that the rights of animals are in any way antagonistic to the rights of men. Animals, as well as men, in this view, have the right to live a natural life, to attain an individual development, subject to the limitations imposed by the permanent needs and interests of the community. And in determining what these permanent interests are, there should be equality of claim on the part of all orders of animal creation. This is a philosophy of individualism applied to all sentient life. Another view, that may properly be contrasted with this, would take into account the desires and pleasures of the inferior animals, but not from the standpoint of the positive rights of the animals themselves. Man's sovereignty over the animal kingdom is recognized, and the effects of man's acts upon human character and welfare is viewed as a dominant consideration. Rights are relative. The rule of nature is that the lower generally serves the ends of the higher. The question of suffering and destruction inflicted by the stronger upon the weaker should be made a subject of scientific study as well as of sentimental regard. In any scheme of humane instruction, the sympathy of the young is the motive that forms its cornerstone. With the philosopher of absolute rights the major aim is to arouse that sympathy by dwelling on cases of extreme cruelty and suffering, to reach a humane attitude by developing a keen appreciation of wrongful acts. The relativist, on the other hand, tends to lay stress on a knowledge of the structure, habits, and functions of animals. What ought to be done, rather than what ought not to be done, is emphasized, and a cardinal purpose is to teach that unnecessary and wanton injury or destruction of either plants or animals is uneconomical, injurious to society, and dangerous to the character of the offender. Actual instruction along humane lines, however, is ordinarily based on no well-reasoned philosophy of animal treatment. The mass of those associated with the anti-cruelty movement are not doctrinaire. They simply follow the opportunist policy of dealing with cruelties as they arise, and of mitigating severities of animal treatment as far as the prevailing situation will permit. Humane educational schemes usually share this opportunist quality.

*Private Organization* — For the most part, humane education is carried on under private



auspices Humane workers have steadily emphasized the need of humane instruction in public schools, and some progress has been made in this direction, but the larger effort has been expended on instruction given in small groups, organized in any opportune way. Various titles are given to such groups. "Junior Humane Society" is sometimes applied, "Young Defenders" is the name used in the parent American anti-cruelty society, but "Band of Mercy" groups are much the most numerous, and their activities are typical of scope and method, by whatever name children's organizations of this sort may be known. The first Band of Mercy was established by Mrs. Caroline Smithies at Wood Green, England, in 1875. At her death the movement was continued by her husband and daughter, and later, in 1883, a union of all bands in the kingdom was formed, with the Royal Society for the Prevention of Cruelty to Animals at the head. Under the arrangement the Royal Society became the governing body for the union, but the bands retained their freedom of direction and responsibility in all local matters, including financial independence. Uniform cards of membership, members' badges, and registers were adopted by all bands. The governing body provided these at cost. A half-penny monthly journal, previously and since issued by the Royal Society, entitled *Band of Mercy*, became the organ of the union. The bands have multiplied in number. Their formation has been promoted in many directions, as separate and distinct organizations, or within Sunday or day schools, or in connection with Bands of Hope or other moral, social, or religious associations. The Royal Society has been particularly insistent that each band should have a formal organization and a permanent secretary. Members pay small dues. Regular meetings are held at which lectures or addresses are given, Band of Mercy melodies sung, readings and recitations delivered, stories and anecdotes related, and interesting or meritorious work done by members reported.

The pioneer in American Band of Mercy work was Mr. George T. Angell of Boston. He founded the American Humane Education Society, which has been instrumental in forming more than eighty thousand such bands in the United States. How many of these are active organizations it is impossible to say. To each band of thirty or more members the Society sends each month a copy of *Our Dumb Animals*, from which readings and recitations may be selected. *Twelve Lessons on Kindness to Animals*, published by the Society, badges, members' cards and other matter are likewise provided. Effort is made to have Band of Mercy Day observed in the public schools. In Massachusetts a day in April has been observed in this way for three years past, and in the schools of Boston for four years. In 1909 a pamphlet of thirty-two pages, the *Humane*

*Manual*, was gratuitously distributed to the 15,000 teachers of the State. In 1908 a similar pamphlet containing a reprint of selections from the chapter on animals in Hyde's *Practical Ethics* was so distributed. This work is in the hands of the State Organizer of the Society.

An interesting experiment along these lines has been undertaken in New York by the American Museum of Natural History. A series of lectures dealing with animal life were planned to be given at the museum and at various settlement houses throughout the city. The lectures were used as a starting point for the formation of settlement bands of "Young Defenders," who are expected to protect street dogs and stray cats from molestation and to report cases of ill treatment to the anti-cruelty society. Another method of reaching children is that of instituting humane essay competitions in schools, to the winners of which suitable prizes are awarded. In Buffalo, for instance, more than 1500 such essays were received from pupils in the sixth, seventh, eighth, and ninth grades and high schools in the 1909 competition. In Rochester the Humane Society offers prizes to public, private, and parochial schools in a similar way.

Even in a hasty survey of private efforts for the humane education of children, it would be a mistake to leave the impression that its object ends with the attaining of a more kindly attitude toward dumb creation. Its material in the main deals with animals, and is calculated to further their humane treatment, but its aim — however quixotic and inspirational its methods — is the broader one of developing a more considerate attitude in every aspect of life.

*State Provisions* — State legislation has done little to further humane education, beyond recognizing humane societies, Audubon societies, and other organizations as agencies for its promotion. A succession of New York laws provide for an agreement with the American Museum of Natural History in New York City, by the terms of which materials, specimens, etc., are provided for free instruction in natural history in normal and other schools for the preparation of teachers, and in free common schools. Further, lectures are provided for, to be given on holidays and at other suitable times to artisans, mechanics, and other citizens. In Illinois, California, and some other states the law provides for an annual "Bird Day" in the schools. The law of Colorado requires that two lessons per week (not less than ten minutes each) be given in the schools on the humane treatment of animals. The law of North Dakota prescribes a like period for "a system of study of the humane treatment of animals," as do the laws of South Dakota, Montana, and Wyoming. The latter three, however, specify "a system of humane treatment as embodied in the laws of

## HUMANE EDUCATION

the respective States, and do not prescribe a definite period of instruction. In California humane education is compulsory in all primary and grammar schools having more than one hundred census children in the district. This instruction may be oral, and the purchase of textbooks may not be required of pupils. In Oklahoma the law prescribes instruction in schools to the amount of not less than one half hour per week on the "humane treatment and protection of dumb animals and birds; their lives, habits, and usefulness, and the important part they are intended to fulfill in the economy of nature." The Illinois law is similar, but is the most extended of any of the state laws. The Pennsylvania law provides for not more than one half hour per week on the "kind treatment of birds and animals," and those of Maine and Washington for not less than ten minutes. The law of Texas prescribes that "suitable instruction shall be given in the primary grades once each week regarding kindness to animals of the brute creation and the protection of birds and their nests and eggs." The New Hampshire statute provides for "a well prescribed reading course dealing with the principle of the humane treatment of the lower animals." Idaho and Utah have been reported as having compulsory requirements.

In England, France, and Germany, humane education is in no degree compulsory, although in all varying effort is made to link up private humane effort with the work of the schools. Literature is given to pupils and teachers, teachers' conferences are held, and other devices are employed similar to those used in the United States. In France activities have perhaps been more systematic and effective than in the other countries. Humane instruction there finds a place in the schools incidental to the general scheme of moral and civic instruction. More than six thousand *Sociétés Protectrices* have been formed in the schools under the patronage of the national society for the protection of animals. The English *Code of Regulations for Public Elementary Schools* contains a note to the effect that instruction "should be especially directed to the inculcation of courage, truthfulness, cleanliness of mind, body, and speech, the love of fair play, consideration and respect for others, gentleness for the weak, kindness to animals," and other considerations. But English humanitarians lament their failure to carry out this suggestion in specific ways.

R. C. M.

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## HUMANISM AND NATURALISM

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**HUMANISM** — See COURSE OF STUDY, THEORY OF; CULTURE; HUMANITIES, LIBERAL EDUCATION, RENAISSANCE AND EDUCATION.

**HUMANISM AND NATURALISM** — In educational literature, humanism has usually a specific meaning, indicating a distinctive intellectual tendency that marked the revival of learning in the fifteenth and sixteenth centuries. For that aspect of humanism, see RENAISSANCE AND EDUCATION.

Under the present caption, only a somewhat rarer and also looser signification of the term, belonging to certain problems in the philosophy of education, receives consideration. From the side of educational practices, this philosophical question originated in the just mentioned historic sense of humanism. As a consequence of the revival of learning (along with the backward state of the natural sciences), linguistic and literary culture succeeded theology as the controlling factor in higher education. By the nineteenth century, however, natural science had made such extraordinary advances that its representatives were naturally restive, and even rebellious. They challenged the practical supremacy of language and literature, and attacked on intellectual grounds the theories that were advanced in justification of this supremacy. Upon the practical side, the case was decided in favor of the claims of the natural sciences—not, of course, that the humanistic studies were excluded, but that the claims of scientific study were admitted upon substantially equal footing, whether by insertion of some natural science into the old classical course or by affording students an option between a literary and a scientific course. The adjustment thus far reached represents, however, a working compromise through concession to forces strong enough to force recognition, rather than a solution based upon any generally recognized philosophy of the relations of man and nature to each other. As ideals humanism and naturalism are perhaps more sharply opposed to each other now than at any previous period.

Humanism may be defined as the conviction that spiritual and ideal values are of supreme rank in the make-up of reality, and that these values are most adequately expressed in the great or classic achievements of humanity in literature and art—especially literature. Naturalism rests upon the conviction that, negatively, humanism is a survival of the geocentric medieval philosophy, with its false conception of the place of the earth and of man in the universal scheme, and with its exaggerated teleological interpretation of things; positively, that man and his affairs are a subordinate part of nature, seen in their true place

only when nature is made the chief and primary object of study. Incidentally, naturalism almost always has as one of its implications that language and literature are too artificial, factitious, and, as it were, ornamental, to be a sound basis for education. Science, it is urged, presents mankind with truths concerning realities of existence, language and literature with man's accidental and fanciful reactions to these realities.

Philosophically viewed, the controversy is a reflection of the time-worn discussion of the relations of spirit and matter, mind and nature, subject and object; and the supposed antagonism of naturalism and humanism originates in dualism (*q v*) respecting these concepts. Greek classic philosophy presents, upon the whole, a view of things in which there is a balance between naturalism and humanism. From one standpoint, that of value, a humanistic idealism dominates; the life of reason as exhibited in the realization of distinctively human functions is the supreme moral good, and hence the ultimate measure of worth in education. This conception was embodied in the Aristotelian conception of a *liberal* education and in the notion of the liberal as distinct from the mechanical and industrial arts. But reason is not a peculiar and isolated property, much less creation, of man. On the contrary, nature, in virtue of its orderliness, and especially in view of the fact that its order shows itself in the tendency to achieve specific ends, is itself rational, and the attainment of rationality by man is nothing but the realization in conscious thought of the relations immanent in nature. From the side of conditions or efficient means nature also, not man, is supreme. The values, or goods, of life are absolutely dependent for their achievement upon the efficacious workings of physical conditions, even the contribution of human deliberation and effort, regarded as a causal factor, falls within the scope of nature. Or, as Aristotle puts it, mind is the actualizing, the complete energizing, of the body, a view which makes it impossible to regard mind as a separate independent causal force. In short, classic Greek idealism was idealistic in the sense that it had a teleological view of nature. Nature and mind were not regarded as two forces working either together or against each other, but as means and end, causal conditions and final values, potentiality and actuality.

Medieval philosophy, even when professedly following Aristotle, introduced two profound modifications into this view. On the one hand, nature as it now exists is fallen or corrupted, being implicated in "an aboriginal catastrophe," the denial by the first man of God's will as law, and the substitution for it of human inclination. This profound perversion of reality affected all physical nature, in itself completely good, as well as human nature. The inevitable result (taken of course in con-

nection with the barbarous state of society) was a depreciatory attitude toward all knowledge of a natural kind, in contrast with knowledge having to do with man's redemption — the subordination, both in philosophic theory and educational practice, of natural knowledge to supernaturally revealed science, or theology. Medieval philosophy also inverted the relation between mind and nature, for it regarded mind as the sole ultimate *efficient* cause of natural existence, instead of conceiving mind as the *final* cause, or good, of natural things. Thereby a metaphysical dualism of spirit and matter was superadded to moral dualism of the first state and ultimate destiny of man as contrasted with the present state of nature.

Renaissance philosophy was humanistic in both the narrower and the wider sense of that term. It found in the revival of Greek philosophic thought a means of justifying the growing interest in the phenomena of physical and human nature. Like Greek thought, it rested in a conception which united humanism and naturalism. Naturalism was opposed to supernaturalism, and hence represented the means of satisfying distinctively human, instead of theological, potentialities and aims. The prevailing way of conceiving the relation of man and nature was that of a microcosm to a macrocosm. Man was in small edition that which the universe was in large. As Windelband truly says, the natural science of the seventeenth century was the daughter of the humanism of the sixteenth century.

This union, resting upon the use of Greek thought and the emulation of the free Greek spirit to justify a free and full satisfaction of human capacity through natural conditions, was, however, soon undermined from both sides. Humanism became more technical, more literary and philological, and less philosophical. Moreover, the rise of the Protestant-Catholic controversy diverted the study of language and literature from social and æsthetic channels, and made its use a weapon of religious dispute. As natural science worked itself free from the earlier mystical and imaginative traits, it became more and more purely mechanical, more and more indifferent to teleological considerations. Nature mechanically viewed is indifferent to mind, or even opposed to it, since the chief mark of mind is its purposiveness. This tendency of natural science toward dualism was reinforced by the growing moral and political interest in the self or ego, and by the development of the idea that the final source of certain knowledge (as against the authoritative impositions of dogmatic beliefs), was to be sought simply within the inner self, the field of personal consciousness. These two latter factors conspired with the discovery of the "inner world" as a field for literary exploitation, to mark off mind, reason, as a realm by itself, sharply contrasted with nature. Natural and mechanical science was concerned

with the "object," and over against the object stands the "subject," defined and described in terms exactly antithetical to those applicable to nature, or the object. The resulting dualism motivates directly all the philosophic problems of the seventeenth century, and supplies the background of the controversy between naturalism and humanism in education.

The difficulties and problems that arise in rigid philosophic dualism are paralleled in educational controversy. By assumption, there are two separate words, and yet both of them are necessary to make up the whole account of our real experience. The result is, inevitably, whether in pure theory or in educational, a mechanical compromise assigning one isolated region to mind and humanistic study and another to matter and to naturalistic studies. The same forces, however, that have tended to break down the rigid dualism of mind and matter have operated, though independently, to render questionable the division of studies into exclusively human and exclusively physical. The rapid development of the historical, anthropological, economic, and other social sciences has introduced a large and important body of material that will not fit easily into either of the older rubrics. Obviously humanistic in matter and import, it also emphasizes both in its subject matter and its methods of explanation processes that connect man's life with natural conditions. The theory of evolution when applied to humanistic subject matter tends also to bring out its continuity with natural conditions. Industrial conditions are seen to have the most intimate bearing upon human affairs, and they also are bound up with the natural sciences. As long as economic affairs were regarded as out of the pale of serious concern by all those occupied with man's higher interests, it was an easy matter to side-track them intellectually and educationally. Now that the close connection of economic conditions with success in attaining the highest political and moral status of society is generally recognized, the thinness and superficiality of a humanism that excludes from attention all reference to industry, commerce, and applied science become increasingly obvious. As a consequence, contemporary philosophy and contemporary educational theory may be said to be confronted with a common problem: The discovery of the common background or matrix in which humanistic and naturalistic interests are united, and the tracing of their respective differentiations from this community of origin,—a differentiation, however, which should not become a separation, and which, accordingly, secures the possibility of fruitful interaction between them whenever desired.

J. D.

See IDEALISM AND REALISM IN EDUCATION; NATURE

**HUMANITIES, THE.**—This term came

into use in the fifteenth and sixteenth centuries as an English equivalent of the Latin *literæ humaniores*, meaning in effect literary culture, "letters." The sense of the term was probably influenced by reminiscence of the use of the word *Humanitas* by Aulus Gellius and Cicero to denote the liberal culture befitting a man as a man. It was influenced by a differentiation from "divinity," so as to designate the studies of human interest as distinct from the theological studies which had dominated medieval education—especially to designate secular instead of "sacred" rhetoric, poesy, and grammar. This wider sense of the term shaded naturally into a narrower one. Since as a matter of fact the material of literary secular culture was at first the Latin, and then the Greek languages and literatures, the term "humanities" came to mean almost exclusively the study of Latin and Greek. Humanity is still in use in the Scottish universities as a technical term for the study of Latin, and at Oxford the classical studies are known as *literæ humaniores*. Generally speaking, in the seventeenth century a humanist meant a grammarian or philologist. In the nineteenth century the use of the term was influenced by the conflict in higher education between the classical studies and the sciences of nature. In the course of the controversy, the term tended to broaden its meaning, and to revert to designating whatever concerns man as distinct from physical nature.

J. D.

See HUMANISM AND NATURALISM, LIBERAL EDUCATION, NEO-HUMANISM, RENAISSANCE AND EDUCATION

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**HUMBOLDT, FRIEDRICH WILHELM CHRISTIAN CARL FERDINAND VON** (1767-1835)—The German philologist and statesman in his short connection with the educational administration of Prussia exercised a strong influence on its future development. A profound scholar himself, he readily seized the opportunity afforded by his position to introduce the characteristic features of the New Humanism. (*qv*) into Prussian higher education. But from another direction, too, his strong faith in independence and self-activity led him to introduce much-needed reforms in all branches of education, so that in the universities the spirit of academic freedom was given the greatest scope, while in the elementary schools the Pestalozzian methods and the encouragement of individual development found a strong advocate in Humboldt. Educated privately by skillful teachers, he later attended the universities of Frankfurt-a-O,

Göttingen, and Jena, interested above all in the humanities and especially in Greek culture. In 1790 he entered the Prussian civil service, but retired within a year. In 1802 he was appointed minister to the Vatican, where his duties did not prevent him from forming a circle of friends interested like himself in classical studies. In 1808 he became Privy Councillor and Director of Ecclesiastical Affairs and Public Instruction, an office which he held for about eighteen months. In this brief period he instigated the reorganization of the system of admission to the universities which resulted in new regulations for the *Abiturientenprüfung* (qv). An important step in advance was made by the introduction of an examination for secondary school teachers. Hitherto appointments were made locally, and the candidates were as a rule students of theology or clergymen. Humboldt desired to establish a secular teaching profession. The examination of teachers was placed in the hands of a commission which should also consider educational methods and systems, new curricula, textbooks, and other publications. To reform elementary education young men were sent to Yverdon to study Pestalozzi's work, while through Humboldt's influence Zeller was enabled to open a normal school at Königsberg, based on Pestalozzian principles. Humboldt himself evinced an interest in the teaching of drawing and music. The whole work of Humboldt was directed to raising the cultural standards of the nation and to give it a feeling for the beautiful and æsthetic. In 1810 Humboldt retired from educational administration, but in the interval up to his complete severance from political life in 1819 he held several important posts which required delicate diplomatic ability.

As a scholar Humboldt ranks high in the field of philology. He established a reputation as a critic by a review of Goethe's *Hermann und Dorothea* in 1800. His chief works were, however, in linguistics, the principal of these being: *Prüfung der Untersuchungen über die Urbewohner Hispaniens vermittelt der baskischen Sprache* (*Researches into the Original Inhabitants of Spain by means of the Basque Language*, 1821), and *Über die Verschiedenheit der menschlichen Sprachen und ihren Einfluss auf die geistige Entwicklung des Menschengeschlechts* (*The Heterogeneity of Languages and its Influence on the Intellectual Development of Mankind*, 1836), a treatise on the philosophy of speech and language as the peculiar expression of a people's characteristics. His works were published in seven volumes (*Gesammelte Werke*) in 1840-1852, and under the title *Gesammelte Schriften* in 1904-1908. For portrait, see p. 586.

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**HUME, DAVID** (1711-1776) — The philosopher; born and died in Edinburgh. Hume's works include *A Treatise of Human Nature*, *An Inquiry concerning Human Understanding*, *A Dissertation on the Passions*, *An Inquiry concerning the Principles of Morals*, *Political Discourses*, *History of England*, *Dialogues concerning Natural Religion*, essays on *Suicide*, the *Immortality of the Soul*, *Miracles*, *A Particular Providence and a Future State*, various other *Essays Moral and Political*, and a short autobiography. He left no strictly educational writings, and his influence on the history of education was so indirect that it is impossible to estimate its amount. But in psychology, ethics, metaphysics, history, religion, and economics his influence has been very great indeed. In psychology and metaphysics he carried through the prevailing doctrines of Locke (qv) and Berkeley (qv) with unrelenting logic to conclusions so repugnant to common sense that (as he fully realized) neither he nor anybody else could really believe them. Taking his cue from Berkeley's doctrine that we can form no conception of any material substance beyond our own ideas, such as these are usually supposed to reveal, he proceeded to prove that neither can we form any conception of a mind or any other reality behind them, such as they are usually supposed to belong to. Thus he resolved one's very self into "nothing but a bundle or collection of different perceptions (*i.e.* thoughts and feelings) which succeed each other with an inconceivable rapidity, and are in a perfect flux and movement."

This doctrine of the self is one example of the general philosophical "skepticism" in Hume which aroused Kant to write his *Critique of Pure Reason* and stirred Thomas Reid and his Scottish followers to develop the philosophy of "common sense," all more or less unsuccessful attempts to solve the problem of the possibility and nature of knowledge. Neither British nor German philosophy can be fully understood without a knowledge of Hume.

Hume's doctrine that a cause is practically nothing more than a uniform antecedent, and need not in any way resemble or be "greater" than its effect, has helped us to break away from a vast amount of medieval philosophizing, and prepared the way not only for the agnosticism of Huxley and Spencer, but for a genuine philosophy of evolution. In ethics and economics Hume clearly enunciated the principles afterwards worked out so successfully by his younger friend Adam Smith. Hume's *Essay on Miracles*, intended to be "an everlasting check to all kinds of superstitious delusions," did not attempt to prove that miracles cannot happen, but only that no amount of testimony is sufficient to prove one. Our only reason for believing in testimony at all is our experience of its truthfulness — of the usual or uniform conformity between a man's statements and the facts he tells about. But we mean by a

miracle a violation of the laws of nature — a single event contrary to the uniform experience of all mankind. To adduce the strongest kind of testimony for a miracle is therefore only to pit one experience of uniformity against another. The very thing that makes us trust the witness makes us disbelieve his tale. But in fact the testimony usually adduced for miracles is not strong at all. The witnesses are not usually trained observers, and they are influenced by religious enthusiasm and our common love of wonders. "Miracles" are commonest amongst ignorant peoples; and the more you believe in the miracles of any one religion, the more you must discredit those of every other. Hume's argument concerning a future state is somewhat similar to that concerning miracles. If we happen to believe in such a state, well and good, but the fact that things are not altogether as they should be in this world does not *prove* that they will be better anywhere else. In these two essays Hume shows the influence of his historical training. In the *Natural History of Religion* he discussed historically the probable origin of popular religious beliefs. H. A. A.

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**HUMPHREY, HEMAN** (1779-1861) —

Second president of Amherst College; was born at Hartford, Conn., on Mar. 26, 1779. He was instructed by private tutors, and was graduated from Yale College in 1805. For several years he served as pastor of Congregational churches. He was president of Amherst from 1823 to 1845. He proposed the establishment of a department of education in the college for the training of teachers, but the proposition was never carried into effect (see EDUCATION, ACADEMIC STUDY OF, in the United States). In 1838 he traveled in England, France, and Belgium for the purpose of inspecting educational institutions. He was also active in the cause of temperance. His published writings include numerous addresses on education, an edition of the New England Primer, and a work on *Domestic Education* (1840). W. S. M.

See AMHERST COLLEGE; EDUCATION, ACADEMIC STUDY OF.

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**HUMPHREY, or HUMFREY, LAURENCE**

(c. 1527-1590) — Writer on the education of nobles in the time of Queen Elizabeth, was educated at Cambridge and at Oxford, was B.A. in 1549, and, becoming M.A. in 1552 from Mag-

dalen College, Oxford, lectured in that college on natural philosophy and on moral philosophy. In 1553 he joined the Protestant exiles in Basle, and then in Zürich, and afterwards at Geneva. In 1560 he was made Regius Professor of Divinity in the University of Oxford, and in 1561 he was chosen president of Magdalen College, Oxford. Humphrey was permeated with the Calvinistic views in religion, acquired abroad, and, as Anthony à Wood says, "did not only . . . stock his College with a generation of Nonconformists, which could not be rooted out in many years after his decease, but sowed also in the Divinity School . . . seeds of Calvinism, and laboured to create in the younger sort . . . a strong hatred against the papists."

Humphrey's chief educational work was entitled *The Nobles, or Of Nobility*. It was first published at Basle in 1560, in Latin, as *Optimales, sive de Nobilitate, eiusque antiqua origine, natura, disciplina*. His own English translation appeared in London in 1563, as *The Nobles or of Nobility. The Original nature, duties, ryght and Christian Institution thereof*. Joined with it is an English translation of the *Lytle Treatyse of Philo a Jewe, concernynge Nobility*. Humphrey's *Nobles* is dedicated to Queen Elizabeth and also to the Right Honourable and Worshipful Gentlemen of the Inner Temple.

Humphrey lays down the demand that the Nobility ought to learn and to give ear to wise counsels. He recalls the names of previous writers on the subject, Lucas Gauricus (Bishop of Civitate), and Hieronymus Osorius, and stoutly defends the distinction of classes as against Anabaptists and others. At the same time Humphrey declares that as to an "idle" Noble, he allows him "not so much as one inch of Nobility." Christ is the fane and type of Nobility. Nobles must "believe soundly and live uprightly," and have piety toward their country, a congenial topic for the Elizabethan age. They must be "liberal," a quality most proper to noblemen, and this liberality must be shown towards the learned. To these the nobleman's chest should be open. Similarly, he must be "liberal" to God's saints, and hospitable toward strangers. Justice must characterize the noble in all his dealings. With special regard to "institution" or education, it is the duty of the nobles themselves to cultivate virtues. Temperance must be cultivated. Sports are to be in moderation; and only for the purpose of making men manlier. But learning is a pursuit worthy of the Noble, and Humphrey declares he will give not merely his own opinion, but describe the "ancient princely way" of education. A learned careful teacher is necessary even for the elements. Grammar should be learned "briefly." The shortest of Cicero's *Epistles* follow. Then Dialogues, e.g. those of Erasmus (*q.v.*), and Castalio (*q.v.*). Terence must be

taught for his colloquial phrases, but with care that nothing undesirable be acquired from him. Even at first Greek and Hebrew should be learned ("preposterously do all Universities, schools and teachers that contrary it")

Another book by Humphrey, of considerable importance in its age, was the following *Interpretatio Linguarum. seu de Ratione convertendi et explicandi autores tam sacros quam profanos, libri tres* Basileæ, 1559. F. W.

#### Reference:—

*Report of U S Commissioner of Education*, 1903, Vol. I, pp 324-327

**HUNGARY, EDUCATION IN.**—Hungary, constitutional kingdom: area of Hungary proper, 109,007 square miles; population, 16,838,255 (1900); ethnical elements Hungarian or Magyar 8,702,301, German, 2,135,181, Slavonic people Slovak, 2,019,641, Roumanian, 2,799,479, Croatian, 1,678,569, Servian, 1,052,180; others, 397,761 Division of population by religion Roman Catholic, 9,919,913, Greek Catholic, 1,854,143, Greek Oriental, 2,815,713, Evangelical Augs, 1,288,942, Evangelical Helv, 2,441,142, Unitarians, 68,568, Jews, 851,378; others, 14,760 Capital, Budapest, population 732,322 Minister of Public Instruction and Worship Count John Zichy

**Historical**—The educational history of Hungary hardly begins before the influences of the Reformation made themselves felt in the sixteenth century. Stephen I, it is true, had as early as the eleventh century ordered the establishment in every parish of schools for the teaching of religion and reading, but the decree had little permanent effect. In 1854 the diet ordered that the funds of the despoiled monasteries should be used to create schools, and by this action stimulated the Catholic Church to new educational activity. But placed between the Turks and the Austrians, the Hungarians had little opportunity for development in the sixteenth and seventeenth centuries. After the crowns of Hungary and Austria were united in 1689, the educational history of the two countries developed along similar lines until the nineteenth century. A wholesome rivalry continued between the Protestant schools and Jesuit colleges until the suppression of the latter in 1772, and under the protection of Maria Theresa the national spirit was fostered without interference. In 1777 the *Ratio Educationis*, a Hungarian edition of Felbiger's (*q.v.*) Austrian regulations, was promulgated, but, since it identified education with the Catholic Church, was refused recognition by the Reformed Church. The anti-national measures of Joseph II, including the exclusive use of the German language, aroused so much opposition that they were withdrawn in 1790, with the exception of the freedom of worship. Before the close of the eighteenth century, the distinctive

features of Hungarian nationality, pride of language, and the spirit of religious and social toleration had been wrought into the schools.

The doctrines of the French Revolution of 1789 found ready sympathy in Hungary, but its manifestation was checked by the Napoleonic conquests. The deeper movement of 1848, which swept over all western and central Europe, revived the spirit of Hungarian patriots, and, led by Kossuth, they achieved momentary independence. The Estates of the Realm were replaced by a national assembly, and the draft of an elementary education law, conceived "in a modern and national spirit," was drawn up by Baron Joseph Eotvos, the first Hungarian Minister of Education. The effort was ended by the disastrous War of Independence, and the absolute rule that followed destroyed the legal basis of the old school system. No other was adopted until the reorganization of the Empire after the brief war with Prussia, which ended in the defeat of Austria in the decisive battle of Sadowa. By the compromise of 1867, Austria and Hungary became two distinct states under a common sovereign, and the same year the Emperor of Austria, Francis Joseph, was lawfully crowned King of Hungary, which was once more assured entire control of its internal affairs.

**The Ministry of Public Instruction**—The political idealism which marked the deliberations of the Hungarian leaders in the short term of independence achieved in 1848 found new and permanent expression in the measures adopted for the internal conduct of the state in 1867. Baron Eotvos was again made Minister of Worship and Public Instruction, and a central department of education was constituted which by its scope and divisions illustrates the completeness of the service under its direction. The ministry is organized in ten departments, including distinct departments of higher, secondary, and elementary education, practically five departments are subdivisions of the last named. The staff of the ministry includes a corps of inspectors and several educational experts. The Hungarian Board or Council of Education formed by the appointment of the King or the minister is primarily an advisory council to the minister, but it also has important executive functions. The laws pertaining to education are prepared and enforced by the minister who has exclusive jurisdiction over schools maintained by the State. The right of inspection is also exercised over other schools so far as consistent with their legal autonomy and in proportion to the measure of state assistance which they receive.

**Elementary Education.**—In his capacity as Minister of Public Instruction Baron Eötvös, in 1868, one year before the adoption of a new education law by Austria, drew up and carried through the legislature the law of elementary education in Hungary (Act XXXVIII, 1868),

making the education of all children compulsory, in day schools from the ages six to twelve; in continuation schools (Sunday or evening) from twelve to fifteen. The civil officers of the parish were required to compel the enforcement of the compulsory provisions. Children educated privately were required to pass an annual examination at the elementary public school. The duty of establishing and maintaining schools was imposed upon the parish authorities, but denominational schools were recognized. It was further ordered that where the local authorities and the religious denominations should both fail to make due provision of elementary schools, the Minister of Public Instruction, acting in the name of the State, should provide schools. As a consequence of the legal provisions the elementary school system comprises national schools, public schools managed by the civil parish (cities, villages, etc.), denominational schools adopted as public schools, and schools under private managers. A measure of unity is secured by legal conditions binding upon all public schools. These conditions comprise a common program and specified requirements as to school buildings and classrooms; they make eighty the limit of the number of pupils in a school; they require that boys and girls shall be taught separately and that the schools shall be open for at least eight months a year in the country and nine months in the city. Teachers must possess the legal qualifications, must receive, at least, a certain minimum salary, and must be guaranteed a pension after the prescribed period of service. Finally the law requires local inspection of schools by duly qualified officials. These provisions appear the more remarkable when it is remembered that the Hungarian school law preceded by thirteen years the first of the series of laws regulating the present system of primary education in France, and by two years the passage of the act of 1870 by which the English government assumed direct responsibility for the education of the masses. In its regard for established customs and vested interests, the Hungarian law recalls the salient provisions of the English Act, which was undoubtedly inspired in part by the interchange of counsels between its author, Mr W. E. Forster (*q.v.*), and his celebrated contemporary, Baron Eotvos.

The law of 1868 prescribed somewhat minutely the internal organization of the schools. It distinguished two courses of elementary education: the six years day school course and the three years continuation course, and required that state schools and communal schools should make provision for both. The six years school may be under the management of one or more teachers, and the schools are called undivided or divided (graded) accordingly. Although the law required separate schools for boys and girls as a matter of theory, mixed schools are very common. The obligatory

program for every school includes, besides the three elementary branches, religion and ethics, grammar, geography, natural history, natural science, civic rights and duties, history of the constitution, elements of geometry, drawing, singing, physical exercises, needlework for both boys and girls, and practical training in agriculture and gardening. An official syllabus is issued by the Minister from time to time, dealing with the purposes and matter of the several subjects and giving extended and admirable suggestions to teachers for the work of instruction. A section of the syllabus is devoted to the undivided schools, which present special difficulties. The national language and literature (Hungarian or Magyar), the national history and the rights and duties of citizens form the very core of the school instruction; hence the intense sentiment of national life diffused throughout the land. Second only to this group of studies is the instruction in natural science, with its complement in the training in agriculture. The latter, which begins in the fifth school year, is thoroughly systematized and pursued with enthusiasm as an essential factor in national prosperity. The branches of elementary instruction are reviewed in the continuation schools with some extension and with greater regard to their ethical and social bearings. By the official syllabus of 1902, the continuation course in agriculture was brought into closer relation with the immediate local conditions, and, as a result, the technical side of the continuation schools has been highly developed in parts of the country. The greater number of these schools have farms or gardens attached, forty-five schools of this class have large experimental farms and are provided with special teachers of agriculture.

The judicious spirit which marks the law of 1868 is illustrated by the special provision for communities below and above the general level of the country. The parish authorities were charged to provide for the instruction of children living on farms within their jurisdiction, either by means of schools or itinerant teachers. This is a matter of peculiar significance, since in the great Lowland (Alfold), which constitutes a third of the entire territory of the realm, the greater part of the inhabitants live on widely scattered farms and are unable to comply with the school law; hence the State has intervened and is supplying the means of elementary education to these scattered homesteads. In other parts of the country, especially in the northwest and southeast districts, the multiplicity of languages and of church affiliations threatens the unity of elementary education. Here again the State intervenes, and without interfering with parochial or other schools, establishes state schools.

The organization of city schools differs from that of rural schools not alone through force of circumstances, but by direct enactments



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These provide for city high schools based upon the fourth year of the elementary school course and continuing the instruction of pupils on quite different lines. The city schools for boys, which are practically the same as the burgher schools of Austria, are organized in four classes (originally in six), and their studies are the same as those of the four junior classes, or forms, of the secondary schools. The crowded obligatory program includes religion and ethics, the mother tongue of the pupils, style, and history of literature, the Hungarian language, the German language, arithmetic, including practical arithmetic, geometry, the geography of Hungary, and universal geography, history, natural history, physics, chemistry (the last three with special regard to industry, commerce, and agriculture), rural economy and industry (in accordance with the wants of the parish and the surrounding country), outlines of common and civil law, bookkeeping, drawing and calligraphy, singing, gymnastics and drill (*Regulations* 1879). Recently sloyd was introduced. Optional branches are Latin, French and other languages, and music. The city schools for girls included four years or forms from the start. Pupils who complete the course are admitted to the schools of industry and commerce for girls, or, if they pass examination, to the fifth class of girls' high schools, if fourteen years old, they are eligible for admission to normal schools (*Regulations* 1887).

**Teachers** — The training of teachers was a cardinal principle in the scheme of national education comprised in the law of 1868. Normal schools existed in Hungary before this date, but the law made explicit provision for their classification, distinguishing between normal schools for the preparation of teachers of elementary schools and those for teachers of higher schools, and fixing the standards of graduation, conditions of students' life, etc. All the authorities entitled to establish elementary schools may maintain normal schools, but they must conform to the legal requirements. Official regulations of 1903 introduced uniformity for all normal schools of the same order, state and private. The program of the elementary normal schools is arranged for four years, and comprises general subjects and those strictly professional, the latter being enforced by the critical observation of the work of student teachers in the model or practice schools. The Hungarian language and literature, Hungarian history, and the German language are obligatory subjects in the course, other languages spoken in Hungary are optional. In the normal schools for women, which follow the same general program as those for men, special attention is given to domestic economy, household work, artistic embroidery and needlework, dairy work, care of poultry, etc., and the official instructions emphasize the importance of these industries, and of women's

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influence as exerted through the home life. The recent movement for the higher education of women promises also to open up other channels for the exercise of their artistic and manual skill.

Above the ordinary normal schools are two state colleges which prepare teachers for the higher elementary and city schools, and serve as models for similar colleges maintained privately. The course of instruction covers three years, and is conducted on the group or department system. The central groups are (1) languages and history, (2) mathematics and natural science. The subjects comprised in each are arranged in special or sub-groups, all additional branches form side groups. By reason of this arrangement students may enter for special subjects and at any time. In all sub-groups the following subjects are obligatory: (1) preliminary study of philosophy (psychology and logic), (2) theory of education and teaching, with history of educational theories and institutions, (3) history of Hungarian literature, (4) teaching in the practice schools. One of the side groups comprises music, vocal and instrumental, which is included in the course of instruction in all training colleges. In school programs generally, Hungarian music is second only in importance to the Hungarian language and literature.

Tuition is free in all state normal schools, and the expenses of boarding are covered partially or entirely by scholarships. Intending teachers, whether graduates of normal colleges or others, must pass examination for a teacher's diploma, conducted by a government board composed of members of a training college staff and representatives of the ministry. Separate boards are constituted for the examinations for the different grades of diplomas. Every diploma must certify that the recipient knows the Hungarian (Magyar) language, a requirement which was extended to teachers of denominational schools by a law of 1907. In all continuation schools the Hungarian language has been made the medium of instruction.

**Conditions of Service** — Teachers of state schools are appointed by the Minister of Public Instruction, of communal public schools by local boards, of denominational schools by the managers of the same. The teacher of a public school has a life tenure unless removed for crimes or misdemeanors, and in accordance with recent laws a teacher must receive a specified minimum salary, whether engaged in a public or private school (Acts XXVI and XXVII, 1907). A pension fund is maintained partly by state and local appropriations, and partly by assessments on the individual salaries, and teachers can claim a pension after ten years' service, after forty years' service they receive full pension (Acts of 1872, 1891). From the same fund aid is extended to the widows and orphans of teachers. The solic-

lude for the welfare of teachers has led to the creation of "Teachers' Homes," where the children of teachers and school officers are cared for while pursuing professional study. The Teachers' Home in Budapest, the Francis Joseph Home, was opened in 1899. The Hunyadi Teachers' Home at Kolossvár began operations in September, 1904. Both the intellectual and social welfare of teachers are promoted by their membership in teachers' guilds, which is required by the law of 1868. These guilds, or associations, are animated centers of pedagogical discussion and reform as well as mutual benefit societies. Teachers have the advantages of the *Hungarian Museum of Educational Appliances* at Budapest, which was opened in 1877 and in 1906 combined with the Teachers' Library. The annual appropriation for the entire institution is about 12,000 crowns (\$2400).

**Unifying Influences** — In the union of public and denominational schools, the Hungarian system of elementary education resembles that of England. But whereas the sense of national solidarity is preserved in England by many influences stronger than the school, in Hungary the school is the very source of its existence. Hence, of necessity, the Hungarian language is required in all schools, elementary and normal, since unity of language is essential to national consciousness. Moreover, so far as possible, the law seeks to impart a common character to all public schools of the same order, whether established by the State or the commune, and to this end has made very careful provision for their supervision and inspection. State schools are under the control of boards of trustees formed partly by election and partly by appointment. Parish schools (municipal and district) are under local school boards whose members are appointed by the local administrative councils. These school boards attend to the external affairs of the schools, including the appointment of teachers, their salaries, etc. The professional supervision and inspection of public schools is intrusted to the royal inspectors and the local administrative councils. The inspectors are appointed by the King upon the nomination of the Minister, one for each county or school area. They are the responsible heads of the system, exercising practically the same authority as a state superintendent in the United States; they are also the intermediaries between the local authorities and the ministry. The chief inspector is assisted by a corps of sub-inspectors.

The duties of the local council in respect to school affairs are judicial and executive (Act XXVII, 1876, amending provisions of the act of 1868). Although the managers of denominational and other private schools have independent control of their institutions, they are subject in a measure to the supervision of the royal inspector and to the local councils.

**Statistics of Elementary Schools** — According to the official report, for the year 1907, the total number of children in Hungary of the obligatory school age was 3,125,000 (1,564,000 boys, 1,561,000 girls). The enrollment in elementary schools was 1,848,176 children (948,918 boys, 899,258 girls); in general continuation schools 347,000; in the agricultural continuation schools 140,655; and in the higher schools of this class 8356, or a total enrollment in continuation schools of 496,011. This gives a grand total of 2,344,187, or 74 per cent of the children of obligatory school ages. The corresponding total for 1909 was 2,775,278. The number of elementary schools in 1907 was 16,561, classified as follows: State schools, 2046; district, 1473; denominational, 12,734; private, 271, proprietary, 37; of the total number of schools 68.5 per cent were "undivided" schools with one teacher each. The number of teachers engaged in public elementary schools was 30,194, of whom 28,600, or 94 per cent, had government diplomas. Of the elementary schools 11,527 had a general, 2040 an agricultural, 102 a general and an agricultural continuation school attached. 57.67 per cent of the said schools used Hungarian (Magyar) as the exclusive language of instruction; while in 17.97 per cent other languages of instruction were used in addition to Hungarian. Consequently the percentage of schools where Hungarian is the language of instruction may be put at 70.91 per cent. In 1907 the amount appropriated for state elementary schools was 10,570,010 crowns (\$2,114,002); the amount appropriated for the subvention of public parochial, denominational, and private schools was 4,864,000 crowns (\$972,800), or nearly half the sum appropriated for schools supported entirely by the State.

**Supplementary Agencies** — *Infant Homes.* — The system of infant protection for which Hungary is noted may be said to date from the efforts of the Countess Teresa Brunswick, who, with the support of Count Széchenyi, the leader of the reform movement in Hungary in the early years of the nineteenth century, established the first infant home at Buda, in 1828, called *Garden of Angels* (*Angyalkert*). In 1836 an association was formed for carrying on the work, in which several prominent men, among them Louis Kossuth, were actively engaged. Through the efforts of this association a training college was established for directresses of infant homes. In 1848, when the War of Independence broke out, eighty-nine homes were in operation, all of which were greatly crippled by the war. Baron Eotvos proposed to include this work in the measures of 1868 pertaining to popular education; but, owing to the objection of the legislature, the matter was deferred for some years. Meanwhile the first Froebel kindergarten was opened (1869) and an association formed to promote this work. This association and the *Hungarian Infant*

*Protective Association* are still active centers of efforts in behalf of young children. The first legislative provision concerning this matter deals with the qualifications of teachers of infant schools (Act XXXII, 1875). The complete organization of the system of infant protection was accomplished by the law of 1891 (Act XV). The special features of the system are: provision for the establishment of infant homes by the State and by local authorities; the requirement of special training for the teachers and of other persons on the staff of the homes; the obligation placed upon parents to send their children between the ages of three and six, who cannot be properly cared for at home, to infant homes, under penalty of a fine ranging from twenty fillér to one crown. The magnitude of this work is indicated by the following statistics: number of infant homes reported in 1906-1907 (a) state, 582, (b) municipal, 1421; (c) denominational, 338; (d) others, 254, total, 2595, among these are 1913 which make use of the Hungarian language only. In these homes were 245,214 children, of whom 57 per cent were Hungarian-speaking, there were 1913 certified mistresses, 427 certified nurses and 332 uncertified nurses, total staff, 2672, the expense of maintenance was, in round numbers, 3,000,000 crowns (\$600,000).

Among the marked features of infant homes should be noted the admirably planned and equipped buildings. They are provided with ample halls, playgrounds, and covered courts, where the children engage in free sport and directed games. The system of training is remarkable for its sympathetic adaptation to the impulses and capacity of childhood, the awakening of the national spirit by songs, stories, and pictures of national life, for the use of the Hungarian language, and for the grasp of Froebelian principles, with modifications to suit the national circumstances and purposes.

*Defective Children* — The provision for the care and training of the blind, the deaf and dumb, and of children who are mentally and physically defective, has been brought under the supervision of the State, in the same manner as the system of popular education. The following statistics relate merely to the educational side of this work, as reported in 1907.

INSTITUTIONS	NUMBER OF CHILDREN	FUNDED CAPITAL, CROWNS
Day homes . . . . .	1652	1,900,614
Orphan asylums . . . . .	4314	17,512,007
Children's Aid societies . . . . .	4339	660,989
Summer colonies, etc . . . . .	1032	230,000
Institutes for the Deaf and Dumb (3) . . . . .	91	1,212,368
Institutes for the Blind . . . . .	88	131,000
Homes for child cripples . . . . .	64	131,000
Home for feeble-minded children (1) . . . . .	105	32,529

**Industrial and Commercial Education** — Industrial education has a long history in Hungary, beginning, as in other countries, with schools established by certain religious orders, and gradually coming under the supervision and fostering aid of the State. Commercial education has a briefer history, and although regulated by special laws was left largely to the initiative of societies and private managers until the close of the last decade. The significant facts in the progress of this practical education since 1867 are the measures adopted for their regulation by the State.

The agencies for both industrial and commercial training fall into two general classes, apprentice schools and technical or professional schools proper. The apprentice schools are under the direction of the Minister of Public Instruction; trade schools or industrial technical schools, and also the technical high schools, pertain directly to the Ministry of Commerce, although the education department is consulted in respect to their scholastic interests. Commercial education is organized under the direction of the Minister of Public Instruction, but in regard to the higher order of commercial institutions the departments of education and of commerce act conjointly. The courses of training for apprentice schools are based upon those of the elementary primary schools; the industrial and commercial secondary or high schools, in like manner, rest upon the more advanced courses of the higher primary and city schools. Hence these forms of specialized training bear the same relation to the education of the artisan and trading classes as the agricultural schools bear to that of the farming population. In accordance with the purpose of maintaining vital relations between technical schools and the industries to which they pertain, the organized agricultural schools are placed under the Ministry of Agriculture.

*Apprentice Schools* — The establishment of apprentice schools is obligatory upon all communities in which there are fifty apprentices working in shops or factories, the masters of trade are also obliged by law to procure the attendance of their apprentices at these schools (Laws of 1872, 1884, 1893). Boys may enter the apprentice schools at twelve years of age after finishing the course of the elementary school. The instruction given in the evening and on holidays occupies seven hours a week, two hours on each of two week days, and three hours on Sundays; the latter are exclusively devoted to drawing. The branches of instruction are (1) the mother tongue, (2) geography, history, and nature study, (3) penmanship, (4) arithmetic and bookkeeping, (5) drawing and sketching. The course is given in detail by the central government. If the religious communities desire to have these apprentices taught religion, they may do so, but they must do it at their own expense. In 1906-1907

Hungary had 465 apprentice (evening and holiday) schools with 83,518 pupils and 3607 teachers; of the entire number of schools fifteen were state schools, 423 district schools, two denominational, and twenty-five belonged to factories and companies. The expenditure for these schools was provided as follows: 437,886 crowns were allotted by the Treasury and from the National Apprentice Fund; 1,241,758 crowns contributed by district authorities and other supporters, thus the total necessary expenses amounted to 1,679,644 crowns (\$335,928). In the same year there were ninety-one commercial apprentice schools, of which two were state schools (Fiume and Brasso), sixty-three district, and twenty-six belonging to companies. The total number of pupils was 7160, and the number of teachers, 417. The sum disbursed by parish authorities and companies for the schools was 223,983 crowns.

The commercial courses for women in 1906-1907 numbered twenty-four, of which seven were in Budapest. The pupils numbered 1456, and the expense of the courses, amounting to 141,452 crowns, was met chiefly by tuition fees.

The system of technical schools is crowned by the Polytechnicum at Budapest, and the system of commercial education by four institutions of high standing, namely, the Oriental Commercial Academy, Budapest, a training college for teachers of commercial schools, and two commercial academies, one at Budapest, the other at Kolozsvár. The total expenditures of the Education Department upon trade and commercial instruction in 1907 was 1,450,638 crowns (\$290,127).

**Secondary Education** — In his project for the reform of education in Hungary Baron Eotvos included the secondary schools, but the time was not favorable for any material change in institutions so deeply rooted in custom and sentiment, and it was not until 1883 that a measure was carried dealing with the system of secondary education. Previous to this time its development had followed the same course in Hungary as in Austria, excepting only for the authorized independence of the schools of the Reformed and Eastern churches, which was exercised mainly in respect to administration and to religious instruction. Many influences, social and professional, conduced to the general adoption of the courses and standards of instruction prescribed by the regulations of 1777 and 1806 (*Ratio educationis*). These regulations prevailed till 1849, when, under the régime of absolutism, the Austrian system was forced upon the public secondary schools of Hungary. The endeavor, during this period, to make German the medium of instruction was partly counteracted in Hungary by the general use of Latin, which accounts for the command of Latin as a spoken language, on the part of educated Hungarians even to the present time. A permanent advantage from the alien influ-

ence was the official recognition of modern studies, which was continued after Hungary recovered its autonomy.

The present organization of secondary schools is based upon the law of 1883, the work of August Trefort, Minister of Public Instruction from 1872 to 1888. This law recognizes secondary schools of two orders: classical, represented by the gymnasia, modern, represented by the realschulen. The programs of the two are nearly identical in duration (eight years) and study scheme, with those of the corresponding schools in Austria (*qv*). A single difference should be emphasized, namely, the inclusion of both the Hungarian and German languages as compulsory subjects, and the conduct of the final or leaving examination in the Hungarian, requirements applied equally to state and denominational schools. The widespread complaint of the overcrowded programs of the secondary schools led to a revision of the same in 1890 under the direction of Dr. Julius Wlassics, at that time Minister of Public Instruction. Among the changes effected was that of allowing students in the classical schools a choice between Greek and certain specified studies, as a consequence Greek has been dropped in many gymnasia. Notwithstanding this change, the literary requirements are still excessive.

As to the relative standing of the gymnasia and the realschulen, it should be observed that students who pass the final examination of the classical schools may be admitted to any university courses, students from the realschulen are restricted as regards rights of entrance to the polytechnic, the mining, forestry, and agricultural high schools, and to university courses in mathematics and natural science.

The professors of secondary schools must be university graduates who have supplemented their general studies by professional training, and must have successfully passed the government examinations for admission to the service. A seminary and practice school were established at Budapest in 1872, in connection with the university faculty of arts, by Dr. Kármán, who had been a student in Ziller's Seminary at Leipzig, and was thoroughly imbued with the Herbartian spirit. In 1895 a state normal college for secondary teachers was organized at Budapest under the auspices of Minister Wlassics, and this, also, is a center of Herbartian principles. Teachers of secondary schools attain to full appointment after three years' probationary service. At this stage they receive an annual salary of 2000 crowns (\$400) in the capital, and 1600 crowns (\$320) in the provinces. The teachers under full appointment are divided into two classes. Salaries in the lower class begin at 2600 crowns and rise by periodical increase to 3200 crowns; in the higher classes the salaries increase by successive additions, from 3600 to 4400 crowns. Directors receive from 4800 to 6000

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**crowns** After thirty years' service teachers and directors may be retired with a pension.

**Statistics** — The total number of secondary schools reported in 1906 was 202, of which 170 were classical and thirty-two modern. Of the classical schools thirty-eight were maintained by the State, and of the modern schools twenty-five. The number of secondary students was 68,159, of whom 50,283 were of the Hungarian nationality and 6254 Germans. As regards religious affiliations, the largest contingent, *i.e.* 27,499, were Roman Catholics, and the next largest 14,455, of the Jewish faith. The total number of teachers was 3711. The expenditure for secondary schools in 1906 amounted to 19,347,745 crowns (\$3,869,549). Of this amount 3,380,587 crowns (\$676,116) were derived from fees, the remainder from public appropriations and endowments. The estimated value of the property of secondary schools is about 90,000,000 crowns (\$18,000,000).

**High Schools for Girls** — Separate schools and a distinctive type of education for girls mark the Hungarian system. This is illustrated by the arrangement of city schools and by the creation of special high schools for girls. The first of the high schools was established at Budapest in 1875, and the example was soon followed by municipal and church authorities. The course of instruction was based upon the sixth year of the elementary school, and arranged for six additional years. The purpose to maintain high scholastic standards in the new schools was indicated by requiring the same qualifications for the teachers as are required for those of secondary schools for boys. The present organization of the high schools was determined by a ministerial decree of June 12, 1901. The official program comprises the following studies: religion, Hungarian grammar and literature, German, French, psychology and theory of education, history, geography, zoology and botany, mineralogy and chemistry, hygiene, housecraft, physics, arithmetic, drawing, calligraphy, needlework, singing (optional from the fifth class upward), physical exercises. Among the optional subjects are the English and Italian languages, taught from the fourth class upwards in two hours a week respectively.

In the year 1895, by the authorization of Dr. Julius Wlassics, young women were admitted to the university, and thus were enabled to devote themselves to philosophical, medical and pharmaceutical callings, with certain restrictions. It was therefore necessary to make arrangements for a course of studies preparing them for the new privileges. For this purpose a course of studies on classical school lines was established at the Budapest High School for Girls during the school year 1897-1898; so that those who were preparing for the university might have special and suitable training, commencing with the fifth

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class and lasting four years. The Budapest High School has since been transformed into a girls' classical school, and other schools of the same character have been established. Hence the education of girls is now proceeding in two courses: one marked by the predominance of modern languages and domestic science; the other closely assimilated to the classical school for boys. The high schools for girls have mixed faculties of men and women, and their development has created a demand for women teachers having the same qualifications as the professors of secondary schools for boys, receiving the same salaries, and enjoying the same distinction. In 1905-1906 the high schools for girls numbered thirty-two, of which sixteen were state schools. The number of students was 5817, including 1008 boarders. The majority, *i.e.* 5367, were Hungarians. The schools employed 524 teachers, of whom 343 were women. The expenditure for the high schools for girls in 1905-1906 was, in round numbers, 1,970,000 crowns. In the budget of 1907 the State appropriated for this purpose the sum of 1,325,000 crowns (\$265,000).

**Higher Education** — The Royal Hungarian University of Sciences of Budapest is the chief center of classical and scientific study and research in the kingdom. Its origin is traced to the establishment of a university under the direction of the Jesuits at Nagyszombat in the seventeenth century, it was nationalized in the eighteenth century and transferred from its original home to Budapest. The university of Kolozsvár (Klausenburg) was founded in 1872 by the incorporation of the existing Academy of Law and Institute of Surgery. The Royal Polytechnicum was organized as a university of technical sciences in 1871. The latest official statistics pertaining to these three institutions are presented in the following table —

State Universities	Dates of origin and date organization	Total students 1911	Professors and assistants	EXPENDITURES		Vols. in Library
				Crowns	United States equivalents	
Budapest	1635 1783	6858	351	3,746,859	\$760,612	482,000
Kolozsvár (Klausenburg)	1581 1872	2359	136	1,764,011	358,094	116,090 <sup>1</sup>
University of Technical Sciences (Budapest)	1782 1871	1349	155	1,430,846	349,841	90,395

<sup>1</sup> Not including the vols. belonging to the library of the Transylvanian National Museum, with which it is united.

The distribution of university students by faculties and the number of doctors' diplomas conferred in the year of the latest available report, were as follows:—

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FACULTIES	BUDAPEST			KOLOZSVÁR		
	Number of students		Number of diplomas	Number of students		Number of diplomas
	Ordinary	Extraordinary		Ordinary	Extraordinary	
Theology	78	9	6			
Law	3091	152	309	1428		211
Medicine	1258	166	149	202	82	20
Arts	1203	234	74	360	59	18

In the same year the distribution of students by faculties in the technical university and the number of diplomas conferred were as follows in the department of engineering, number of students, 382; number of diplomas conferred, 106, department of mechanical engineering, students, 587; diplomas, 121; architecture, students, 96; diplomas, 13; general department, students, 8; diplomas, 11.

Among recent events in the history of the University of Budapest, which illustrate both the scope of that institution and the general development of higher education, the following are particularly noteworthy. The expansion of the faculty of law to include political science and the institution of seminars for the promotion of research and practical training. In the medical faculty special courses of training for pharmacists and school doctors have been established. In 1889 the Pasteur Institute and Hospital was established. The faculty of arts from its foundation served as a preparatory course for students of the other faculties, and it has become also a center of training for teachers of secondary schools and an examination board for candidates aspiring to that service. Since 1885 the faculty of arts has comprised seminars which are partly for the training of teachers, partly for the purpose of initiating students into the methods of research. The faculty can boast of five seminars, those of classics, modern philology, history, geography, and mathematics. By a royal decree of Nov. 18, 1895, women were admitted as undergraduates of universities and university colleges in order that they might be prepared as teachers, doctors, and chemists. Permission is given to women students in each case after a statement has been made by the university or college in question and diplomas are issued to them after a successful completion of the prescribed university career. In addition to these two universities, the Minister of Education announced (1912) a bill to provide for the establishment of two new universities at Pressburg and Debreczin, only the former to include a medical school. A royal academy has existed at Pressburg since 1794, with a faculty of law and political science and courses in philosophy. At Debreczin a Reformed Higher Institution

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(*Hochschule*) was established in 1549 and now has theological, legal, and philosophical faculties with 277 students in 1910.

The Baron Joseph Eotvos College is a unique institution at Budapest, the object of which is to give deserving students of the Budapest University, who intend to enter the teaching profession, an opportunity for holding social intercourse with their fellows and of acquiring the necessary theoretical and practical knowledge to qualify them for their work. The college is directly subordinate to the Minister of Public Instruction, who delegates his authority to the curator. For the expert guidance of the resident students four tutors (chosen by the curator from among the teachers in the service of the State) are appointed by the Minister (for periods of three years in rotation) for special duties. They are present in the college during the hours devoted to private study, to give individual or combined instruction to the candidates, and, as occasion arises, to hold special courses of lectures.

Higher education in Hungary includes, further, independent colleges of theology maintained by the various religious denominations; and colleges of law. The schools of midwifery were raised to the rank of state professional schools by regulations of 1873, and placed under the control of the Minister of Public Instruction. The Royal Hungarian College of Mining and Forestry, under the direction of the Minister of Finance and the Minister of Agriculture, makes provision for the scientific education of surveyors of mines, surveyors of smelting works, and surveyors of forestry. It was attended in 1907 by 355 students, 117 in the mining department, 238 in the forestry department. Students are admitted by competitive examination, and those who fail to satisfy the rigid requirements for promotion during the four years' course are eliminated. Tuition is free; the purpose of the school is to secure a body of highly trained experts for the state service of mining and forestry. In addition to the liberal support of higher education, the State contributes to the maintenance of the schools of painting and sculpture and the conservatories of music, which preserve from age to age the distinctive traits of national art. The following art institutions are under the immediate direction of the Minister of Public Instruction, and receive liberal appropriations annually from the State. The Royal Hungarian College of Art is both a school for the training of teachers of drawing and for the development of independent artists; the students for 1907 numbered 347, of whom ninety were women; the State grant for the year was 183,080 crowns (\$36,616). A special school of painting for women was established in 1885 under the auspices of the ministry. The annual appropriation for the school is about 21,000 crowns (= \$4200). The National Academy of Music is entirely supported by

the State at an annual expenditure of about 230,000 crowns (\$46,000). The Theatrical School was opened in 1863 in connection with the National Theater, and in 1873 was put under the charge of the Minister of Public Instruction. The age for admission to the school is sixteen for women and eighteen for men, and only such pupils are retained as show decided dramatic talent. The diploma of the school admits the recipient to membership in the National Association of Actors. In 1907 the State appropriated 82,000 crowns (\$16,400) for the current expenses of the institution. A. T. S.

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**HUNT, MARY HANCHETT** (1831-1906).

— Temperance educator, was educated at the Palapsoo Institute, Maryland, and was for several years instructor of chemistry there. She was the leader of the movement that made temperance physiology a compulsory part of the school instruction in the United States. She was the author of thirty textbooks on temperance physiology. W. S. M.

See TEMPERANCE INSTRUCTION IN SCHOOLS

**HUNTINGTON, FREDERIC DAN** (1819-1904) — Educational writer, was graduated from Amherst College in 1839, and later took a course at the Cambridge Divinity School. He was for five years (1855-1860) a professor in

Harvard College, but most of his life was given to the ministry of the Episcopal Church. His *Unconscious Tuition*, published originally in 1856, was a notable contribution to the literature of education, and is still widely read.

W. S. M.

**HURON COLLEGE, HURON, S D** —

A coeducational institution established by the Presbyterian Synod in 1883 at Pierre as Pierre University; the title and location were changed in 1898. Academic, collegiate, commercial, music, and elocution departments are maintained. The entrance requirements are equivalent to sixteen points of high school work. The degrees of A B and B S are granted on the completion of appropriate courses. The faculty consists of twenty-four members.

**HUTCHESON EDUCATIONAL TRUST, GLASGOW, SCOTLAND** —

An endowment left by George Hutcheson (1550-1639) and Thomas Hutcheson (1589-1641), public writers and notaries of Glasgow, and now devoted largely to educational purposes. George Hutcheson left a tenement of land for the building of "one perfyte hospital for entertainment of the poor, aged, decrepit men to be maintained therein," and for its maintenance added bonds of the value of about \$12,000. Thomas Hutcheson supplemented this by a sum equal to about £600, and for himself gave bonds amounting to about £12,000 for founding in connection with the hospital "a commodious and distinct house of itself for educating and harboring twelve male children, indigent orphans, or others of the like condition and quality, sons of burgesses." In 1821 a Royal Charter was obtained. The scope and purpose of the endowment was extended, as in the case of many similar endowments in Scotland, for educational purposes. In 1876 the school was extended and a new school was added for girls, both schools being called Hutchesons' Grammar School. Moderate fees are charged and a limited number of free foundationers are admitted.

See HOSPITAL SCHOOLS

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**HUTCHINS, JOSEPH** (1747-1833) — Text-book author and college professor, was graduated from the University of Pennsylvania in 1765, and was for many years professor in Franklin College. His *First Principles of English Grammar* (1790) antedated the text-book by Lindley Murray (q v) by five years.

W. S. M.

**HUTTEN, ULRICH VON** (1488-1523). — German humanist and reformer. Of an cr-

ratic and unstable character, living generally on the generosity of patrons of learning, Ulrich von Hutten won the admiration and friendship of many of the humanists whose center was at Erfurt. Hutten's chief works were the *De Arte Versificandi, Liber unus* (1510), which gives the rules of Latin prosody in 422 hexameters; patriotic poems addressed to Emperor Maximilian, who gave him the laureate crown in 1517; orations against Ulrich, duke of Wurtemberg, who had murdered a relative of Hutten, and in the last stage of his career, when he joined the cause of the Reformation, prose writings and poems in the vernacular, in which he was as successful as with Latin. Hutten is credited with an important part in the publication of the *Epistolæ Virorum Obscurorum* (q.v.). It is now well established that in the first part of the letters Hutten had no share whatever, but he was probably the chief author of the second part which appeared in 1517. A man of strong impulses and considerable ability, Ulrich von Hutten threw himself as enthusiastically into the fight for liberal culture as into the cause of political and religious freedom.

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**HUXLEY, THOMAS HENRY** (1825–1895).

—Scientist, educational thinker, and social reformer, was born at Ealing, near London, May 4, 1825, the son of a secondary schoolmaster. Briefly educated at Dr Nicholas's school in Ealing, where his father was a teacher till 1835, Huxley showed an early turn for metaphysics and for scientific inquiry. The lad's real education came through private reading, conversation, and intimacy with older people. Anatomical studies and Carlyle's writings on philosophy and history deeply influenced Huxley during adolescence. Admiration for Carlyle impelled him to acquire a knowledge of the German language subsequently invaluable to him as a scientific thinker. In 1841 he went, a boy of seventeen, as assistant to a medical man, Mr Chandler, in Rotherhithe. Among the population surrounding the London docks, he came face to face with the grimmest aspect of the social problem, and throughout life was a zealous reformer of social conditions, holding firmly to the middle way between repressive collectivism and crippling *laissez-faire*. Studies at Charing Cross Hospital (especially under Wharton Jones) completed his medical training, during which he won brilliant distinction at the London University. In 1846 he was appointed assistant surgeon to H.M.S.

*Rattlesnake*, a frigate sent out by the British Admiralty on an exploring expedition to New Guinea. Thus Huxley, like his intimate friends, Charles Darwin (q.v.) and Joseph Dalton Hooker, began his scientific career on board a ship of the British Navy. His work on the *Rattlesnake* established Huxley's scientific position. On his return to London in 1851 (aged twenty-six) he was elected Fellow of the Royal Society, becoming a member of its Council and receiving its Royal Medal in 1852. But pure science was long in bringing Huxley pecuniary preferment. In 1852 he, like his friend Tyndall (q.v.), was an unsuccessful candidate for a professorship at the University of Toronto. The death of his mother, and his father's illness, in 1852, combined with his own failure to find a suitable post, brought him nearly to despair. He was on the brink of giving up science and of emigrating to Sydney as doctor or squatter. In 1854 the tide turned. He was appointed lecturer in the Government School of Mines in Jermyn Street, London, and entrusted with coast survey investigations under the Geological Survey, to which he became naturalist in 1855. He also was appointed lecturer on comparative anatomy at St. Thomas' Hospital. Now established, he rapidly rose to eminence in the scientific world.

A characteristic of Huxley's writing was his intimacy with the best current scientific thought in France and Germany. No earlier English scientific writer had shown the same European knowledge. Huxley was one of the few who were initiated by Darwin into the argument of the *Origin of Species* before the publication of the book, which was submitted to the judgment of Huxley, Lyell, and Hooker. In Darwin's words, he acted as the latter's "general agent." His famous reply to Bishop Wilberforce at the Oxford Meeting of the British Association in 1860 gave him national fame. In 1862 Huxley began his scientific lectures to working men. No one did so much to secure public acceptance for the thesis of natural selection.

Huxley as a teacher was magnetic. His students found his intense love for science infectious and his lectures memorable. As Dean of the Royal College of Science, London, he introduced changes of organization which are of historical importance from the point of view of educational method.

Huxley showed an untiring interest in questions of education. In 1854 he delivered at St. Martin's Hall, London, an address on the *Educational Value of the Natural History Sciences*, urging that biology demands a prominent place in any worthy scheme of education. In 1865 he supported the scheme for a group of international colleges (to be established in England, France, and Germany, so that a boy could in turn acquire a sound knowledge of all three languages while continuing the same course of education), which had been put for-



ward by Dr Leonhard Schmitz and Richard Cobden, but was fatally interrupted by the Franco-German war of 1870. At the same period he supported Dean Farrar's (*qv*) proposals for the introduction of scientific teaching into the great Public Schools. In 1866 he published *Lessons on Elementary Physiology*, a textbook which had great formative influence upon later educational manuals. In 1868 he addressed the South London Working Men's Club on *A Liberal Education and Where to Find It*.

In 1870 Huxley published the *Lay Sermons*, a model of style in the accurate popularization of scientific thought. In the same year (the Elementary Education Act having just been passed) he wrote a powerful essay on *The School Boards, What They Can Do and What They May Do*. He was elected a member of the first London School Board, and had an almost determinative influence both in planning the course of study and in the retention of the Bible in the curriculum. He advocated infant schools, continuation schools, technical education, and "an educational ladder from the gutter to the University." The first elements of physical science were to be taught in the schools. "There is no form of knowledge or instruction in which children take a greater interest." Girls were to be taught the elements of household work and of domestic economy. Physical training and drill were to be part of the regular business of every school. Drawing and music, as civilizing arts, were also to find a place in every course of training. History, except the most elementary notions of it, he regarded as too advanced for children of elementary school age. He declared himself "in favor of reading the Bible, with such grammatical, geographical, and historical explanations by a lay teacher as may be needful, with rigid exclusion of any further theological teaching than that contained in the Bible itself." But Huxley was strongly opposed to any teaching of religious formularies, *eg* even the doctrine of the Trinity, in elementary schools aided from public funds.

Huxley became secretary of the Royal Society in 1871 and president in 1880. In 1881 he declined the Linacre Professorship of Physiology at Oxford and to be nominated for the mastership of University College, Oxford. He refused all titular honors from the State, except a Privy Councilorship in 1892. The latter he accepted because, though incidentally carrying a title, "it was an office, in virtue of which a man of science might, in theory at least, be called upon to act as responsible adviser to the Government should occasion arise." His connection with the Science and Art Department from 1854 to 1890 was intimate and loyal. Of the good which that department did in stimulating scientific study and teaching he was one of the chief authors. But he was not blind to the defects of the system, payment by results,

which he accepted as the best practicable plan. From 1877 onwards, Huxley was an ardent and powerful advocate of technical education. The great address given at Manchester in 1887 is a *locus classicus* of contemporary English thought on the subject.

But he was out of sympathy with modern developments of English thought as to the relation between the State and secondary education, holding that, while social welfare justifies a system of compulsory elementary education with a rich curriculum, beyond that individuals must be left to rise through innate capacity, rather than be lifted by state help into places for which they may have no real qualification.

Since Thomas Arnold, Huxley was perhaps the most powerful personality in English education. Brave as a paladin, absolutely fearless and disinterested, profoundly learned, affectionate, humorous, tender, artistic, at heart intensely religious, but the implacable foe of dogmas in which he did not believe and of ecclesiastical authority which he distrusted or denied, he represented at its best a transitional phase in English speculation and practice in the sphere of ethics and politics. Throughout his life he was a great antiseptic influence in English thought upon education and the functions of the State. M E S

For portrait, see p 621

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**HYGIENE** — Hygiene (from *ὑγιεία*, hygiene, health) is usually defined as the science that treats of the prevention of disease and the preservation of health. It is especially an applied science, and, in a certain sense, an art. It aims, in the words of a modern writer, "to make growth more perfect, life more vigorous, decay less rapid, death more remote." The positive note in this definition of aims is characteristic of recent hygiene. It is no longer satisfied with the mere attempt to prevent disease, but it emphasizes especially the need of normal healthful development and the acquisition of vigorous habits of health that shall be prophylactic against disease.

The scientific study of hygiene is recent. The attempt to practice hygiene is very old. The art of hygiene is supposed to have begun with the ancient Egyptians; and a crude mass of folk traditions representing more or less clearly the experience and superstitions of the race in regard to the preservation of health has come down to us. On account of the recency

of the scientific study, a vast amount of error is mingled with the truths of experience that have survived. But while the scientific method as applied especially to hygiene is recent, and the results are still so meager that some investigators call it the science of the future, nevertheless the same ideals and the same methods are employed here as in other parts of the field of science, and here as elsewhere the most rigorous scientific experimentation under controlled conditions and with verification of results is demanded.

The subject of hygiene naturally divides into personal and public hygiene. Hygiene in a broad sense includes also the study of conditions that favor the healthful development of the human species (eugenics); the conditions affecting the health, preservation, and development of special races (racial hygiene); and the conditions that favor the healthful development of human society (social hygiene).

Public hygiene has many divisions. on the one hand, sanitation as regards soil, water, food, air, cleanliness in general, protection from disease, care of the dead, the defective, the feeble-minded, etc.; and on the other hand, the hygiene of occupations—military hygiene, naval hygiene, the hygiene of factories, etc. An introduction to the subject of public hygiene is given by such American textbooks as those of Bergey, Harrington, and Sedgwick, and the scope of it is shown by Weyl's great handbook. Among these various departments of public hygiene none is more important than child hygiene and school hygiene, and the whole field should interest teachers. These subjects and personal hygiene are treated below in special articles. W H B.

See EUGENICS; HYGIENE, PERSONAL; HYGIENE, SCHOOL; HYGIENE, TEACHING OF

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**HYGIENE OF GRADING.** — See GRADING, HYGIENE OF.

**HYGIENE OF INSTRUCTION.** — See HYGIENE, SCHOOL.

**HYGIENE, PERSONAL** — Personal hygiene consists of two important parts, somatic hygiene and mental hygiene. On account of the great individual differences in strength, endurance, ability to work and to resist disease, the problem in both these fields must be an individual one. The solution is of vital importance, especially for the teacher, not only for the preservation of the teacher's own health, but for the right performance of one's professional work and to enable one to set a proper example before one's pupils. Mental hygiene is quite as important for the teacher as somatic hygiene, and the teachings of mental hygiene and the hygiene of instruction are so important for sound education that for pedagogical as well as hygienic reasons the teacher cannot ignore them.

The subject has also important social aspects. In its wider sense personal hygiene is the very basis of disease prevention and health preservation. All plans for community or national freedom from disease must rest upon and depend upon the care with which the individual members of society settle their problems in personal hygiene. If every member of any given social unit would persistently apply his rights of franchise in favor of more stringent and effective laws of hygiene and sanitation, the problems of personal hygiene would be far easier. The difficulties of personal health control are largely difficulties which are of a community origin. The transgressions of one member of a community are visited upon the lives of his innocent fellow citizens. Equity in matters of this kind is secured only through law backed by strong popular sentiment. Then, if every member of any given social unit is protected from hygienic or sanitary injury inflicted by his fellow citizens, he may organize his policy of personal health control with every prospect of success. Under such circumstances it would be possible to develop a community in which each member practiced intelligent habits of bodily nourishment, supervising the food he would eat, the food he would drink, and the food he would breathe; intelligent habits of excretion; intelligent habits of exercise, in-

telligent habits of rest, and intelligent habits of cleanliness. Men of such habits are men of health, men of strength, men of efficiency. A community or a nation with such habits would have solved the problem of prevention of disease and have conserved its resources in terms of human life, human happiness, and human prosperity, with all that such conservation means economically, socially, and politically.

Another very important relationship of personal hygiene is its relationship to intellectual efficiency. The uncorrected, incapacitating, remediable physical defects of school children, the time lost through absences due to preventable disease, the paralyses and other organic degenerations following the preventable diseases and leaving chronic incurable conditions obstructive of further mental development and destructive of that already attained, the disturbed home conditions producing nervous strain, poverty, undernourishment, and lowered resistance, following parental disease or death, are all samples of serious avoidable and preventable conditions affecting the intellectual activities of school children. If the personal hygiene of school children and the personal hygiene of the communities in which they live were what they ideally ought to be and what they could be, these destructive conditions could not exist.

Furthermore, the aggressively healthy child is the most efficient child academically as well as physically considered. The teacher that is working with sound healthy minds will secure larger educational results than under less normal conditions. This fact is effectively proven by the experiences of our open-air schools, the introduction of school lunches, the progress of pupils who have been relieved of incapacitating physical defects, and the studies of men who have compared schools and school children representing various types of physiological health.

**The Scope of Personal Hygiene** — In its narrower sense, personal hygiene has been construed as including only those physiological and anatomical and very intimate personal relationships and habits which are obviously personal. Such a conception would bring the following topics under the heading of "Personal Hygiene". Care of the clothing, skin, scalp, nails, eyes, ears, nose, teeth, mouth, throat, heart, lungs, alimentary canal, genitourinary organs, bones, joints, brain and nervous system, food, water, ventilation, tea, coffee, alcohol, and tobacco. In some texts "first aid to the injured" (*q.v.*) is included.

A wider construction of the scope of personal hygiene includes everything that bears upon the health of the human body. (See **HYGIENE, TEACHING OF**.) Such a scope would include the various subtopics connected directly and indirectly with the following subjects. Bodily nourishment, including food,

water, and air, the excretions, exercise, rest; the influence of abnormal conditions on health (*e.g.* defective vision, bad teeth, adenoids, constipation), the influence of certain habits on health (*e.g.* rapid eating, bad habits of vision, smoking, drug habits, sexual habits, etc.), the causes of disease; the carriers of disease, our defenses against disease, and the nature of our common diseases.

Personal hygiene considered from this point of view would be rational and comprehensive. Its relationship to sex hygiene (*q.v.*) domestic hygiene, school hygiene, medical inspection (*q.v.*), school nursing, community hygiene, industrial hygiene, military, naval, and national hygiene is obvious. These special divisions of hygiene are important because they represent personal hygiene under special conditions. The hygiene of all society and of all the enterprises of society depends upon the hygiene of the individual. On the other hand, the individual is more than powerless unless society as a whole stands for such regulations and such customs as will make possible, easy, and practical the application of the laws of health.

T. A. S. and W. H. B.

For methods of instruction and content of the subject see **HYGIENE, TEACHING OF**

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**HYGIENE, SCHOOL** — School hygiene, one of the most important departments of public hygiene, is concerned with the conditions of health in the schoolroom and the sanitation of the school surroundings. During the last fifty years the scientific method has been more and more employed in this field, and a solid nucleus of scientific fact has been collected. A rich literature has been contributed in the form of articles not only in the special periodicals devoted to the subject, in reports, proceedings of societies, and the like, but in the archives of Hygiene, of Medicine, Physics, Psychology,

Anthropology, and even in those of Architecture and Engineering, as well as in the educational journals. The three large German handbooks, by Baginsky and Janke, Burgerstein and Netolitzky, and Eulenberg and Bach, show the scope of the work already done; and the little textbooks by Shaw, Kotelmann, and others, furnish convenient compends of the elementary facts and principles.

The history of the development of the subject is interesting, but can be briefly told. The ancient Greeks, with their emphasis upon physical training in early education and the important treatises by Philostratus, Lucian, and Oribasius, were pioneers in school hygiene. While in the Middle Ages hygiene was largely ignored by writers and teachers, with the Renaissance came a new interest in health and physical development. Vittorino made play and hardy nurture a prominent feature in his school. Luther emphasized the need of physical exercise. Comenius insisted on spacious classrooms, playgrounds, physical training, sound health as a condition of a sound mind, and the adaptation of instruction to the pupil's stage of development. The Jesuits practiced hygiene in their schools, and the reformers like Locke, Rousseau, and Basedow preached it. School hygiene in the modern sense began with the founders of gymnastics, — Guts Muths, Jahn, and Ling, — and with the work of physicians like Frank and Lorinser, and was placed upon a solid foundation by the special studies of a long line of investigators from Lang, Zweiz, Fahrner, Von Pettenkoffer, Cohn, and Barnard, down to the present time.

School hygiene draws its facts from many sources, and naturally it overlaps other related subjects, such as general hygiene, sanitary engineering, medicine, child hygiene, etc. The subject naturally divides into three parts — the construction and sanitation of the school-house, the hygiene of the school child, and the hygiene of instruction. All of these are, of course, ultimately concerned with the health of the child, but the classification is a convenient one. The aim of all of these is positive, the development in the school child of habits of healthful activity. Especially and directly is this true of the last two divisions — the hygiene of the school child and the hygiene of instruction.

**Hygiene of the School Child** — Child hygiene in an important sense is a special subject because the child's body differs from that of the adult. The hygiene of the school child demands special consideration because of the special work required in the school. It is based upon the character of the child's body and the laws of growth, and it seeks to determine the needs and to avoid the dangers of each stage of development. Hence among the important contributions to school hygiene in the last twenty-five years have been many scientific studies of growth and development, of

the diseases and abnormalities of school children, and of the defects of the various sense organs. Thus the relation of physical development to intelligence, the incidence of disease by years, by grades, by seasons, by months of the school year, the relation of defects to school progress, etc. Methods of detecting and controlling contagious diseases have been investigated, and certain important correlations have already been established. By the introduction of health inspection into the public schools in recent years not only is the importance of school hygiene emphasized, but a large amount of valuable material for the study of the subject is being collected. The school should be made the most important factor in public hygiene; for in it practically all the children are collected, and conditions can be controlled in the interests of health. The prime importance of this part of school hygiene for the teacher is obvious. (See **CONTAGIOUS DISEASES; EAR, EXCLUSION FROM SCHOOL, EYE; MEDICAL INSPECTION, etc.**)

**Hygiene of Instruction** — While this department of school hygiene may be said to have begun with the Greeks and been treated by Comenius, it has been developed only in recent years. It is now so important, however, that Burgerstein devotes some four hundred pages to it in the second edition of his handbook, and each year brings important new contributions. It emphasizes the hygienic importance of the mental habits formed by education and of the secondary effects of instruction, and it studies every educational principle and method and the matter of instruction from the point of view of hygiene. Thus each subject of instruction is considered with regard to the effect of the discipline on health. (See articles on the Hygiene of **ARITHMETIC, READING, DRAWING, SPELLING, SINGING, etc.**)

The many problems concerned with the period of study — fatigue, the best alternation of periods of work and rest, the length of the school day, one session or two, recesses, pauses, etc. — have all been made the subject of scientific investigation. The importance of this newer field of school hygiene is seen when one considers the fact that an important means of curing nervous and mental disorder is re-education, the development of healthful habits of mental activity — wholesome interests, habits of attention, self-control, and orderly association — in fact, the very habits that are essential for hygienic school work. And when one further reflects that the inmates of such institutions were a few years ago pupils in the public schools, the advantage of developing such habits as prophylactic against nervous and mental breakdown is obvious. More and more scientific investigation and observation are showing the hygienic importance of such mental training; and the hygiene of instruction has become of vital significance to the teacher.

**The Construction, Equipment, and Sanitation of the Schoolhouse.**—First of all the sanitary surroundings of the schoolhouse have been made the subject of investigation. The schoolroom is a workshop. The conditions must be made hygienic for the work to be done in it. The work required is performed chiefly by the brain, by the eye, and ear, and by the hand under the control of the eye and the brain. Thus the conditions necessary are not merely the avoidance of whatever would be injurious,—a stagnant, poisonous, arid, or overheated atmosphere, too intense light, glare from surrounding buildings, noisy occupations, unsuitable rooms, etc., but in every way the optimum conditions for such work—especially abundant and properly regulated light and an ample supply of oxygen. So important is the condition last mentioned both for the health of the pupils and the work to be done that the desirability of schools out of doors, or in conditions approximating those out of doors, is now being emphasized. Since in most parts of the country, however, a large amount of indoor work seems necessary on account of inclement weather, it is becoming more and more important to provide hygienic conditions in the schoolroom.

Thus this department of school hygiene is concerned first of all with the optimum conditions for a workshop where the laborers are growing children and the labor brain work. Architectural and artistic considerations are important, but secondary. First of all must be considered the health of the workers. For example, the unit in a schoolhouse is the schoolroom, and the size of the room should be determined by consideration of the average limits of normal sight and hearing, and the problem of construction is that of grouping a sufficient number of such units in a schoolhouse in a convenient way to give suitable light, air, etc. Many scientific studies have been made of the best forms of construction, and of methods of heating, ventilation, lighting, etc., and from these and the experience in building millions of schoolhouses certain definite norms for construction have been established. If we could bring together into one schoolhouse all the good features that are actually incorporated in various schoolhouses throughout the country, features which actual experience has shown to be of practical utility, we should have a model schoolhouse. Most schoolhouses, however, are seriously defective in certain aspects, and some apparently ignore modern hygiene altogether.

W. H. B.

See articles on ARCHITECTURE, SCHOOL; HEATING; VENTILATION; LIGHTING, etc.

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**HYGIENE, SOCIAL**—See SEX HYGIENE

**HYGIENE, TEACHING OF**—The importance of the teaching of hygiene can hardly be overestimated. Health represents a universal human interest. Its importance can be estimated only in terms of human value. Efficiency, to adopt the modern slogan, is impossible without it. Both directly as contributing to personal well-being and indirectly as contributing to the welfare of others, health is a prime condition of human happiness and even of morality. Such truths, which are so commonplace as to be merely platitudes, should not only be taught to the young, but should be made vital by training. Hence the aim of education from the point of view of hygiene is the development of habits of healthful activity both physical and mental. This training in habits of health should be supplemented by suitable instruction at different grades. To insure such training and such instruction, an adequate course in hygiene and proper training are imperative in the preparation of all teachers. This is the consensus of hygienists, and a resolution to emphasize this need was passed by the Second International Congress of School Hygiene at London, 1907.

**Instruction in Hygiene in the Schools**—The extent to which instruction in the prin-

ciples and practice of hygiene has been introduced into the schools of the United States is indicated by the recent investigations of the American School Hygiene Association. Meylan reported on 116 colleges, of which 75 per cent were giving instruction in hygiene. Twenty-six per cent of the colleges reporting on the details of their work were giving instruction in personal hygiene only; 24 per cent were giving instruction in general hygiene; others reported in smaller percentages that instruction is being given in emergencies, community hygiene, industrial hygiene, and mental hygiene. Seventy-nine per cent of these colleges reported that students were required to undergo a medical examination before taking up their work. Seventy-nine per cent reported regular sanitary inspections of school buildings and dormitories; 77 per cent inspected kitchens; 83 per cent inspected the water supply and grounds. Twenty per cent of these colleges accepted hygiene as a credit for admission.

Gulick reported on 90 public normal schools and on 2392 public high schools. Seventy-four per cent of the normal schools and 16 per cent of the high schools were giving instruction in hygiene. At the last Congress of the American School Hygiene Association, Gulick reported on 758 cities having graded public school systems. He found that 45 per cent of those cities "have regular organized systems of medical inspection in their schools" and "about one quarter of the cities have systems under the Board of Health" and three quarters are under the Board of Education. "Only a little more than one half of them undertake physical examinations." Seventy-six of those cities were employing school nurses, and forty-eight, school dentists. (See MEDICAL INSPECTION.) Twenty-five per cent of those cities were using individual drinking cups, and 75 per cent had sanitary drinking fountains. (In some of the cities both systems were in use.) "Over one half of these schools use moist cloths for dusting, in nearly all of them dust-absorbing compounds are used in sweeping; and in nearly a tenth of them the schools are supplied with vacuum cleaners." Most of these cities reported that their schoolroom floors were washed once in a month or once in three months, "although it is by no means rare to find cities in which they are washed once in five months or never washed at all." Adjustable desks are reported in about one half of the cities heard from. "Ninety-five per cent of the cities teach their children the effects of alcohol and tobacco; 61 per cent have special courses on the prevention and cure of tuberculosis, and 48 per cent give lessons in first aid." It is very evident from these reports that a large number of the larger cities in the United States have made provision for instruction in the principles of hygiene and have organized systems of medical and hygienic supervision which must be more or less effective in establishing the practice of hygiene.

Europe, Canada, Australia, New Zealand, Japan, China, Mexico, and Argentina are reported as having plans for various improvements in school hygiene. Medical inspection, school nurses, open air schools, school lunches, school dental clinics are being reported from the larger cities all over the world. On the other hand, little is being said about the introduction of hygiene into the curricula of the schools. It is difficult to introduce a new subject into the school curriculum. School curricula everywhere are already overcrowded, and it has been difficult to secure time and opportunity for the instruction of pupils in the principles and practice of hygiene in the primary and secondary schools. France has provided some instruction in her primary schools. The teacher gives this very elementary instruction as a minor part of his regular work. The higher schools have more advanced instruction given by the teacher or professor of natural history. The English Parliament (May, 1911), considered a bill "to require that in public elementary schools instruction shall be given in hygiene and to girls in the care and feeding of infants," and the Education Board issued syllabuses on these subjects. The status of instruction in hygiene in the secondary schools of the British Isles was stated by C. E. Shelly at the International Congress on School Hygiene, London, 1907 (see *Proceedings*, p. 919) as follows: "It cannot be said that hygiene has any existence as a recognized subject of instruction in the Secondary Schools of this country with the exception of a certain number of training schools for teachers." No instruction in hygiene is required by law in Russia. The instruction that is given is given voluntarily, and is optional. The same condition is general throughout Europe. Attempts have been made in Germany to provide school instruction in sex hygiene (*q.v.*). At last reports the authorities repressed the effort. Austria is at present giving such instruction in connection with anatomy to pupils in the preparatory schools. This plan has been in operation three years. It is reported that recently this instruction has been extended to the lower Austrian schools so that pupils who leave at the age of fourteen years will have had its benefit.

**Scope of a Course in Hygiene.**—Authorities differ as to the proper content of a course in the principles of hygiene. The older texts combined a study of anatomy and physiology with a study of the influences that act injuriously upon the organs and therefore upon their physiological activities. Some of the later texts minimize the amount of anatomy and physiology presented and emphasize the presentation of more purely hygienic material.

Leaving out of consideration the essential value of an intelligent knowledge of the main facts of human anatomy and physiology, there remain obviously very strong reasons why an intelligent knowledge of hygiene is impossible

without an equally intelligent knowledge of anatomy and physiology. The teacher must be well informed in these fundamentals, for he cannot afford to be ignorant of the basis of his subject. The pupil must necessarily be content to take many things for granted, but his hygienic education will be more valuable in the proportion in which it is based on a real knowledge of its scientific basis. The amount of time necessary to give an adequate knowledge of physiology and anatomy will depend on whether or not physiology is taught elsewhere in the curriculum as well as on the age of the pupil and on the phase of hygiene under consideration.

There are different points of view also concerning the content of elementary, intermediate, and advanced courses in their relation to each other. A common plan is to consider the same subject matter year after year, going more deeply into the details each time. The opposing plan is to take up new phases of hygiene each term, utilizing at the same time the facts already presented. Another variation in the conception of the proper content of a course in hygiene is that which includes procedures calculated to develop the practice of hygiene. Habit is most important. We must have the knowledge, but the knowledge is of little use if it is not applied in the daily habits of the individual. The procedures that tend to develop habits of hygiene are physical exercise (games, sports, plays), swimming bathing, tooth-brush drills, hygienic and medical inspection with the correction of bad habits of hygiene and of remediable incapacitating physical defects, routine exclusions for contagious cases and cases exposed to contagious disease. This conception combines instruction in the principles of hygiene with instruction in the practices of hygiene. It unites classroom instruction with the applications of hygiene in the various departments and divisions of the school.

It is most desirable from the standpoint of educational method and effective results to combine the essentials of related anatomy and physiology with a carefully graded sequence of hygienic subjects, at the same time insisting on the practice of health habits and procedures from those of simple cleanliness and exercise up to those of individual relief from the handicap of physical defect and those of community protection against communicable disease.

**Methods of Instruction in Hygiene.** — There is the same necessity for sound educational methods in presenting the subject of hygiene to school children or college students as there is in the presentation of any other subject taught them. The object of this instruction in hygiene is the establishment of right habits of living based upon a rational knowledge of the reasons why those habits are right. The subject is essentially scientific in its foundations and logical in its application. All the arguments that have been advanced in support of

better educational methods of teaching scientific subjects and all the arguments that have been advanced in support of educational methods that will best develop the power of reasoning are arguments in favor of the employment of the best educational methods in the teaching of hygiene. The subjects which are basal to hygiene, such as physiology, anatomy, and bacteriology, should be taught by the methods that have been found most effective for those subjects. The need for dissections, models, illustrations, diagrams, charts, specimens gross and histologic, and clay molding in anatomy; of illustrations, references, laboratory experiments, and so on in physiology, of cultures, experiments, and specimens in bacteriology is as important when these subjects are a part of a course in hygiene as they are when they are independent.

The curricula of our schools are already overcrowded. The addition of hygiene as a complete subject means a large addition. For these reasons there are very few schools in which hygiene is presented in anything like its complete form. The commonest school method is that which utilizes a selected textbook from which the pupils prepare their recitations. Charts, diagrams, illustrations, and practical questions accompany the recitations. Where departments of biology exist, or where physiology or bacteriology is taught, these subjects are often made to cover hygiene or various parts of it. Many of our high schools and colleges are placing hygiene in the Department of Physical Education, where it has a peculiar appropriateness. A good deal of hygiene is taught by the medical inspectors and nurses in some of those schools that have an efficient system of medical inspection.

**Teaching of Hygiene in the Primary Grades.** — The young child on entering school brings with him the habits of hygiene which have been taught him at home. If his mother has taught him good habits of eating, good habits of excretion, good habits of bathing, good habits of exercise, and good habits of rest, the problem of his hygienic instruction during his elementary years in school is much simplified. In fact he has already received a quality of instruction which from the standpoint of his physiological well-being and efficiency will never be surpassed at any other time in his life. As a rule, however, the young child on entering school, particularly the city child, is in need of more or less forceful instruction in the habits of hygiene, and has a faulty knowledge of even the simpler principles of hygiene. The individual need for and the character of instruction must be determined by the teacher or authorities in charge. It is obvious that such matters as cleanliness of the body and wearing apparel, care of the teeth, eyes, ears, nose, hair, and nails, habits of play, excretion, and posture, will figure prominently in this early instruction. The teacher will have profitable recourse to informal talks,



personal talks, and the use of simple charts, pictures, diagrams. There should be hygienic and medical examinations supported by a requirement that reasonable hygienic and medical advice must be respected. This combined instruction in principles and practices of hygiene will tend even at a very early age to establish principles and practices in the thoughts and acts of the child.

**The Teaching of Hygiene in the Grades and in the High School** — Throughout the later work in the grades and in the high school there should be the same careful correlation between the instruction in the principles of hygiene on the one hand and the procedures and conditions of applied hygiene and sanitation on the other hand as they exist in the school system, its buildings, grounds, and material equipment. The educational influences from these various sources should be harmonious. There should be no inconsistencies between general scientific hygienic principle and local hygienic practice. The subject matter in any given course in hygiene should include particularly the hygienic features connected with the health problems which occur in the daily lives of the individuals concerned. Such a course would logically include the following topics: Food, its physiological importance and requirements; its source, its contaminations, its preparation, its ingestion, the influences of emotional states on its digestion, its assimilation and its excretion. Water, its physiological importance; its contamination. Air, its physiological importance, its contaminations, its alterations under various meteorological conditions, ventilation. The excretions, their physiological significance; care of the bowels, the kidneys, the skin, the lungs. Physical exercise, its importance, its necessity, its varieties; its abuse. Rest; mental and physical rest, relative rest and recreation, sleep. The influence of abnormal conditions on health, *e.g.* defective vision, obstructed breathing, adenoids, tonsils, defective and unclean teeth, diseased gums, sluggish ulcers, wounds and old areas of irritation, exposures to heat, to cold, to moisture and to drafts, fatigue. The effects of bad habits on health; *e.g.* rapid eating, mouth breathing; unwise use of the eyes, sex habits, the abuse of tea, coffee, alcohol and tobacco, opium and cocaine habits. The causes of disease, such as pathogenic bacteria and other parasites. The carriers of disease, such as the fly, the mosquito, the flea, the rat, and careless human beings. Our defenses against disease, such as fresh air, sunshine, cleanliness, and good health. Special hygiene, such as domestic hygiene, municipal hygiene, community hygiene, industrial hygiene, school hygiene, "sex hygiene." First aid to the injured, and the care and feeding of infants.

**Legal Requirements.** — In most city school systems special emphasis is laid on the unhygienic influences of alcohol and tobacco. A

number of state legislatures have enacted laws requiring such instruction in the schools of the state. The importance of this instruction is great. No course in hygiene can be complete without including a discussion of alcohol and tobacco. There is, however, a question as to the wisdom of specifying through state law that these subjects be included unless the law is made to cover in addition other equally important subjects such as dental hygiene, the hygiene of alimentation, pathogenic bacteria, the fly and the mosquito as carriers of disease, spitting, and so on. Emphasizing the importance of instruction concerning the unhygienic effects of alcohol and tobacco through legal procedure must inevitably make other seriously important phases of hygiene seem to be a matter of secondary consideration. See ALCOHOL; TEMPERANCE, INSTRUCTION IN.

**Instruction in the Training School for Teachers** — The hygiene taught in the training school for teachers should include instruction in anatomy, physiology, bacteriology, and certain phases of sociology. Special emphasis should be placed on the instruction in school hygiene, domestic hygiene, municipal and community hygiene, industrial hygiene, and certain of the general features of military hygiene and sanitation. In addition to the special topics noted in this paper for instruction in the grades and high school, the normal school should cover the following topics in school hygiene: the school site, buildings, and playgrounds, the material equipment, including benches, blackboards, lighting, ventilation, heat, water, toilets, accommodations for exercise, rest, and eating; school supplies, such as pencils, books, chalk, apparatus and utensils; the standardization of schoolbooks, systems of cleaning, such as moist wiping, special sweeping, vacuum cleaning, periodical and special fumigation, and antiseptic cleaning; the food, dress, weight, and morbidity of school children, the fatigue of school children; infectious diseases and school epidemics, the ears, eyes, noses, throats, teeth, and mouths of school children, nervous conditions, cripples, defectives, and the morbid and criminally inclined. T. A. S.

See HYGIENE, PERSONAL, HYGIENE, SCHOOL.

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**HYMER'S COLLEGE, HULL** — See GRAMMAR SCHOOL, ENGLISH, COLLEGE, ENGLISH; PUBLIC SCHOOLS.

**HYPÆSTHESIA, or HYPOÆSTHESIA** — The decrease in ability to appreciate stimuli. The term is applicable to all forms of sensation, including vision, hearing, taste and smell, as well as touch, pressure, and pain, but is commonly applied only to the latter group of sensations. Since special words are employed to describe the decreased ability in vision, in hearing, in smell, in taste, in temperature sensations, and in pain, it is customary and the best usage (although the custom is not always adhered to) to restrict the use of the simple terms ending in *-æsthesia* (*i e* an-, hyper-, and hypo-*æsthesia*) to the pressure-like sensations such as those of touch and pressure. S. I. F.

See ANALGESIA, ANÆSTHESIA, HYPERÆSTHESIA

**HYPALGESIA, or HYPOALGESIA** — The decreased ability to appreciate painful stimuli. See ANALGESIA, ANÆSTHESIA

**HYPATIA OF ALEXANDRIA** — One of the most eminent women teachers of antiquity, and one of the ablest of the later Greeks. In spite of her remarkable position and the somber tragedy of her death, few passages relating to her survive, but they uniformly ascribe to her an exceptional distinction for culture and influence no less than beauty and virtue. She was probably born between 360 and 370. Suidas says that she flourished under Arcadius (395-408), Philostorgius places her story in the reign of Valens (364-378); and John Malalas describes her as an "aged woman" at the time of her death (416). Her father, Theon, was a distinguished teacher of astronomy and mathematics at the Museum. Two of his many works still survive. But the daughter, Suidas says, surpassed her father in ability, and went on from mathematics to philosophy. She wore the philosopher's cloak, and expounded Plato, Aristotle, and "the other philosophers" (probably Neoplatonist) to large bodies of students. The statement that she taught on the street seems to be a misinterpretation. The article in the *Lexicon* of Suidas is a late and adulterated epitome of an earlier writer, but the letters of Bishop Synesius, an enthusiastic pupil, and the *Ecclesiastical History* of Socrates confirm her position. Socrates says that she "surpassed all the philosophers of the time, and taught in the Platonist (Neoplaton-

ist) school founded by Plotinus." The Neoplatonist school had by that time been detached from the Museum, and its one woman teacher drew pupils from all parts of the Greek world. Hierocles, Synesius, Troilus, and other known scholars were amongst her pupils. Her chief distinction was in philosophy, but she imparted "all disciplines," — mathematics, mechanics, astronomy, and philosophy, — and the letters of Synesius refer to her technical skill. Two large works are mentioned as having been written by her, but they have not survived: an arithmetical *Commentary on Diophantus* and a *Commentary on the Conic Sections of Apollonius of Perga*. She is described as a fluent, precise, and attractive speaker, and is uniformly praised for beauty and high character. Suidas tells that the leading persons of the city used to visit her, as it was the custom at Athens for magistrates to visit distinguished teachers. Socrates narrates that she was friendly with Orestes, the Prefect, and that this friendship led to her lamentable fate. A mob seized her as she entered her litter, dragged her through the streets, and, after tearing her flesh from her bones with oyster shells or broken pottery, burned her remains. The cause is obscure, but Socrates seems to suggest that the Archbishop Cyril's followers laid the blame for the friction that existed between the Prefect and Cyril on the aged and influential pagan teacher. The murder was perpetrated in 416, when Hypatia must have been in or beyond the sixth decade of her life. She is the heroine of Charles Kingsley's *Hypatia*. J. M.

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**HYPER** — A prefix to indicate an exaggerated degree of any characteristic. Thus hyper-*æsthesia* is an excessive degree of sensitivity.

**HYPERÆSTHESIA.** — An increased sensitivity to stimuli in any sensory field, but usually applied to the abnormal sensibility of the skin and the underlying tissues. The hyper-*æsthesia* may be of peripheral or central origin, due to abnormalities in the sensory end organs or in the spinal cord or brain, respectively. Certain substances applied to the skin produce a peripheral hypersensitiveness which is probably due in large part to the increased blood supply. Examples of this are the conditions following the application of very hot, not burning, stupefies, of mustard plasters, of turpentine and of cantharides to the skin to act as "counter irritants." All of these leave the skin hypersensitive, at times so much so that the individual cannot bear the pressure of his clothing. Pedagogically the hyper-*æsthesia* are of little importance, except that in a highly

## HYPERALGESIA

nervous individual of unstable mental make-up they may lead to convulsions, to voluntary isolation, etc

S I F

See ANÆSTHESIA, ANALGESIA, and the references there given

**HYPERALGESIA** — The exaggeration of the pain sense, whereby (1) pain-producing stimuli are felt to be more painful than normally, and (2) the pain threshold is lowered and stimuli which do not produce pain in a normal individual or in normal parts give rise to pain sensations. Sections of the body with a lowered pain threshold are sometimes called "tender areas."

See ANÆSTHESIA, HYPÆSTHESIA; HYPERÆSTHESIA  
S I F.

**HYPERMETROPIA** — See EYE, especially Sections on Hygiene of the Eye and Tests of Vision

**HYPEROPIA** — (ὕπερ, over, and ὤψ, eye). That condition of refraction where the eyeball is too shallow, and hence parallel rays of light come to a focus behind the retina. The hyperopic eye is an undeveloped eye. It is, in fact, the normal condition of the human eye in infancy. Even with children of school age some investigators have found the majority of children with hyperopic eyes, but the number of such eyes decreases with the increased age and higher grade of the pupils, although the defect remains permanent in a considerable percentage of cases. While it is the normal condition for young children, the fact of this prevalence of hyperopia makes certain hygienic precautions necessary. In the first place the undeveloped eye of childhood, the hyperopic eye, is better fitted for looking at objects at a distance than for near work. Reading, for example, is an occupation peculiarly ill fitted for the hyperopic eyes of children, for their arms are too short to hold a book conveniently even at the normal distance of twelve inches, while a greater distance would be desirable for them. The error of refraction can be overcome by accommodation, but the child with hyperopic eyes reads with great muscular strain. This defect, especially when combined, as frequently happens, with astigmatism, often causes headache and other physical disorders.

When the hyperopia amounts to two diopters, or in any case on the advice of a competent oculist, the error of refraction should be corrected by the use of convex lenses. The fact of hyperopia as the normal condition of the eye in infancy, the changing degree of refraction as the eye develops, and the need of adaptation to the actual condition at each stage, illustrate the importance of yearly tests of children's vision and of expert advice when marked changes occur.

W. H. B.

See EYE, especially sections on Hygiene of the Eye and Tests of Vision, also DESKS AND SEATS, READING, HYGIENE OF; WRITING.

## HYPNOSIS

**HYPNOSIS** — The phenomena of the hypnotic state are induced through a psychological alteration of consciousness and control, which in turn are presumably conditioned by a change of status of brain-functioning. Though plausible theories have been offered in explanation of the susceptibility to assume the hypnotic state, it cannot be said that we understand its nature, nor just what happens in the nervous system when hypnosis ensues. Psychologically we find in hypnosis a handicapped or impaired functioning, the loss of relation to the environment, to the normal assimilation of experience as material for the personal memory-continuum, and to the normal initiative and direction of the mind's concerns. The losses thus entailed lay the hypnotized subject open to the direct suggestion or command of messages and influences that reach his altered consciousness; so that exaggerated suggestibility comes to be the most conspicuous symptom of the state. That other handicapped states offer analogous relations is set forth under the term "suggestion" (*qv*). Through the large areas of excluded mental action and responsiveness there goes out to the impressions that enter an intensive concentration, which again conspicuously characterizes the phenomena of this state. In this respect the analogy of the state to somnambulism as it spontaneously occurs in predisposed individuals is very close, and gave to the state the name of artificial somnambulism.

The typical phenomena may be briefly summarized. The state is induced by the consent of the subject who passively yields to the request to seek sleep, to yield the command of his thoughts and to relax. A sharp command (partly reinforced by strokings or similar manipulations), such, for example, that he cannot open his eyes, may then be successful, and the attempt to open the eyes fail or succeed only after repeated trials. The anticipation of the altered condition being thus gradually established, it is entered upon by trained subjects in response to any sign or suggestion, and similarly a snap of the fingers, an upward stroke, a sharp call in an altered tone, breaks up the state, and restores the subject to the normal condition. The development of the symptoms proceeds rapidly and through suggestion. The subject becomes responsive only to the presence and word of the operator. He sees and hears nothing that is not presented to his avenues of sense by such imposed suggestion. He will regard the fountain-pen as a stiletto, and the upholstered chair as his victim. He will see a blank card as a photograph; and he will fail to see objects really present which he has been informed are spirited away (negative hallucination). He will perform actions seemingly impossible to his normal powers of self-command; and hysterical subjects — the hysterical state either emphasizing or complicating the hypnotic disposition — will show mental in-

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fluence over functions (such as the healing of scars) physiologically removed from conscious influence. Though obviously endless in variety, the hypnotic phenomena present but the developments of suggestibility, made possible by the limitations of responsiveness and the surrender of directive control. Similarly, the actions of the (deeper) hypnosis remain unrecalled to the waking consciousness and find no place in its memory sequence. But here the psychic impairment becomes more subtle and exhibits the typical relations of the subconscious phenomena. For it may be shown that what is thus excluded from the normal consciousness is not wholly excluded, and by indirect and circumventing devices may be shown to find some sort of registry. Likewise the hallucinations and the insensibilities of the hypnotic state are not wholly complete; and what the hypnotic consciousness fails to perceive yet finds indirect record. (See SUBCONSCIOUS.) The situation becomes yet more complex through the possibility of post-hypnotic suggestion, for here the suggestion, though imposed in hypnosis, is yet acted out in the normal condition. The subject realizes his action, gives some excuse for it, if it is foolish or improper, and accepts it as his own conduct, due to an impulse for which he cannot quite account.

The applications of hypnotic suggestion for the curative treatment of disease, particularly of nervous functional troubles, has the same basis as that of waking suggestion, but through the artificially induced state lowers the resistance which a more nearly waking consciousness might, in spite of a consenting effort, obstructively exercise. Questions of legal responsibility and commission of crimes in the hypnotic state have also led to critical discussions, and have raised the question as to whether the subject does not recognize the sham character of the crime which he hypnotically commits. Yet the practical submission of the subject to the operator's will has led to a more cautious use of the process, and affects the bearing of its practical applications.

Historically the state is connected with the older theories of an actual physical influence streaming from the operator's person and physically affecting the subject, and again to the theories of special sensitiveness of the subjects by virtue of which they developed powers beyond the normal. The former comes directly from Mesmer and the doctrine of animal magnetism, or an all-pervasive magnetic influence which the favored operator embodies in his own person; the latter found its development in the notion of "sensitives" or "mediums" later absorbed by the spiritualistic sense of the term. It was the outgrowth of these unsupported notions and the explanation of the phenomena on the basis of an altered physiological and psychological state that was the special contribution of James Braid (1795-

## HYPOTHESIS

1860), and which inaugurated the modern study of the topic. (See MESMERISM.) J. J.

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### HYPNOTISM — See HYPNOSIS

**HYPOTHESIS** — A supposition, a theory, or a mode of explanation held tentatively pending further inquiry, because of its value in the organization of knowledge and in direction of inquiry. The increased importance attached, in the development of modern science, to making and using hypotheses is a necessary part of the evolution of inductive and experimental science. It marks the attainment of a genuinely critical reflective attitude, and provides the working method for dealing with the otherwise insoluble antagonism of dogmatism and skepticism. The older and classic scientific attitude (commonly called deductive, but better termed subsumptive or authoritative) assumed that science was possible only where there existed a body of absolutely certain and definite fixed principles of "truths," under which empirical or observable data might be brought. Only as the body of experienced data was subsumed under the absolute first principles did the former acquire logical systematization and rational justification, that is, the characteristic traits of a science. These first principles were themselves, accordingly, of a radically different nature from that of the facts of experience. The former were universal and necessary, self-evident truths of reasons or rational intuitions, innate ideas, *a priori* to all experience. The latter were *a posteriori*, the result of sensations and imagination, contingent, fluctuating, particular. When acceptance of ultimate rational principles was made the foundation of all science, doubt and denial of their existence led to skepticism regarding the possibility of knowledge. Dogmatism and skepticism thus exhausted the philosophies of knowledge.

The modern scientific movement began when men gave up the notion that science consisted in defining and classifying existences just as they were found and substituted the search for processes and energies which made the objects, or brought them into existence. The latter point of view necessarily involved the use of imaginative conceptions of *possible* causes. The speculative danger latent in the new method was checked by insistence that the imaginative conceptions, or hypotheses, must lend themselves to mathematical statement, deduction, and to corroboration by the results of

experimental observations. Descartes' theory of knowledge marks the transition from the older to the newer, or scientific, logic. He retained the notion that science begins with truths or concepts of pure reason, and that what was needed was concentric deduction from these universals, until the phenomena revealed to sense observation were approximated. At the same time he insisted upon the necessity of definite and accurate (mathematical) formulation of these ultimate notions and upon methodic procedure, a series of intermediate steps from the universal to the particulars. When the Cartesians called these ultimate principles "hypotheses," they did not mean to imply their doubtful character, but rather that they were "placed under" all the particular facts of existence and of science. When Newton said that he did not make hypotheses (*non fingo hypotheses*), he did not mean (as is sometimes stated) that he did not gratuitously invent them, but that he did not employ them in the Cartesian way. In the modern sense, no one invented or used hypotheses more freely than Newton, but, as against the Cartesian theory of the world, he held that general interpreting principles must not be derived from pure thought, but be suggested by experience and then transferred by analogy to other phenomena, their verification existing in the suggestion of new or experimental observations exactly confirming the deductive results. In Kant, we find again an inconsistent compromise of the old and the new logics. He recognizes that science does not consist in the mere accumulation and classification of facts, since it requires conceptions which the mind, from its own initiative, uses to cross-examine existing observations and employs also as methods of undertaking new experimental constructions. To quote his own words: "When Galileo caused balls which he had carefully weighed to roll down an inclined plane, or Torricelli made the air bear up a weight which he knew beforehand to be equal to a standard column of water, a new light broke on the mind of the scientific discoverer. It was seen that reason has insight only into that which it produces after a plan of its own, and that it must itself lead the way with principles of judgment and force nature to answer its questions." But in his general philosophic formulation of this insight, Kant overlooked the fact that the "principles of judgment" with which thought approaches objects are purely hypothetical in character and are approved or rejected according as they work out in experimental construction of objects. Accordingly, his philosophy, though called critical, was at bottom a revival of dogmatic rationalism, since he held that knowledge requires a fixed stock of *a priori* concepts that are imposed once for all upon objects. The inherent difficulties in this position conspired with the constantly increasing emphasis upon experi-

mental verification to discredit the older empiricism and rationalism alike, and led to the formulation of the doctrine that all general ideas, or concepts, are originally purely hypothetical, gaining certainty as they work successfully to interpret and organize observations and to direct further fruitful experiments. In placing the standard of value for concepts in their use, instead of their structure, the resulting functional empiricism becomes truly critical, assigning a distinctive important rôle to concepts, a rôle not capable of being played by facts and observations by themselves, but insisting also upon the need of experimental test.

J. D.

See CONCEPT; IDEA; JUDGMENT; KNOWLEDGE; METHOD; PRAGMATISM.

**HYPICSICLES.** — See GEOMETRY.

**HYSTERIA.** — Among medical men there is the greatest difference of opinion regarding this topic; some deny the existence of a special disease under this name and would group the patients under other headings, while others include all cases that cannot clearly be diagnosed in other ways. In other words, for some hysteria does not exist as a medical entity, for others it is the name for a scrap basket into which cases are thrown if they do not fit into the regular pigeonholes. It is, therefore, difficult, perhaps impossible, to define the term in any manner that will be satisfactory to all, but it may be said that the best opinion is that hysteria is a disease of a nervous character, with varied manifestations which may simulate the conditions in many organic diseases, nervous and otherwise.

The symptoms in hysteria have been the subject of much discussion, and on the limitation of the symptoms depends the conception of the disease. The symptoms in this disease are extremely varied, and in a general way may be confused with corresponding symptoms in other diseases. The following classes of symptoms may be distinguished: (1) emotional instability; (2) abnormal suggestibility, which Babinski regards as the chief characteristic of hysteria, to the extent of holding that the other accompanying phenomena of the disease are due to the suggestion of the examining physician or the patient's reading; (3) sensationalism due to an exaggerated ego, which leads to a desire to win notoriety and sympathy in any way whatever; (4) motor disturbances, *e.g.*, convulsions and tremors as well as paralysis and motor defects; (5) sensation disturbances; (6) vasomotor, trophic, and secretory disturbances, about which, however, there is little agreement. Jelliffe, in the best account of the whole hysteria problem, has given the broadest expression to hysteria in defining it as "a general tendency to certain reactive expressions," which have already been noted above. Babinski throws aside the classical symptoms

As noted by Charcot and his followers as artifacts and poor observation, and attributes the disease wholly to suggestion. Other psychological explanations of hysteria have been advanced, and in general it may be said that the psychological hypotheses are more satisfactory than those of a physiological nature, *e.g.* those in which attempts have been made to correlate the symptoms with cerebral conditions. The most important of the psychological explanations are those of Janet and of Freud. The definition of Janet, which gives his general explanation, is as follows: "Hysteria is a form of mental depression, characterized by the retraction of the field of personal consciousness and by the tendency to the dissociation and the emancipation of systems of ideas and of functions, which by their synthesis constitute the personality." The symptoms are due to a narrowing of the field of consciousness, to an inattention which produces in general an amnesia. The anesthetics are, according to this view, due to lack of attention to the sensations from the body and the paralyses to a similar cause. The sensation elements are grouped in a subconsciousness, if we may speak of such a thing, and they are there combined just as are the conscious perceptions. The combinations give rise to impulses which are not consciously controlled, and there appears to be a splitting or a doubling of the personality.

Most authors agree, that although the hysterical manifestations do not become obtrusive until the third and fourth decades of life, the impressions that lead to the manifestations are obtained during the first fifteen years. The explanations of Babinski and of Freud indicate the possibility of hysteria formation in children. The abnormal stimulation of bright children, the fixation of the attention upon his health, and the permitting a child to daydream help in the formation of the characters that become hysterical. The vicious habit of obvious concealment from maturing children of all matters of a sexual nature, with the consequence of the acquisition of false notions, and the harsh treatment of childish fears lead to the formation of abnormal modes of reaction and to repressions and concealments of emotional states which may become nuclei for hysterical manifestations in later life. S I F

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**IAMBlichus** — See NEO-PLATONISM.

**IBN EZRA, ABRAHAM BEN MEIR (ABEN EZRA)** (1092?–1167) — A Jewish scholar, poet, philosopher, and mathematician. The first period of his life was spent in Spain up to 1140,

his home being in Toledo; the rest of his days was spent abroad, mainly in Italy. Ibn Ezra traveled much, and, in addition to the countries of the Mediterranean coast, visited France and England. His reputation rested for several generations on his commentaries on the Holy Scriptures, for he raised the art of Biblical exegesis to the degree of a science. He helped to revive Hebrew scholarship outside Spain. Ibn Ezra also wrote on grammatical terms in Hebrew, on style, and meter (*Zahot*, 1145). In his philosophical works, traces of Neoplatonic influences may be found. His mathematical writings were numerous and include works on the peculiarities of the numbers one to nine (*Sefer ha Ehad*), on arithmetic (*Sefer ha Mispar*), on the calendar (*Sefer ha Ibbur*), on the astrolabe (*Keli ha Nehoshet*) on three chronological questions (*Shalosh She'elot*); and composed astronomical tables (*Luhot*), and translations of the astrologer Mashallah. He is the subject of Robert Browning's poem, *Rabbi Ben Ezra*.

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**ICELAND** — A large mountainous volcanic island in the North Atlantic Ocean (latitude) 63° 24'–66° 32', (longitude) 13° 32'–24° 35' W. Area, 40,437 square miles, climate comparatively mild, especially in the south. The population is 83,000 (1909), engaged chiefly in sheep raising and in fishing.

**History and Government** — The effort has been made, but on very slight evidence, to identify Iceland with the Thule of Pytheas, traces of Irish settlers (monks) were found by the first Norse discoverers. The Norwegians began to migrate to Iceland in the year 874, and in the next sixty years the island was fully settled. Government, in the form of an aristocratic republic, was organized in the year 930. Christianity was introduced in the year 1000. The Icelandic republic lasted until 1264, when Hakon, King of Norway, helped by the long-continued feuds between noble families of the island, was able to induce the Icelanders to be incorporated in the Norwegian monarchy. Iceland with Norway was united to Denmark in 1397. The main events under Danish rule to the opening of the nineteenth century are as follows: Introduction of the Reformation, practically complete in 1550 when the Danes had become the real national leaders, the last Catholic bishop, Jon Arason, and his sons beheaded, the grant of a monopoly in Icelandic

trade to a kind of colonial company of Copenhagen merchants, 1602 — an economic blunder of the Danish government, which brought the island to the brink of ruin, abolition of the Althing in 1800, which meant the sweeping away of the last traces of Icelandic independence.

In the nineteenth century, especially after 1830, there was a marked revival of national feeling and a struggle for national independence, resulting in 1843 in the restitution of the Althing in the form of modern legislatures (advisory only). The constitution of the millennial year, 1874, gave the Althing legislative power subject to the veto of the King, the executive power being in the hands of a governor. The present constitution, adopted in 1903, gave the Althing increased power and placed the executive power in the hands of a minister, an Icelandic residing in Iceland and having a seat in the King's cabinet.

**Language and Literature** — The main body of the settlers of Iceland having come from Norway, the language naturally was developed from the West-Northern dialects of that country and got its literary form in Iceland on account of having been comparatively early put to literary use; it has been preserved far better in Iceland than in any of the other Scandinavian countries. The modern written language differs from that of the Sagas about as much as Tennyson's language differs from Shakespeare's. This has the far-reaching educational result that every boy and girl has access to real classics, at the same time interesting to youthful minds. It is impossible to understand the intellectual characteristics of the people without reference to the national literature which is taught in all schools.

**The Icelandic Literature** comprises 1 Eddas — *Sæmundar Edda* (Older Edda), a collection of cosmogonic, epic, and didactic poems, collected without doubt in Iceland and largely composed there. *Snorra Edda*, a textbook of mythology explaining the constantly recurring metaphors (*Kennangar*) of the "Scalds," giving the myths of the Scandinavian race and copious quotations from the older poets, showing their use in poetic technique.

2 Sagas, which can be divided into three groups: (1) Historical sagas, mainly by known authors, as Snorri Sturluson's *Heimskringla* (history of the kings of Norway); the *Sturlunga saga*, written by a contemporary and participant in the events, Sturla Thordason. (2) Family sagas relating the actions of the leading aristocrats at home and abroad, founded always on fact, but idealized for æsthetic motives. The form in some instances is concise, as in the modern short story (Maupassant); such is the story of Gunnlang, the Worm Tongue. Sometimes it is of epic proportions; stories of whole country-sides or families, as in *Njala*, the most artistic and famous of all. (3) Romantic and legendary sagas often written under foreign influence (*Chansons de geste*, Briton lays, etc.). These

are almost entirely medieval, and lack the realistic spirit of the genuine sagas. The Eddas and sagas belong, it may be said, to the period c. 850-1300.

Besides the Eddic poetry, generally simple in form, — as *Beowulf*, — is the scaldic poetry, court poetry in praise of kings and princes, extremely artificial in form. To the period 1300-1500 belong the historical ballads (*rimur*) and some splendid religious poems in the old scaldic meter, as Eysteinn Asgrimsson's *Lula*. From the fifteenth down to the nineteenth century, there was a lull in the intellectual life of Iceland, broken, however, by a few notable productions, as Hallgrímur Pjetursson's *Passion Psalms*, the sermons of Bishop Jon Vidalin, and the poems of Stefan Olafsson and Benedict Grondal (the elder).

The poetic renaissance came in the nineteenth century, coinciding very nearly with the political awakening. The leader in this development was Jonas Hallgrímson, whose influence was felt to the end of the century. The chief poets of the later romantic school, 1850-1880, were Steingrímur-Thorsteinson, Benedict Grondal the younger, and Matthías Jochumson. To this period succeeded that of realism (1882), inaugurated by the poet-journalist Jón Olafsson. Lyric poetry reached its height in this period in Hannes Hafstein, author of the spirited ballad, "The Death of Skarphedinn." The realistic impulse naturally gave rise to novelists, of whom the greatest is Gestur Pálsson, and to dramatic art. The latter is stimulated by the establishment of a permanent theater at Reykjavík.

**Educational Beginnings** — Iceland having been settled mainly by the Norwegian aristocracy, the intellectual standard was naturally very high from the beginning. The vikings and local chiefs who emigrated to Iceland were often men who had traveled far and wide, and had seen the civilization of the Celt, the Frank, the Saracen, and Byzantine. On the other side, Christianity in Iceland was introduced more as a political than a religious measure, and its sponsors were the weightiest men of the land, the æsthetic and moral ideas are still closely connected with the old belief. The people are almost without exception Lutherans, the State supporting the Lutheran Church, but there is complete religious liberty. The island forms one bishopric with 105 parishes. In earlier times the educational supervision was entirely in the hands of the clergy. Primary education was always well provided for, the children being taught at home by their parents or by peripatetic teachers. The pastor would visit each family in his parish once a year, examining the children in the elementary branches, if it was found that a child had not received proper training, the pastor had the power to order it taken away from the parents and educated at their expense by some more competent person.

**Present Conditions** — Since the new public school system was introduced, 1907, great progress has been made. Illiteracy is practically

## ICELAND

unknown, and almost everybody can write and knows the elements of arithmetic. Young and old are very fond of reading, and the young people acquire on their own accord further information, especially a knowledge of Danish, of later years also of English, and thus gain access to larger literary fields, the ancient and modern Icelandic literature, as well as newspapers and periodicals, are eagerly read. Each town has a public school, and there are a number of higher schools: a classical college at Reykjavik with about 100 students (a continuation of the old cathedral schools at Hólar and Skálholt), two *real* (or scientific) schools, three schools for women, and some public high schools. At Reykjavik are the following special institutions: a normal school, a school of navigation, a commercial college, and a technical school, also agricultural schools at Hólar and Hvannaeyri.

The three professional schools, of theology (est. 1847), medicine (est. 1876), and law (est. 1907), were in 1911 incorporated into the University (*Háskóli*) of Iceland, which also embraces a faculty of philosophy and history, literature, and language of Iceland. The university was inaugurated Oct. 4, 1911.

The national library (*Landsbókasafn*) at Reykjavik has the most complete collection in the world of books printed in Iceland (73,000 volumes and 6400 Icelandic Mss.). Besides the college library at Reykjavik, with a large and valuable collection of books and Mss., Iceland has three county libraries. The national archives (*Ríkiskjalasafn*, est. 1882) have the safe custody of all civil and ecclesiastical records more than thirty years old. The archaeological museum (*Forngrafsafn*), established 1863, has about 6000 objects. The society of naturalists (*Íslenska náttúrufræðislag*), established 1889, has a museum of natural history. All these collections are housed in the national library building.

Of learned societies, etc., must be mentioned the Icelandic Literary Society (*Íslenska náttúrufræðisfelag*), established 1816, the Icelandic Historical Society (*Íslenska sögufélag*), established 1902, the Agricultural Society, etc.

The financial estimates of 1910-1911 carried a total of 2,930,000 crowns (\$785,240). Of this amount 502,000 crowns (\$134,436) were voted for the Church and education, and 145,000 crowns for scientific and literary purposes. Thus it appears that 22 per cent of the total budget was for intellectual and religious institutions.

Iceland has about a dozen printing establishments (the first introduced in 1530), which at present issue about twenty newspapers, published once or twice a week, and some ten periodicals. During the last century many Icelanders emigrated to America and established flourishing settlements in North Dakota and Manitoba; they publish journals of their own, which are also much read in Iceland.

St. St. and T. J.

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### ICKELSAMER, VALENTIN (1500?-1541?).

— The author of the first German grammar. He was born in the old free city of Rothenburg on the Tauber and studied first at the University of Erfurt and then at Wittenberg, where he was attracted by the fame of Luther and of Melancthon. In 1525 he held the position of a German schoolmaster in Rothenburg, which city was then agitated by the socialistic movement later culminating in the peasants' rebellion. Ickelsamer took an active part in this movement, in consequence of which he had to flee from the city. He went to Erfurt and from there to Augsburg. There, in 1534, he published his *Deutsche Grammatica* (*German Grammar*) in which he made a strong plea for the study of the mother tongue. The book contained interesting remarks on orthography and etymology, but its chief object was to show a new method of teaching reading based on the phonetic value of the letters. In this Ickelsamer was about three hundred years ahead of his time, for it was not until the second half of the nineteenth century that the old alphabetic method was finally discarded in the schools.

F. M.

**IDAHO, STATE OF** — First organized as a territory by Congress in 1863, Idaho was admitted to the Union in 1890 as the forty-fourth state. It is located in the Western Division, and has a land area of 84,290 square miles. In size it is a little larger than Kansas, nearly twice the size of Pennsylvania, and would make ten states the size of Massachusetts. For administrative purposes it is divided into twenty-three counties, and these, in turn, are divided into school districts of irregular and varying size. In 1910 Idaho had a population of 325,594, and a density of population of 3.8 people to the square mile.

**Educational History** — Owing to the small number of inhabitants in the territory, little was done toward the establishment of schools previous to 1870. In that year the census returns showed only 466 pupils in the schools of the territory, and a total school population of only 888. By 1875 the school population

had increased to 3852; by 1885, to 15,399; by 1890, at the time of the admission of the state, it had increased to 27,311; and by 1908 it had reached 85,216. In 1875 the laws which had previously been passed were gathered up, added to, and reenacted in the form of a new school law for the territory. The territorial controller was made *ex officio* territorial superintendent of public instruction, the auditor of each county was made *ex officio* county superintendent of schools; and three trustees were to be elected to take charge of the schools of each school district. The main lines of the present school system were laid down in this law; the chief changes since that time being in the increase of the powers and duties of the county and state school officials, at the expense of the district organizations. The trustees of each district, under the law of 1875, examined and licensed all teachers, adopted textbooks, and generally managed the schools, while the superintendents collected information, made reports, and apportioned funds. A county school tax of from two to five mills was levied for the support of the schools. In 1874 there were seventy-seven school districts, fifty-three schoolhouses, three school libraries, and 2030 pupils in the territory. The increase of the territory in both population and schools was slow during the eighties, was more rapid after its admission as a state in 1890, and has been still greater since 1900. For some time the progress of the schools was retarded in certain counties by trouble with the Mormons, but after 1890 this seems to have disappeared. In the revised school law of 1883 the office of county superintendent was created and separated from that of county auditor, teachers' institutes were begun, and the functions of the State Superintendent's office were enlarged. In 1887 the separate office of State Superintendent of Public Instruction was created. Since the admission of the state, educational progress has been rapid.

The act of admission gave the state a large amount of land for educational purposes. The common schools received the sixteenth and thirty-sixth sections in each township, or a total of 3,068,231 acres; two townships, or 46,080 acres, were given for a state university, 40,000 acres were given for a state school of science, which, in 1907, was added to the state university endowment fund, 100,000 acres were given for normal schools, 40,000 acres for a state academy, and 40,000 acres for a state industrial school. The constitution fixed the minimum sale price at \$10 an acre, but the sales so far made have been for more than twice this price. Only about one tenth of the school lands are now under lease. These lands will, in time, sell for a good price, and the funds thus created will yield a large income for education. The state constitution of 1890 made very detailed provision for a state system of education. A State Board of Education and a

State Board of Land Commissioners were created; the public school fund and lands were carefully safeguarded, a minimum price of \$10 an acre was set on all school lands; any form of aid to sectarian or religious schools or societies for any purpose, as well as religious tests and the teaching of religious tenets, were forbidden, compulsory education was authorized, the university was located, and the title to university lands was confirmed; and the territorial office of county superintendent was abolished, the probate judges of the county being made *ex officio* county superintendents. In 1892 the University of Idaho was created, and the same year the first state teachers' association was organized. In 1893 a free textbook bill and a compulsory education law were enacted, and state normal schools were established at Lewiston and Albion. In 1896 the constitution was amended to provide for the re-creation of the office of county superintendent. In 1899 the State Textbook Commission was reconstituted, and its work made more definite. In 1901 the Idaho State Academy, a secondary and technical school, was established at Pocatello, and a State Library Commission and traveling libraries provided for. In 1903 the Idaho Industrial Training School, a reform school for boys and girls, was established at St. Anthony. In 1905 the State Board of Education was given power to issue teachers' certificates of a higher grade, valid anywhere in the state; and the compulsory education law, long a dead letter, was revised and strengthened, and county probation officers provided for. In 1907 three six-weeks normal schools were organized. In 1909 rural high schools were established, a State Board of Examiners was created, the system of certification was changed into a full state certifying system, required meetings of school trustees were provided for, and a state school law commission was created. In 1911 this commission reported, and its report was accepted by the legislature, and a new school code enacted. This materially enlarged the powers of the State Board of Education, changed the plans for certifying teachers and apportioning school funds, and made changes in the management and instruction in all rural high schools.

**Present School System.** — At the head of the school system is a Superintendent of Public Instruction, elected for two-year terms by the people, and an *ex officio* State Board of Education, consisting of the State Superintendent of Public Instruction, the Secretary of State, and the Attorney-General. There are also a State Board of Land Commissioners, created by the constitution, and composed of the members of the State Board of Education, with the Governor added, a State Library Commission, consisting of the State Board of Education, with the President of the State University added; a State Textbook Commission, consisting of the State Superintendent of Public



Instruction and six others, appointed by the State Board of Education, two to be practical business men and four to be teachers of at least five years' experience, and a State Board of Examiners, who read and grade all examination papers and grant all teachers' certificates for the entire state. To the State Board of Education is given general supervision over the schools of the state and the preparation of a uniform course of study for the elementary and high schools of the state. The State Superintendent acts as the executive officer of the Board; apportions the income of the school fund semi-annually; visits the counties, and holds meetings with the county superintendents; makes rules and regulations for the conduct of teachers' institutes, and appoints assistant conductors for each one, prepares and distributes all blanks and forms used, and makes a biennial report to the Governor. He or she (women have held the office continuously since 1899) is also a member *ex officio* of the Boards of Trustees of the two State Normal Schools, of the State Academy, and of the State Industrial School.

The State Board of Land Commissioners is charged with the duty of locating, protecting, renting, and selling the school, university, and other lands granted to the state by the General Government by the act of admission. The State Library Board has charge of the traveling libraries of the state, and is directed to cooperate with public and other libraries anywhere in the state. The State Textbook Commission selects the textbooks to be purchased and supplied to the schools of the state, high schools included, and makes six-year contracts with the publishers.

In each county there is a County Superintendent of Schools, elected by popular election for a two-year term. He (or she) must be a practical teacher of at least two years' experience in Idaho, and must hold at least a first grade teachers' certificate to qualify for the office. He is required to hold monthly meetings with his teachers, to visit each school each term, to apportion the school money to the districts, to conduct an annual teachers' institute, may require trustees to make repairs, or to abate a nuisance, may transfer pupils and their quota of funds from district to district; keeps all records, and makes an annual report to the State Superintendent of Public Instruction.

In each school district a board of three school trustees are elected, one each year, at an annual school election. District lines may be altered and new districts created by the Board of County Commissioners. Any district may establish a kindergarten or a high school, and all must provide a five months' term of school and have an average daily attendance of five. Trustees have charge of all school property, and are empowered to employ teachers and fix their compensation; by vote of the district may build, rent, furnish, or sell schoolhouses and

sites, may spend 25 per cent of the school money for fuel, janitor, supplies, and equipment; must spend 3 per cent of the school money for the school library, may dismiss pupils; must compile an annual school census of all pupils six to twenty-one in the district, and must publish an annual financial report. Teachers must make a yearly report to the County Superintendent of Schools. Any district having a valuation of \$150,000 may be organized as an independent district by the County Commissioners. Such independent districts have six trustees, who have, in addition to the powers and duties of trustees of ordinary districts, power to levy a special tax sufficient to provide a nine months' school. If a district employs 35 teachers, it may also employ a superintendent and adopt its own textbooks.

**School Support** — No state tax is levied, but a required county tax of not less than five nor more than ten mills is levied, and any school district may vote a local district tax up to twenty mills. The apportionment of income from the state school fund is made to the counties on the sole basis of the number of school census children. In the counties all county taxation, fines, and license money, are added, and the total is then apportioned to the districts, one third equally to each, without reference to its size, and two thirds on the basis of school census, less 5 per cent, which is withheld for apportionment to the rural high schools. District trustees must levy a tax sufficient to provide five months of school, and the voters of any district may vote a further tax up to a total of 20 mills. Independent districts have special taxing privileges.

**Educational Conditions** — Of the population of 1900, 15.2 per cent were foreign born, 57.7 per cent were males, 3.5 per cent of the total population were Indians, and 1.7 per cent were Chinamen. But 6.2 per cent lived in cities of 4000 or over, while the remainder lived in country districts or in little towns. The state is sparsely populated, large areas being practically uninhabited. The chief occupations are mining and agriculture. The compulsory education law has long remained unenforced. It was revised in 1905 and made more definite, and a probation officer was appointed for each county to assist the Judge of the Probate Court in dealing with the worst offenders. By the new law children eight to sixteen years of age are required to go to school the entire time the schools are in session, though children over fourteen are excused if they have completed the eighth grade, as are all children who are instructed at home or who are physically or mentally incapacitated, or whose labor is necessary for the support of themselves or their parents. Trustees are required to report all delinquent children to the County Superintendents of Schools, who in turn reports them to the Probate Judge.

In material conditions the schools have made

very rapid progress within the past fifteen years. Many of the town and high school buildings are substantially built and fairly well equipped. The average value of the school buildings of the state is about \$3000. The schools are rapidly being graded and standardized. All schools follow a state course of study. All pupils who complete the eighth grade pass the uniform state examination, and this certificate is required for admission to the high schools of the state. Manual training, domestic science, and agriculture are included in the state course of study as optional studies, and a number of schools are reported as making a beginning in these subjects. Two towns are reported as offering regular instruction in manual training. In a few places large consolidated schools have been established, and the pupils are transported to the central school. The state has a good school library system which has been in existence for a long time. Each school district must make yearly additions to its school library; the traveling library system is efficient, and any town or city may levy a tax of one mill for library support. On petition of twenty voters in any school district, an election must be called to vote on the question of a similar library tax on the property of the district.

**Teachers and Training** — For the training of new teachers the state maintains two state normal schools, and since 1907 has maintained three summer schools, offering a six weeks' course of instruction. The certification standards are better than in many other states, and the certification plan has an especial merit in that it provides for a partially graded series of examinations leading up to the highest diploma.

**Secondary and Higher Education** — The state maintains the Academy of Idaho at Pocatello, and the University of Idaho at Moscow (*qv*). The Academy of Idaho offers preparatory, business, and technical courses. The University of Idaho is the only institution of higher learning in the state. High schools are developing rapidly, considering the sparsity of population, there being fifty-one public and private high schools on the University of Idaho list of inspected institutions in 1908, and new schools are being organized each year. The union-district high school law of 1909, and the authorization of two-year agricultural high schools in the same year, will add a new stimulus to their development. The state maintains the Idaho Industrial School at St. Anthony, a reformatory institution for both sexes, and in 1909 established a state institution for the deaf, dumb, and blind of the state, who had heretofore been cared for elsewhere, under the supervision of the State Board of Education. E. P. C.

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**IDAHO, UNIVERSITY OF, MOSCOW, IDA** — A coeducational state institution established in 1889. Its government is in the hands of a board of nine regents appointed by the Governor. In addition to the college courses, preparatory, music, engineering, and agriculture courses are offered. The entrance requirements are sixteen units. Courses are offered in the college of letters and sciences leading to the degrees of A B, B S, Mus B, and B S in domestic economy, as well as the A M and M S. The college of agriculture gives a four-year course leading to the degree of B S, and a short winter course of a general nature. The college of engineering provides four courses in different departments of engineering, each leading to the appropriate degree. The State Teachers' Certificate is given to those graduates with the A B or B S degree who have taken courses in education. The enrollment in 1910-1911 in all departments was 527. The faculty consists of fifty-four members, of whom nineteen are full professors.

**IDEA AND IDEATION** — Ideation denotes either the act of thinking or the course, the stream, of ideas, according as ideas are regarded as manifestations of a soul substance or spiritual entity, or as mental contents which in their associations and sequences make up the mind. Upon a third view, it expresses the function exercised by ideas, the results they effect in subsequent experience. So far accordingly as the word is not a synonym for the process of thinking (*qv*), its meaning depends upon that assigned to the term "idea."

Historically, the term "idea" dates from the Platonic philosophy. With him, it means an absolute, unchanging, immaterial archetype, standard, or pattern, which the manifold changing particulars of sense that are called by the same name partially share in and represent. It was the form, the nature, the essential character of a set of particular existences. It was their universal, generic, and also their end, their completion, or perfect reality. Through its presence, and only through its presence, are changes controlled, or made other than an aimless, chaotic flux which as a flux is unknowable because not enduring long enough to have any assignable character. Within the world of physical change or becoming, these ultimate immaterial essences appear as mathematical forms. Mathematical relations supply nature with all its regularity and recurrence, with whatever is constant, or resembles constancy, amid the scene of change. They also supply the only conditions through which nature may be, in any genuine sense, known, be matter of science. The usual charge against the Platonic theory of ideas is that it confused mental concepts with things. If the charge means that Plato began with psychical existences or even with logical abstractions and ended with hypostatizing them, it quite misses

the method and object of Plato. He began with changing objects, acts, and beliefs, and concluded that self-consistent beliefs, stable modes of behavior (individual and social), permanently real objects (and no object not permanently real can be truly real at all) all imply unified eternal essences, which as unified and eternal must be immaterial. This meaning of the term (or of its Latin transliteration of the Aristotelian *eidos*, species, namely) lasted through the entire scholastic period, nominalism alone denying the objective existence of archetypal standards of action and belief. Moreover, through the use of final causes in the medieval science of nature, these standard patterns, in the form of the ends for the sake of which events occur, were assumed also to be the keys to the natural sphere. Even to-day, any one who believes in absolute eternal objective standards or types of justice, truth, law (whether natural or moral), etc., to which particular sets and events tend to conform (or should conform) accepts the essentials of the Platonic doctrine of ideas.

Quite early in modern thought, however, the term "idea" began to change its signification, taking on a more distinctively mental coloring. The notion of objective pattern shaded over into that of internal design, a mental copy according to which an action is carried on, the notion of objective end similarly shades into that of *conscious* intent, purpose as a mental copy of some result to be accomplished. In this way, the term "idea" came to designate any object so far as that object was held in mind, whether for purposes of action or thought. According to the scholastic theory of knowledge, the *species*, the kind, was always the real object of knowledge, even in dealing with a particular thing; that is, in *this* table the table-character is what is grasped by intelligence, whatever does not take the form of such a universal is incognizable. John Locke also called the immediate object of the mind in knowledge an idea, but according to him general characters are never directly apprehended objects or simple ideas. On the contrary, sensible qualities, red, hard, loud, sweet, etc., are the forms, the ideas, which mind grasps or "knows" directly. But Locke also accepted the notion that many of these qualities exist only in *mind*, and so he tended (though with some ambiguities) to hold that the objects of the mind in knowledge are mental objects only. Locke's influence practically determined, accordingly, the subsequent sense of the term "idea" — namely, mental event, occurrence, existence, especially if any cognitive force is attached to the mental existence. However, even this restriction was not always observed, idea was often used to designate any mode of so-called psychic existence, such as a feeling, desire, etc. (The word "thought" has also been used in the same loose style.) On the other hand, some surviving flavor of the earlier intellectual connota-

tion clung to the term, so that, following Hume, many psychologists reserved the term for secondary or revived mental events, keeping the terms "sensation," "feeling," "impression" for the primary.

The significance of the term is still further confused by the fact that it has developed a sense intermediate between the original Platonic objective one and the modern psychic one: a logical usage to denote meaning (*what is meant*), conception (*what is conceived*), the object of intellectual reference as distinct from the act of referring. The fundamental importance of meanings in mathematics, the fruitful way in which these meanings interact for the production of new meanings which no inspection of the original meanings could have revealed, the objective coherence of the resulting systems, have led to the formation of a school of Neo-realism which insists that the science of mathematics proves the independent existence of intellectual essences, not subject to the flux of time and non-physical in character. Moreover, many critics have pointed out that the psychic school confused ideas as meanings with ideas as private, psychic existences, thus making knowledge impossible, since knowledge requires that sensation, image, idea, have a stable reference beyond its own existence. The use of hypothetical meanings as tools of inquiry has meantime suggested still another sense for the term "idea" — that of tentative hypothesis, suggestion, theory. This interpretation mediates between the two conceptions of meaning as pure objective essence and idea as mere psychic existence. As uncertain and tentatively used, the hypothesis or suggestion is mental, in its application and possible outcome, if confirmed, it is subjective.

J D

See CONCEPTION; HYPOTHESIS, METHOD, THINKING, also ASSOCIATION OF IDEAS

**IDEAL COMMONWEALTHS** — See UTOPIAS AND EDUCATION

**IDEALISM** — In the history of thought, idealism covers two things very different from one another, each kind including many varieties and both distinct from the meaning of the term "idealism" as employed in life. In the latter sense, idealism means a praiseworthy *moral* attitude, consisting in devotion to high aims, to ideals, even at the expense of personal loss in material comfort and financial gain. In its technical philosophical meaning, the two types of idealism are characteristic of ancient and modern thought, respectively. The former is primarily a teleological theory of the cosmos, of nature, the latter is primarily an assimilation of nature to consciousness. Classic idealism was a systematized method of interpreting nature from the standpoint of final cause (see CAUSE). It held that nature exists for the sake of realizing purpose, the ultimate

purpose being the Good. The degree of reality possessed by any temporal or phenomenal form of existence is accordingly measured on the scale of the degree in which it embodies or realizes the End, the Good. Reason, intelligence, was conceived as either the highest, the final, good of existence or at least as an indispensable element in the culminating end. It was not conceived, however, as either the efficient cause of nature or as the stuff out of which apparently physical things are made. Nor was the proof of idealism sought in psychological or epistemological grounds. On the contrary, the theory of knowledge was such as would now be termed realistic. It held that the human knower, the individual mind, became intelligent or rational through the process of knowing objects that exist independently of it, by means of appropriating to itself the amount and kind of ultimate reality embodied in them. In the phraseology of Aristotle, sensation is a realization of the sensible qualities of objects; imagination of their form so far as still immersed in particular cases; reason of their universal form, free from particular limitations. And while Plato and Aristotle, the two great names of classic idealism, disagreed in many respects, they were at one in holding that our mental operations are to be viewed and explained from the standpoint of objective reality, not objective reality from the standpoint of our operations of knowing. Consequently, while much is made of reason as explaining the order, the harmony, and proportion found in nature, little is made of the chief concept of modern idealism, consciousness, so that the term hardly appears as a significant conception.

Modern idealism may be said to have found its points of departure in two convictions. (a) The most certain, the best known, thing is an individual's own inner life, his play of emotions, hopes, fears, pleasures, pains, ideas, memories, etc., what was later termed consciousness, or the psychic. (b) all objects as known are relative to the processes of sense-perception and judgment that are involved in knowing them. (1) From the feeling that the surest, the most accessible region, in fact the only directly accessible and absolutely sure thing, is the individual's own inner life, it was but a step to the conclusion that the sole escape from skepticism as to the possibility of scientific knowledge of the world, as well as the sole way of explaining how a physical world can interact with a mental world, is to resolve that external world itself into psychic material. The assimilation of the objective to the subjective has been the characteristic trait of every form of modern idealism. (2) The conviction that sense qualities are relative to the individual percipient had been held by some of the sophists in antiquity. Under the prevailing conditions of science at that time, however, such a theory could issue only in intellectual nihilism, the denial of all stable knowledge.

The case was quite otherwise with the beginnings of modern science. All those interested in removing from science the incubus of explanation through final causes fastened upon it by scholasticism and in substituting a mechanical mode of explanation, were interested in reducing physical nature to a homogeneous medium, to mass, motion, space, and time capable of interchangeable statement in terms of one another. The most obvious obstacle to the accomplishment of this ideal was the diversity of static qualities presented by natural objects. By the simple device of relegating color, sound, smells, tastes, to the mind of the percipient, this obstacle was overcome, and the residual "real" object was left with only properties that lent themselves to mathematical formulation and mechanical explanation. Hence, it was those most interested in the progress of physical science that were most emphatic in declaring the purely mental nature of the "secondary" qualities. Galileo, Descartes, Hobbes, all taught that they are "effects" produced by the real object on the sentient mind, useful as signs to point to powers in the object, but having a purely mental status.

It was the work of Berkeley (*qv*) to carry this line of argument into a thoroughgoing idealism. With acumen and vigor he pointed out that to common sense, to the plain man, the real object and the perceived object are identical, that as a matter of fact the so-called primary qualities (extension, resistance, and the spatial-mathematical properties generally) are inseparably bound up with the visible and tangible qualities, and hence that the so-called material real object was but an "abstract" idea. Hence the entire world of known and knowable objects was mental *esse* equals *percipi*. Berkeley, as a theologian, had no difficulty in attributing the permanent and orderly relations manifested in the world of perceived objects—their "laws"—to the work of divine mind, leading us to expect, in regular and reliable ways, one perception to follow upon another. Hume (*qv*), with his antitheological bias, had no difficulty in showing that upon Berkeley's own principles, God, being unperceivable, has no valid status, and that mind itself must be resolved into the simple flux or stream of changing perceptions.

Since his time, idealism has flowed in two separate channels. Empirical, psychological, or subjective idealism has stood for the Berkeleyan resolution of existence into perceptions and their associations, simultaneous and successive—minus, of course, his assumption of spiritual soul substance, divine and human. But since one school of philosophic theory, and upon the whole, the orthodox one, had always attributed slight, or even negative, importance to perceptions as compared with conceptions, in determining the framework of knowledge and in giving certainty, there arose another

## IDEALISM

type of idealism which identified "Reality" with conceptual, or rational, contents; whose motto was *esse equals intelligi*. This school of rational idealism is also termed objective realism, because it has taught that thought relations constitute objects independently of relation to any individual percipient, which, as merely individual, is only sentient and hence incapable of general (scientific) knowledge except as it is informed by the same *a priori* or objective reason that constitutes the objective world itself. Its chief motif has been the necessity of permanent and universal relations for the existence of objects of scientific and systematized knowledge, and the identification of these relations with the various functions of rational thought. This type of idealism was introduced by Kant and was carried to its culmination by Hegel, who, however, introduced another and independent conception, that the objective manifestation of mind is found more adequately presented in social life, in the state, and in the historic phenomena of politics, art, and religion than in nature. Schopenhauer, in turn, gave idealism a further distinctive turn by finding the clew to the nature of existence in will rather than in rational thought.

It may almost be said that, barring materialistic and agnostic philosophies, these two types of idealism divided the field between them for a century after Kant. At present, there are many signs that the idealistic movement has, temporarily at least, spent its force. At least, there is a strong realistic tendency in active progress. This movement is too recent and too close to permit of any accurate and just assignment of causes. Some of the main reasons for it are, however, obvious. One is the exhaustion of interests in the type of problems that gave idealism its original impetus. Another is a number of inherent inconsistencies that no type of idealism has completely overcome. Allied to this, is the seeming deadlock between the two kinds of idealism. Moreover, there is a growing feeling that the complete resolution of everything into psychical existence, whether sentient or rational or a fusion of them both (as in Bradley and Royce) in breaking down all distinction between mind and anything else, defeats its own end—that of attributing some distinctive, significant place and efficacy to intelligence in the scheme of existence. Concretely, the most influential force has probably been the development of the doctrine of biological evolution and its evidence that mind, instead of being the sole monopolistic existence, is itself an expression of life, and the means by which life secures its most effective control of the environment in the furtherance of its own active processes. At present, the realistic movement has both a pragmatic and an intellectualistic form, the two agreeing in their common opposition to traditional idealistic systems rather than in a positive body of convictions. J. D.

## IDEALISM AND REALISM

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**IDEALISM AND REALISM IN EDUCATION** — Two idealistic systems of philosophy have had a peculiarly intimate connection with the theory of education, the Socratic-Platonic movement in antiquity and that of German transcendentalism in recent times. They have also exercised a significant influence upon educational practice. The effect upon practice has not been so much direct as reflex, consisting chiefly in affording a supposed intellectual justification for procedures that originated independently of philosophy. The Platonic idealism, so far as it affected education, was a development of the method pursued by Socrates in his endeavor to arrive at fundamental principles and standards of action. Socrates urged that since no man would voluntarily do violence to his own being or deliberately seek his own harm, ignorance of his own real nature and its proper end, or good, was the source of all evil doing. Moreover, ignorance was the cause of the divisions, the struggles and factions, of civil life. Wherever there is knowledge or true understanding, dispute is impossible, agreement and knowledge are equivalent. The search for knowledge, the process of learning, is, therefore, of necessity a search for that which all men have in common, and which, accordingly, they have a mutual interest in reaching. Argumentative dispute, the desire to conquer in argument, is *ipso facto* evidence of lack of love of wisdom or knowledge. Its opposite, comparison of ideas with a view to discovering their common basis and intent, Socrates called dialectic. Since opinions and beliefs could differ only if they meant to refer to the same thing, a common underlying reality was implied in them.

In the dialectic method there were accordingly three elements: (a) The presupposition

of an objective universal as the proper subject matter of knowledge, (b) the implication of this universal in all particular opinions and beliefs, (c) the possibility of its discovery by systematic comparison of particulars. The resultant discovery formed the concept or definition of the object in question — justice or whatever ethical reality might be the object of search. Unless there were such objective universals, the moral anarchy of subjectivism was inevitable; anything was good or right that seemed to be right or good to an individual at any particular moment. The further consequence was social discord and strife, for only an objective universal gave anything common, that is supplied a basis of unity.

Plato extended the Socratic method from moral realities and knowledge of them to all realities and the proper method of knowing them. Knowledge as distinct from private shifting opinions is possible only by virtue of unchangeable substantial universals in which all the particulars of a class participate and through reference to which they can be defined and understood. These objective universals were the Platonic Ideas (*q v*) or Forms. Moreover, since all particulars were changing, they were capable of order and uniformity only in the degree in which their changes tended toward their universal. It was then their end, their good, or perfection. Hence true or dialectical knowledge consists in knowing the ends for which natural things exist, a thing without an end is a mere monstrosity.

There are many phases of the Platonic idealism that are reflected in his own educational theory. In fact, education was of central importance in his philosophy, since it was only by a proper method of education that men could become skilled in the use of the dialectic method and be enabled to turn the eye of the soul from the sense appetites and opinions, that correspond to mutable particulars, upon the eternal universal. But a more important consideration for our present purpose is the fact that while the details of the Platonic scheme remained practically without influence, the two chief aspects of his method became firmly embedded in all higher education. These were the setting of dialectical above physical inquiry, and of discussion of final causes above search for efficient causes. Physical science dealt with just the particular and changing things which, according to this philosophy, were relatively unreal, they corresponded only to sense knowledge and mere probability, or opinion. More important was the elaborating and comparing of ideas and beliefs, matters of classification and definition, rather than of observation and experiment. Knowledge of antecedent conditions and constituent (physical) elements was, moreover, held in contempt compared with knowledge of the end or purpose for which things existed. And this latter was a matter of development

of meanings rather than of external observation of facts.

That for over fifteen hundred years education followed these lines is too well known to need recording. There is also no need to say that causes quite independent of the Platonic idealism were responsible for the neglect of the physical sciences and mechanical methods of analysis. But the Platonic dialectic as elaborated through the Aristotelian logic furnished the intellectual tools for the entire patristic and scholastic system of education, and the philosophic ideas through which the leading ideas were defended and systematized. Even in the humanistic educational ideal, the feeling that preoccupation with ideas and beliefs is intrinsically more worthy than inquiry into natural existences is to a considerable extent a survival of the dialectic side of classic idealism.

In the general sense of the term, accordingly, Realism in education began with the reaction of the Renaissance period against the supremacy of those forms of subject matter that could be dealt with by pure logic. It contended that such subject matter consisted simply of abstractions at its best, and at worst simply of words. Moreover, since only ideas and beliefs that were already in the mind, or that were already current, could be analyzed, defined, and systematized by purely dialectic method, this method confined men to tradition and authority. In the interest, then, of both reality and mental emancipation, the Realism of the sixteenth and seventeenth centuries called men from ideas to things. Francis Bacon is the great representative of this movement, philosophically, so far as philosophic Realism influenced education it was chiefly through his work. The older methods were, however, too deeply entrenched to undergo much more than slight transformations in externals. The Baconian Realism was but prophetic; there were no well-developed methods of inquiring into fact and no organized subject matter available for educational purposes.

The transcendental idealism of the later eighteenth and early nineteenth century had a symbolic and an institutional form, the former represented in education by Froebel, the latter by Hegel. Both are dominated by the idea of a progressive development or unfolding of a spiritual self-consciousness (which is the principle of totality) in and through the particulars of nature and human experience.

According to romantic (or symbolic) idealism, particulars (especially those approximating mathematical form) are suggestive, illustrative, allegorically symbolic of the absolute truth. Accordingly they may be employed to awaken in the mind of infancy the absolute truth or reality already implicit or latent in it. Froebel's great natural aptitude for perceiving the educative force of plays and games, and modes of occupation was accordingly utilized

by him in the interest of a religious, quasi-mystic, quasi-mathematical formalism, the formalism being explained and sanctioned by its supposed correspondence in the realm of feeling and sense with spiritual essence and law in the absolute sphere

Hegel's idealism was substantially an outgrowth of his opposition to the subjective idealism he attributed to Kant and Fichte. According to him, absolute mind is externalized in physical nature, but truly objectified in social institutions and history. The state is objective reason and will. Only by participating in this realized spirit can the potential mind, latent in individuals, get rational substance or body for what otherwise is a mere empty capacity for consciousness. The unqualified necessity of social institutions as the agencies through which the latent rationality of individuals is to be awakened and developed or brought to full reality, was thus the final lesson of the Hegelian idealism. The accomplishing of this end constitutes education.

Remarkably enough, the great metaphysical realist, Herbart, reached essentially the same conclusion by an opposed route. According to him, there is no one final, all embracing, absolute reality, there is a plurality of reals. Moreover, there is no intrinsic tendency in the individual mind to evolve according to its own inner law into realization of supreme reason or spirit. There is only the capacity to react in a characteristic way to every contact with a real. Education is thus not the growth or development of the mind in accord with its own inner nature, it is a forming or shaping of mind through the presentation of the external reals which operate upon it. The earlier reactions persist as ideas and form the mental material through which all later presentative reactions are received and organized. By controlling the earlier presentations, in terms of which the later are "appereceived" and made effective, we can accordingly control the formation of mind and character, this latter being, indeed, but the complex of patterns formed by past contents as they operate in determining the reception and organization of new contents. In deciding, however, the order and sequence of the presentation of materials, Herbart was almost wholly under the influence of the notion of recapitulation of the culture of the past. As the earlier contents in the history of the individual dominate the assimilation of the later, so these earlier contents are to be assimilated to the culture products of the earlier stages of civilized mankind. Thus, in spite of their radically diverging bases, the Hegelian and the Herbartian systems, as applied to education, agree in the primacy of social material, the former emphasizing the value of institutions, the latter of culture products.

It is out of the question in a matter involving as many important considerations and issues as the idealistic-realistic controversy to do

more than point out some of the chief points involved in passing judgment upon it. From the earlier historic division it appears that the question concerns the respective places of meanings and of natural existences in the scheme of experience. From the latter discussion, the issue is seen to have to do with the respective functions of inner development and outer control. If one commenced the investigation of the problem with educational interests uppermost, one's most probable conclusion would be that existence and meaning, internal growth and outer direction, are mutually complementary, not exclusive rivals. As matter of fact, the beliefs of the greatest number of men have always been dualistic rather than exclusively idealistic or realistic. But, again, from the standpoint of that direction of growth of character and intelligence that we call education, what is needed is not a division of the field into separate regions, or into two disconnected kinds of force, but a cooperation of two distinctions which are both relative to the evolution of life and experience. In short, from the standpoint of education, the need is for a philosophy which translates the static divisions of mind and world, inner and outer, that characterize traditional dualisms into dynamic interacting factors of growth, thereby going beyond both traditional idealism and realism. J D

See DUALISM, HUMANISM AND NATURALISM

### IDENTITY — See SELF

**IDEOMOTOR (Idea and Motor)** — Many active processes are dependent upon ideational processes rather than upon sensory stimulation. These motor processes are said to be aroused through the action of ideas and the processes thus aroused are said to be ideomotor in character. Thus the activity of an insane person may be aroused through the presence of certain fixed ideas (*qv*). The significance of the word in psychological discussion is that it draws attention to the fact that many motor processes depend upon central nervous activities and are not dependent upon external sensory stimulations.

C H J

**IDIOCY** — The term specifically used to denote the lowest grades of mental defect, although it has been, and unfortunately is still, sometimes used loosely to apply to almost any grade of deficiency. In the definition adopted by the British Royal Commission on the Feeble-minded and agreeing with common usage, an idiot is described as "a person so deeply defective in mind from birth, or from early age, that he is unable to guard himself against common physical dangers," being differentiated on this somewhat economic basis from (1) the Imbecile (*qv*) in that the latter, while "capable of protecting himself

under usual circumstances, is incapable of earning his living," and from the Feeble-minded (*q.v.*), who, while "capable of earning a living under favorable circumstances," is incapable of "competing on equal terms with his normal fellows."

**Classification and Incidence** — For purposes of description idiots are frequently divided into three groups, high, medium, and low grades, although obviously there is no definite line of demarcation between these groups any more than there is between the larger division of idiot, imbecile, and feeble-minded. Sufficient evidence exists for the statement that there is a continuous distribution of cases through all grades of deficiency from the merely dull or stupid person to the lowest grade of idiot.

The following typical classification is employed by the New Jersey Training School for Feeble-minded, "The low-grade idiot is the perfectly helpless child, the middle-grade idiot the one who is able to feed himself, but who eats almost anything, the high-grade idiot, the child who eats with some discrimination, discarding that which is not food." More commonly idiots are divided roughly into two groups, the profound, or complete, and the superficial, or incomplete, and again on the basis of their disposition into apathetic and excitable (Ireland). In the first case "the defect is so profound as to involve the fundamental organic instincts, and even that of sucking is absent" (Tredgold).

Perhaps the most satisfactory classification for general purposes is on the basis of the clinical varieties and characteristics and their etiology. Such a description will apply to all degrees of deficiency. Thus Tredgold, following for the most part the clinical groups proposed by Ireland, first divides deficient into two classes, primary and secondary, according as the deficiency is due in the first instance to hereditary factors, "the results of inherent defects of the germinal plasma" and including probably about 90 per cent of the cases. In the secondary class, including about 10 per cent of the cases, "there is no marked heredity, and no inherent ability to develop, but the growth of some portion or the whole of the brain is interfered with, or arrested, by disease or other adverse environment." These terms, primary and secondary, as thus defined, are proposed as being more accurate than the more usual terms, "congenital" and "acquired."

To these classes a mixed class of cases must, as Shuttleworth and Potts point out, be recognized "in which the actual lesion supervenes upon a brain originally imperfect in development, and to such cases, occurring at a crisis of early life, has been given the name *developmental*."

The chief clinical varieties recognized are (Tredgold): (1) simple amentia corresponding to the "genetous" group of Ireland and presenting "no special distinguishing features

other than the anatomical and physiological anomalies to aments in general," and divided according to etiology into porencephalic, sclerotic, and hydrocephalic; (2) microcephalic; (3) mongolian, (4) epileptic (*q.v.*); (5) vascular, toxic, or inflammatory, again subdivided into the three classes given under (1); (6) syphilitic; (7) infantile cerebral degeneration; (8) cretinism (*q.v.*), (9) amentia due to nutritional defect; (10) amentia due to isolation or sense deprivation.

The number of persons classified as idiots depends somewhat on care and method of classification. According to Tredgold there were in England in 1906 "approximately 8654 persons corresponding to 0.25 per thousand of the entire population. The class is thus about one third as numerous as the imbeciles and comprise about 6 per cent of all amounts." As regards sex, there is a small preponderance of male idiots.

Reference should be made to the idiot savants or idiot geniuses. They furnish evidence for the specialization of mental defect. They may be gifted, for example, with unusual memory of one sort or another, — numbers in the case of some of the arithmetical prodigies, in music, art, or craftsmanship, but signally wanting in most, if not all, other respects (F. Peterson, *Idiot Savants*, in *Popular Science Monthly*, Vol. L, p. 237). For the details of methods of training that have been attempted, beginning with the early attempts of Itard (*De l'Education d'un Homme Sauvage*, 1801) and the notable work of Seguin (*Idiocy and its Treatment by the Physiological Method*, 1866, republished by Teachers College, Columbia University). The reader is referred to these writings and the appropriate chapters in the following selected bibliography.

W. F. D.

See DEFECTIVES, SCHOOLS FOR; FEEBLE-MINDED

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**IDIOSYNCRASY** -- A characteristic which marks the individual as different from his fellow.  
See ATYPICAL, GENIUS

**IDIOTS** — See IDIOCY, DEFECTIVES, SCHOOLS FOR.

**IDLENESS** — See ATTENTION; INTEREST, SCHOOL MANAGEMENT

**IDO** — See LANGUAGES, ARTIFICIAL.

**IGNATIUS OF LOYOLA**. — See JESUITS, EDUCATIONAL WORK OF.



**ILLINOIS COLLEGE, JACKSONVILLE, ILL** -- A coeducational institution founded in 1829 and chartered in 1835. Interested and influential in its foundation was the "Yale Band," consisting of seven men from Yale College, as well as the Presbyterians of the surrounding country. The institution became coeducational in 1903, when the Jacksonville Female Academy and the Illinois Conservatory of Music were merged with it. The requirements for admission are fifteen units. The college grants the degrees of A B and A M. The faculty consists of twenty-one members.

**ILLINOIS, STATE OF** -- Originally a part of the old North-West Territory. Organized as a separate territory in 1809, and admitted as the twenty-first state in 1818. It is located in the North Central Division, and has a land area of 56,000 square miles. In size, it is a little larger than New York and New Jersey combined, a little smaller than New England, and about the size of England and Wales. For administrative purposes, the state is divided into 102 counties, these in turn into townships, and these into school districts. In 1910 Illinois had a population of 5,638,591, and a density of population of 100.6 persons per square mile. About two fifths of the population of the state is in Chicago and the adjoining residential towns.

**Educational History** -- The first school of which there is any record was kept in Monroe County, near St. Louis, in 1783, and other schools were opened in neighboring counties before many years. The first schools in Cook County were opened in 1816. (See CHICAGO, CITY OF.) The first constitution in 1818 made no mention of education. The first legislation with reference to schools was in 1819, when the Legislature incorporated three academies, at Edwardsville, Carlyle, and Bellville. The charters of the Edwardsville and Carlyle academies provided for the free instruction of poor children, and, as soon as financial conditions would permit, girls were to be admitted. In 1825 the first general school law was enacted. This provided for common schools in every county, free to all white children, three to twenty-one, for the subdivision of the counties into school districts of not less than fifteen families, and for the election of three trustees for each district by the voters at a called school meeting. The trustees were to examine and hire teachers, to hold and lease property for the schools, and to make an annual statistical and financial report. The support of the schools established was to be derived from local taxation, from the income of the sixteenth section lands and funds, from an apportionment of 2 per cent of all state taxes collected, and from five sixths of the income of the state school fund. Each district was empowered to provide school buildings and equipment, and the clerk of each county commissioner's court was directed to

collect and transmit to the Secretary of State the annual school returns. No state, outside of New England, had so advanced a law, the people of Illinois were not educated up to such an advanced conception of education, the law was nullified two years later, and the state lost its chance of educational leadership in the new West. In 1827 the whole or half support of a school by taxation was made optional with the voters of each district, and no man could be taxed for schools without first obtaining his consent in writing. For the next twenty-five years little was accomplished, and church schools furnished the chief means of education for the state. Excepting for a law providing for the election of three Township Trustees and a County School Commissioner to look after the school lands, and the creation of a county school fund in 1835 by depriving teachers of one half of the public money due to them for the year and with it establishing a permanent school fund, nothing whatever with reference to education was done for ten years. In 1837 provision was made for the incorporation of townships, and for five Township Trustees instead of the three School Land Trustees, in case of incorporation. This board of five Trustees was to manage all the schools, and to report regularly to the County Commissioner of their county. Teachers were to be certificated by the Township Trustees before they could receive any public money. In 1841 the school laws were revised, and the 1827 law with regard to taxation was finally repealed. In all townships not organized under the 1837 law the previous provision, requiring three Township Trustees and a County School Land Commissioner, was reinstated, and in addition three School Directors were to be elected for each school district, under either form of township organization. These new officials were to manage the school of their district, to care for the building, to employ the teacher, and to visit the school. This cumbersome method of combined district and township administration has persisted until the present time. In 1840 and in 1843 there was legislation with reference to academies, as these were then being established in numbers. A few were chartered with the specific privilege of receiving state money on the same basis as the public schools, but this plan was never generally adopted. In 1845 instruction in the schools was required to be wholly in the English language, and the people were required to determine annually, in school meeting, whether they would tax themselves to support a school. The limit of local taxation was placed at 15 cents on the \$100 (1½ per cent). In 1848 a new state constitution was adopted, but this made no mention of education, further than to provide for the exemption of school property from taxation and to permit the Legislature to invest school districts with the power to assess and collect taxes. It was not until the constitution of 1870 that a sepa-

rate article on education was inserted. Unlike Indiana, the constitution of Illinois did not pave the way for new features in school administration, but on the contrary merely recorded what had been established previously by legislation and fully accepted by the people.

The first attempt to secure a form of supervision for the schools was made in 1845 by the designation of the Secretary of State as *ex officio* State Superintendent of Common Schools, and the County School Commissioners as *ex officio* County Superintendents of Schools. These *ex officio* County Superintendents were directed to visit and inspect schools, to examine and license teachers, and to make an annual report to the Secretary of State. The Secretary of State, in turn, was to recommend maps, charts, apparatus, and textbooks, to endeavor to reduce to a uniform system the means of supporting schools throughout the state, and to report biennially to the Governor. In 1854 this *ex officio* system was abandoned, and the separate office of State Superintendent of Public Instruction was created to be filled in 1855, and biennially thereafter, by popular election. Until an election could be held, the Governor was to appoint, and the first appointee was to report a bill to the next Legislature which should provide for a free tax-supported system of public education for all the children of the state. The proposed law was accepted by the Legislature of 1856, and marks the beginning of a real state system of schools. Up to this time private and denominational schools had occupied the field; from now on public schools developed rapidly and soon gained the ascendancy. The new law defined and enlarged the duties of the State Superintendent; retained the County School Commissioners and changed them into County School Superintendents; retained the previously established township and district school boards; permitted the establishment of district school libraries; provided for a two mill state school tax, to be added to a 6 per cent income from the school funds, and for local taxation; required a six months' term, authorized bonds for school buildings; and abolished the "rate" and made the schools free. This law is the foundation of the present system, no fundamental changes having been made since that time. During the next twenty years, the terms of the State and County Superintendents were changed to four years each; the terms of Township Trustees and District School Directors were so changed as to secure a retiring one third each year; township high schools were authorized; and special laws for city districts were framed. In 1872, 1889, and 1909, the school law was revised, but no fundamental changes were made.

In 1839 a state institution for the education of the deaf and dumb was established at Jacksonville. In 1859 an institution for the education of the blind, and in 1865 an institution

for the training of the feeble-minded were also established at the same place. In 1871 a state reform school was established at Pontiac. In 1853 the state teachers' association was formed, and in 1864 a County Superintendents' association was organized.

The new constitution of 1870 was the first to contain a mandate for the establishment and maintenance of a system of public schools. It also safeguarded all permanent school funds, prohibited aid to sectarian or denominational schools, prohibited teachers and school officers from being interested in contracts; and provided for a County Superintendent for each county. The office of State Superintendent is not mentioned in the constitution. Women were first permitted to vote at school elections in 1873. In 1874 a law was passed prohibiting the exclusion of children from any school because of race or color, this law being still in force. In 1857 the first state normal school was established at Normal, and a board of trustees, termed the State Board of Education, was created to manage the school. In 1869 a second school was established at Carbondale, and opened in 1874. In 1867 the Illinois Industrial University (now the University of Illinois) was established at Urbana. In 1869 county normal schools were authorized, and two county normal schools were at once established, one for Cook County (Chicago) and the other for Peoria County (Peoria). Two additional state normal schools were established in 1895, and a fifth such school in 1889. A child labor law was enacted in 1891, and revised in 1903. Kindergarten classes were authorized in 1895, classes for deaf children in 1897, and classes for crippled children in 1903.

An educational commission was created by the Legislature of 1907 and in 1909 reported a recodification and condensation of the existing school laws; a plan for the establishment of a State Board of Education with sufficient power to enable it to be of real educational service; a plan for County Boards of Education for each county to supervise the schools of the county; a new and graded plan for the certification of teachers, which, had it been adopted, would have given Illinois the best certifying law in the Union; a plan for making the township the unit of organization for schools, and a simplification of the present system of school organization by abolishing the District Boards of Directors; recommendations for the improvement of teachers' institutes, and a minimum salary law providing for minimum salaries of \$315 and \$385 per year for teachers holding the two grades of teachers' certificates. Only the first measure, the recodification and condensation of the existing laws, could be got through the Legislature, and the chance of finally organizing a strong and efficient state school system was lost. This Commission made a second report in 1911, but no fundamental changes were made in consequence.

**Present School System.** — As at present organized, the school system of Illinois is as follows: A State Superintendent of Public Instruction, elected by the people for four-year terms, heads the system. There is no State Board of Education, or analogous body, the so-called State Board of Education being merely a Board of Trustees for the State Normal School at Normal. The State Superintendent is required to supervise the public schools of the state, to interpret the school law, decide appeals, and advise school officers as to their duties; to advise County Superintendents as to the construction of school buildings; to grant state certificates to teachers, valid in any county, and to revoke them for cause; to visit the charitable institutions of the state; to prescribe the forms of reports; and to make a biennial report to the Governor. He may also authorize County Superintendents to procure institute instructors, remit forfeitures of the school fund for any failure on the part of districts; require school officers of all kinds to report; and may also request private institutions to make reports. But little power and few functions are assigned to the State Department, and the office is clerical rather than creative.

For each county there is a County Superintendent of Schools elected by the people for a four-year term. There are no County Boards of Education. The County Superintendent is required to look after and sell any township school lands remaining; to visit every school in his county at least once each year, to advise and assist school officers, to conduct a teachers' institute each year, examinations for teachers' certificates each quarter, and examinations for normal school and university scholarships as necessary, to examine the Township Treasurer's bond, and to make an annual examination of his books, to collect fines from the civil authorities and to deposit them to the credit of the school fund, to apportion the state and county school funds to the townships and parts of townships, and to notify the district trustees of the amount distributed, to see that an annual school census is taken by each district, and to make quarterly and annual reports of his acts and visits to the county authorities and annual reports to the State Superintendent. He is also empowered to require reports from all school officers, and to remove district officers for cause, to direct Township Treasurers in the keeping of their books, to renew teachers' certificates without examination, and to revoke them for cause, and to determine disputes among school officials.

Smaller than the county are the Congressional townships, each of which is a school township as well as a civil township. Fractional townships with less than 200 children may be consolidated with adjoining townships. For each township, three Township Trustees are elected, one each year, at the annual April

school elections, to hold office for three years each. These Township Trustees must hold semiannual meetings, must apportion the school fund *pro rata* on census to all districts, and must elect a Township Treasurer, for two-year terms, who acts *ex officio* as clerk of the township board. They may also divide the township into districts, and, on petition of the voters, change the districts or consolidate them. The Township Trustees report annually in detail to the County Superintendent, or, in case the township is cut by a county line, to the County Superintendents of both counties. The Township Treasurer has charge of all moneys; keeps all school accounts for the township and the districts, loans the principal of the township funds, makes an annual financial report to the County Superintendent, receives the taxes collected and pays all orders of the school districts, and acts as an overseer of the financial and business affairs of the district school authorities.

For each school district, within the township, the voters must elect a Board of School Directors of three members, for three-year terms, one being elected each year. The Board is required to manage the schools of the district; to determine the studies, apparatus, and textbooks of the schools, and to loan textbooks to indigents; to employ teachers, and to dismiss them for cause, to levy taxes for the support of at least a six months' school in the district, free and equally open to all, to notify the Township Treasurer of the amount levied, to appropriate funds for specific purposes, to borrow money, and to issue bonds, to make an annual report to the Township Treasurer and to the electors of the district at the annual election, and, in case the district lies partly in two townships, to report to both Treasurers. It is with these District Boards of Directors that the chief control of the schools of Illinois rests. Districts having 1000 or more inhabitants, and up to 100,000 are managed by Boards of Education, which have all of the powers granted to District Boards of Directors, and, in addition, the power to maintain schools up to ten months, to examine teachers by examinations supplemental to the county or state examinations, to buy, lease, and condemn school sites, to employ a Superintendent and a secretary, and to print an annual report and course of study. Cities of over 100,000 inhabitants, of which there is only one, are governed by a board of education of twenty-one, appointed by the mayor, and have still larger powers. (See CHICAGO, CITY OF.) Women are eligible to election to any school office, and, if properly registered, may vote at any school election.

The system of school administration in Illinois is still further complicated by the presence of high school boards. Any township, any two or more townships or districts, and any district having 2000 or more inhabitants, may form a high school district, by petition

and election. For such high school districts a high school board of five trustees must be elected. The high school district is separate and distinct from the common school district, but may levy taxes and conduct a high school in the same manner as such a district.

**School Support** — Illinois originally received 985,066 acres of land from the sixteenth section grant, made by Congress for the support of all schools. This has all been sold excepting 6375 acres. The fund produced by the sale of this land belongs to the township in which the land was located. To this has recently been added the county fund, created by the act of 1835, which amounted in 1906 to \$161,703. The combined fund now amounts to about nineteen millions, and is loaned out by the township treasurers for the benefit of the schools of their townships. The state also received 3 per cent of the sale price of government land within the state, for education, five sixths of which went to form the permanent state school fund and one sixth to the college fund. To the five sixths constituting the permanent state school fund was added \$335,592.32 from the surplus revenue of 1837, being a little more than two thirds of that received. Both funds were borrowed by the state and spent. They amount, nominally, to nearly one million dollars, upon which the state pays interest at the rate of 6 per cent. This, with a state two mill tax, constitutes the state's contribution, and in 1908 amounted to \$896,276.58, or to about 3 per cent of the cost of maintenance of the school system. The interest on the township fund, and the proceeds of fines, forfeitures, and fees, each produced about 3 per cent more. District taxation is the main support of the schools, and produced 88 per cent of the cost of maintenance in 1909. The remainder came from miscellaneous sources. Boards of directors and boards of education in all the school districts of the state, regardless of size, are permitted to levy a local tax of  $1\frac{1}{2}$  per cent on their assessed valuation for maintenance, and  $1\frac{1}{2}$  per cent for building purposes. Bonds for further sums may be voted by the people. All school money is apportioned to the counties, from the counties to the townships, and from the townships to the districts on the sole basis of the number of children under twenty-one years of age in each subdivision. The income from the township permanent fund is apportioned to the districts on the same basis.

**Educational Conditions** — The state is a rich agricultural and manufacturing state, with many railroads and much business. Notwithstanding its large city population, nearly one half of the total population yet live in country districts. Of the total population, about one fifth are foreign born, and about two per cent are negroes. In illiteracy the state had but 4.2 per cent. The educational system of the state is characterized by an excessive

development of local management and control, and little centralization in either management or support. Cook County, containing the large and wealthy city of Chicago, with its large expenditure for education and its many excellent schools, and the small, relatively inefficient, and poorly financed rural schools of the black belt of southern Illinois, stand at opposite extremes of the educational system of the state, as well as of the state itself. The 10,613 ungraded schools, with that number of teachers, are supervised by something like 40,000 school officials, not including the county superintendents.

Many districts report themselves as unable to provide a six months school within the limit of taxation allowed by law. One third of the districts were reported as without a library, and 924 of the 13,058 schoolhouses in the state are reported by the county superintendents as unsanitary and unfit. Six hundred and eighteen schools enrolled less than eleven children. The district system has been so strongly entrenched that no laws for the consolidation of schools and the transportation of pupils have so far been enacted, though strongly advocated. Sixty-six schools in the state report kindergartens, 134 as having manual training, 70 as having domestic science, 102 as having special teachers of drawing, 185 as having special teachers of music, and five cities provide day schools for the oral instruction of the deaf. These extra educational advantages are confined almost entirely to the larger cities. The private and parochial schools of the state enrolled 16.6 per cent of the public school enrollment, and in Chicago 35 per cent.

**Teachers and Training.** — Of the teachers employed 53 per cent were college graduates, 7 per cent were normal school graduates; 21.5 per cent had attended some normal school, 14 per cent had not had the equivalent of a high school education; and 10.5 per cent were beginners. Examinations for teachers' certificates are held quarterly in the counties, and two grades of certificates are granted, valid for one and two years respectively and in the county where issued. The standards for these are low. Special certificates may be granted in almost any subject. State certificates, valid in any county, may be issued on examination by the State Superintendent. Cities may superimpose additional examinations for city certificates. As a means of improving teachers in service, an annual county institute of at least five days must be held by each county superintendent, which is free only to the holders of teachers' certificates. For the training of new teachers, the state now maintains five normal schools, all of which in 1910 maintained summer sessions for teachers in service. The city of Chicago also maintains a city normal college, requiring high school graduation for entrance. Entrance to the state normal schools is from the grammar schools,

and the course is four years in length. For high school graduates, a two years' course is arranged, and a one year's course is also arranged for those who must teach after one year. In 1907 the legislature authorized the four then existing normal schools to arrange for a degree course of two years of graduate study, leading to the degree of Bachelor of Education. College graduates may obtain the degree in one year, and three eighths of the work may be done *in absentia*.

**Secondary Education.** — Any school district having a population of 2000 may establish its own high school and elect a high school board of education to manage the school. City boards of education in cities of 1000 or over, may establish high schools as a part of the graded school system of the cities. Any township may by petition and election establish a township high school, and two or more

In addition to professional departments maintained by the larger of the above institutions, there are also five independent theological schools, four independent law schools, and five independent medical schools, nearly all being located in Chicago.

**Special Institutions** — The state maintains the following special institutions for the education of defectives: the Illinois School for the Blind, at Jacksonville, the Illinois School for the Deaf, at Jacksonville, the School of the Soldiers' Orphans Home, at Normal, the State Training School (Reformatory) for Girls, at Geneva; the Illinois State Reformatory for Boys, at Pontiac. E P C

#### References:—

*Bien Repts of the Supt Publ Instr*, 1854 to date  
*Constitutions of Illinois*, 1818, 1848, and 1870  
*The School Law of Illinois*, 1909 Revision

NAME	LOCATION	OPENED	CONTROL	FOR
Hedding College . . . . .	Abingdon	1853	M E	Both sexes
Illinois Wesleyan University . . . . .	Bloomington	1850	M E	Both sexes
Blackburn College . . . . .	Carlinville	1895	Presbyterian	Both sexes
Carthage College . . . . .	Carthage	1870	Lutheran	Both sexes
Armour Institute of Technology . . . . .	Chicago	1892	Non-sectarian	Men
Chicago University . . . . .	Chicago	1892	Non-sectarian	Both sexes
Loyola University . . . . .	Chicago	1870	R C	Both sexes
De Paul University . . . . .	Chicago	1908	R C	Men
James Milliken University . . . . .	Decatur	1903	Presbyterian	Both sexes
Austin College . . . . .	Effingham	1891	Non-sectarian	Both sexes
Eureka College . . . . .	Eureka	1855	Christian	Both sexes
Northwestern University . . . . .	Evanston	1851	M E	Both sexes
Ewing College . . . . .	Ewing	1867	Baptist	Both sexes
Knox College . . . . .	Galesburg	1837	Non-sectarian	Both sexes
Lombard College . . . . .	Galesburg	1852		Both sexes
Lake Forest College . . . . .	Lake Forest	1876	Non-sectarian	Both sexes
McKendree College . . . . .	Lebanon	1828	M E	Both sexes
Lincoln College . . . . .	Lincoln	1865	Presbyterian	Both sexes
Monmouth College . . . . .	Monmouth	1856	Un Presbyterian	Both sexes
Northwestern College . . . . .	Naperville	1861	Evangel Assoc	Both sexes
St Bede College . . . . .	Penn	1891	R C	Men
Rockford College . . . . .	Rockford	1849	Non-sectarian	Women
Augustana College . . . . .	Rock Island	1860	Lutheran	Both sexes
Concordia College . . . . .	Springfield	1856	Evangel Luth	Men
St Joseph's College . . . . .	Teutopolis	1862	R C	Men
Shurtleff College . . . . .	Upper Alton	1827	Baptist	Both sexes
University of Illinois . . . . .	Urbana	1867	Non-sectarian	Both sexes
Westfield College . . . . .	Westfield	1865	United Brethren	Both sexes
Wheaton College . . . . .	Wheaton	1860	Congregational	Both sexes

townships, or districts, may unite to form a union high school. On the petition of fifty voters in any high school district, the question of whether or not a manual training department shall be established by the trustees must be submitted for a vote, and if a majority votes in favor of it the trustees must establish such a department. These laws have resulted in the formation of a large number of high schools, there being about 700 in the state at the present time.

**Higher and Technical Education** — The University of Illinois (*q v.*) founded in 1867 as the Illinois Industrial University, and located at Urbana, stands at the head of the public school system of the state. It is one of the largest of our state universities, and offers a wide range of instruction. The state also contains a large number of private institutions of learning.

#### ILLINOIS, UNIVERSITY OF, URBANA,

**ILL** — An institution founded by the state as a land grant college in pursuance of the act of Congress of 1862. The institution was incorporated in 1867 as the Illinois Industrial University, and opened to students in 1868. At first labor on the farm was made compulsory, but was soon discontinued. In 1870 shop instruction in the mechanics was introduced for the first time in an American university. Women were admitted in the same year. The university received legislative authority to grant degrees and diplomas in 1877, and in 1885 the present title was adopted. In 1896 the Chicago College of Pharmacy became the School of Pharmacy of the University of Illinois, and in 1897 a school of law, known since 1900 as the College of Law, was opened. In 1897 the College of Physicians and Surgeons

of Chicago became the College of Medicine of the University of Illinois. In the same year the State Library School was opened at the university. In 1901 the School, now the College, of Dentistry, was organized. The School of Railway Engineering and Administration was established in 1907. Courses in business administration had already been introduced in 1900. The government of the institution is in the hands of a board of nine trustees elected for six-year terms, and the Governor of the state, the President of the State Board of Agriculture, and the Superintendent of Public Instruction *ex officio*. Students are admitted by certificate from an accredited high school or by examination. The entrance requirements are fifteen units. In addition to the schools mentioned above, a summer session and agricultural experimental station are maintained. The enrollment of students in 1909-1910 was 5118, distributed as follows: graduates, 283, arts, 880, science, 297, engineering, 1303, agriculture, 628, library, 31, music, 61, academy, 334 (discontinued, 1911), summer session, 313, law, 193, medicine, 526, dentistry, 108, pharmacy, 174. The faculty at Urbana includes 140 members of professorial grade and 368 junior instructors and assistants. Edmund James James, Ph D, LL D, is the president.

**ILLINOIS WESLEYAN UNIVERSITY, BLOOMINGTON, ILL.** — A coeducational institution founded in 1850 and comprising four departments, an academy, college of liberal arts, college of law, college of home economics, school of fine arts, and school of music and oratory. The requirements of admission are fifteen units. The four courses, classical, Latin-scientific, scientific, and English, lead to degrees of A B and B S. A high school education is required of candidates who wish to enter the college of law, which confers the degree of Bachelor of Laws at the end of a three years' course. Of the 737 students enrolled in 1910-1911, 241 were taking work in the college of liberal arts. The faculty consists of 42 members.

**ILLITERACY** — A term used to denote the inability to read and write in any language, and applied to those ten years of age or over. In a few foreign countries, and in a very few American states, statistics are also collected which segregate those unable to read the language of the country from the literate, and as an intermediate class. Classified statistics as to illiteracy have been collected by the United States Census decennially since 1840, and similar statistics are compiled and published at intervals by most other nations. The ability merely to read and write represents a very elementary test, and many who are able to pass it are still illiterate in almost every other than the technical sense of the term. Nevertheless, the ability to read and write distinguishes those who may learn and improve their minds from

papers and books from those who are shut off from this source of knowledge. Thus, the percentage of illiteracy to be found in a state or nation is to a very large degree an index of the extent to which the advantages of elementary education have been provided for the people by the government.

Illiterate people should be classified as to age, sex, nationality, and race to exhibit the existing conditions in any intelligent manner. Illiteracy under the age of ten is generally neglected in all educational statistics, so that little can be told, except in cities where a good school census is taken, as to the degree to which compulsory education laws are enforced during the early school period. The next measure of illiteracy, after the total number ten years of age or over, is usually the percentage of the voting population which is illiterate. This is higher than the former, as it includes a larger percentage of older persons. Statistics for those who have passed certain age periods, such as forty or fifty years of age, show a still further increase in the percentage of illiteracy. Classified by sex, the illiteracy of females nearly always exceeds that for the males of the same age, race, or nationality, except that it is less in the United States for the age period of ten to twenty-four years. In some Catholic countries, and in all Mohammedan and Asiatic countries, the illiteracy of the females is markedly higher than among the males. In Turkey, India, and China we find a high illiteracy among the males, and an almost complete illiteracy among the females.

The least illiteracy to-day is to be found among the people in the countries to the north and west of Europe, and of Teutonic or mixed Teutonic stock. It was in these countries that the Protestant revolt made its greatest headway, and the ability to read the word of God and to participate in the church services were regarded as of great importance for salvation. The lowest percentage of illiteracy to-day is found among the Teutonic nations (the German states, Sweden, Norway, Denmark, and Finland), the Mixed Teutonic nations (Switzerland, Scotland, the Netherlands, and England), and in France. As we go to the south and east of Europe, the percentage of illiteracy increases rapidly, reaching its highest points in Spain and Portugal in the one direction, and in Russia, Serbia, and Roumania in the other. Greece, Italy, and the different states of the Austro-Hungarian Empire also have a high percentage of illiteracy.

Various methods are, however, employed to discover the number of illiterates in different countries. In Great Britain it is usual to compile statistics of illiteracy from the number of those who sign the marriage registers by mark; a supplementary test is also afforded by taking tests among the army and navy recruits. On the Continent the statistics of illiteracy are drawn mainly from the conscripts for the army.

## ILLITERACY

In both tests the statistics are of course true only of people at a certain age. In the United States the census accepts a declaration of each person as to his or her literacy. How varying the basis of calculation is shown by the follow-

## ILLITERACY

living in the rural districts of some of the older states; the very high percentage of illiteracy among the colored race in the Southern states, the marked illiteracy among the Mexican element in the southwest, the great influx of

COUNTRY	P. C. ILLITERATE	BASIS	YEAR	COUNTRY	P. C. ILLITERATE	BASIS	YEAR
EUROPE				AMERICA — <i>Cont</i>			
Austria	26.2	Population over 10 yr	1900	British Honduras	68.8	All ages	1901
Belgium	18.6	Population over 10 yr	1900	Canada	17.1	Population over 5 yr	1901
Belgium	8.5	Army recruits	1908	Chile	49.9	Population over 10 yr	1907
Bulgaria	65.5	Population over 10 yr	1905	Costa Rica	80.2	All ages	1892
Bulgaria	58.4	Marriages	1901-1910	Cuba	56.8	Population over 10 yr	1899
Denmark	0.2	Army recruits	1907	Guatemala	92.7	All ages	1893
England and Wales	1.8	Marriages	1901-1910	Mexico	75.3	Population over 11 yr	1900
Finland <sup>1</sup>	1.5	Population over 15 yr	1900	Newfoundland	45.8	Population over 5 yr	1901
Finland	4.9	Army recruits	1899	Peru	86.5	All ages	1876
France	14.1	Population over 10 yr	1906	Porto Rico	79.6	Population over 10 yr	1899
France	3.5	Army recruits	1904	AUSTRALIA			
France	4.1	Marriages	1901-1910	New South Wales <sup>4</sup>	4.9	Population over 10 yr	1901
German Empire	0.03	Army recruits	1905	New South Wales	1.0	Marriages	1901-1910
Great Britain	13.52	Army recruits	1907	New Zealand <sup>5</sup>	1.7	Population over 10 yr	1906
Greece <sup>1</sup>	57.2	Population over 10 yr	1907	New Zealand	0.3	Marriages	1901-1910
Greece	30.0	Army recruits	No date	Queensland <sup>6</sup>	10.6	Population over 10 yr	1901
Hungary <sup>2</sup>	40.9	Population over 12 yr	1900	Queensland	2.0	Marriages	1901-1910
Ireland	17.4	Population over 10 yr	1901	South Australia <sup>4</sup>	4.5	Population over 10 yr	1901
Ireland	8.1	Marriages	1901-1910	South Australia	0.8	Marriages	1901-1910
Italy	48.2	Population over 10 yr	1901	Tasmania	6.7	Population over 10 yr	1901
Italy	30.6	Army recruits	1905	Tasmania	2.4	Marriages	1901-1910
Italy	38.7	Marriages	1901-1910	Victoria <sup>7</sup>	3.2	Population over 10 yr	1901
Maltese Islands <sup>3</sup>	57.5	Population over 5 yr	1901	Victoria	0.4	Marriages	1901-1910
Netherlands	1.4	Army recruits	1908	Western Australia <sup>8</sup>	4.4	Population over 10 yr	1901
Netherlands (The)	2.2	Marriages	1901-1910	Western Australia	0.6	Marriages	1901-10
Poland	59.3	Population over 10 yr	1897	ASIA AND OCEANIA			
Portugal	73.4	Population over 10 yr	1900	Ceylon (All races)	78.3	All ages	1901
Prussia	0.06	Army recruits	1903	Ceylon (European race)	11.9	All ages	1901
Prussia	0.4	Marriages	1901-1910	Ceylon (Other than European)	78.4	All ages	1901
Roumania	61.2	Population over 7 yr	1909	India	92.5	Population over 10 yr	1901
Roumania	61.5	Army recruits	1908	Philippine Islands <sup>9</sup>	55.5	Population over 10 yr	1903
Russia	70.0	Population over 10 yr	1897	Russia <sup>10</sup>	87.3	Population over 10 yr	1897
Russia	61.7	Army recruits	1894	Hawaii	36.3	Population over 6 yr	1896
Scotland	1.6	Marriages	1901-1910	AFRICA			
Servia	78.9	Population over 11 yr	1900	Algeria	7.7	Army recruits	1909
Servia	36.7	Marriages	1901-1910	Cape of Good Hope (All races)	65.8	Population over 10 yr	1904
Spain	58.7	Population over 10 yr	1900	Cape of Good Hope (European race)	6.2	Population over 10 yr	1904
Sweden	0.3	Army recruits	1907	Cape of Good Hope (Other than European race)	86.2	Population over 10 yr	1904
Switzerland	0.5	Army recruits	1905	Egypt <sup>1</sup>	92.7	Population over 10 yr	1907
United Kingdom	1.0	Army recruits	1903-04	Natal (European race)	2.0	Population over 10 yr	1904
AMERICA				Orange River Colony (European race)	7.3	Population over 10 yr	1904
Continental U. S., total population	7.7	Population over 10 yr	1910	Orange River Colony (Aborigines)	90.6	Population over 5 yr	1904
Native white, native parents	5.7	Population over 10 yr	1910	Orange River Colony (Mixed and other colored)	85.9	Population over 5 yr	1904
Native white, foreign parents	1.6	Population over 10 yr	1910	Transvaal (European race)	3.9	Population over 10 yr	1904
Foreign born white	12.8	Population over 10 yr	1910				
Negro	30.5	Population over 10 yr	1910				
Indian	56.2	Population over 10 yr	1900				
Chinese	29.0	Population over 10 yr	1900				
Japanese	18.2	Population over 10 yr	1900				
Argentina	54.4	Population over 6 yr	1895				
Bolivia	82.9	Population over 7 yr	1900				
Brazil	85.2	All ages	1890				

<sup>1</sup> No definition of "illiterate" is given in the census report

<sup>2</sup> Including Croatia and Slavonia

<sup>3</sup> Native Maltese population

<sup>4</sup> Excluding aborigines

<sup>5</sup> Excluding Chinese

<sup>6</sup> Excluding nomadic aborigines

<sup>7</sup> Including Chinese and aborigines

<sup>8</sup> Excluding full-blooded aborigines

<sup>9</sup> Civilized population

<sup>10</sup> Caucasians, Siberians, and Central Asia

ing table, in which the term "illiterate" includes all persons unable to write their own language, except in the case of countries marked with an asterisk, where illiteracy is based on inability to read:—

In the United States a very determined campaign has been waged against illiteracy during the past thirty years. The relatively high percentage of illiteracy among the native whites

foreigners into the cities and states of the North Atlantic and North Central groups of states, and particularly the rapid shift in immigration from the north and west of Europe to the south and east, after about 1880; and the increasing state and national consciousness that an illiterate population is a national danger, — all alike have tended to stimulate the American states in their efforts

to abolish illiteracy from among them. Great headway has been made in the Southern states not only in reducing the illiteracy among the colored population, but among the poor native whites as well. The history of education in the different Southern states (see articles on the different Southern State School Systems, ALABAMA, ARKANSAS, FLORIDA, etc.) during the past thirty years is in large part the story of a battle to reduce the illiteracy of their people, to provide elementary educational advantages for all, and to enact and enforce some form of compulsory education and child-labor laws. Arizona and New Mexico have also made commendable progress in reducing the illiteracy of the Mexican portion of their populations. (See articles on the school systems in these states.) In the states of the North Atlantic and the North Central groups of states the efforts to reduce illiteracy have been seriously interfered with by the great immigration of foreign elements, coming largely from countries where illiteracy is high and where primary education is but poorly provided for. The French Canadians from Canada have caused much concern to the mill towns of New England. Similarly the great influx of South Italians, Greeks, and Russian and Polish Jews into the cities, and of Magyars, Slovaks, Lithuanians, Poles, and other nationalities from the south and east of Europe into the mining regions and manufacturing towns of the Northern and Eastern states, have caused much concern there. Schools have been increased in numbers and improved, educational advantages have been multiplied, and in cases extended to the parents also, and compulsory education and child-labor laws have been enacted, revised, and enforced. The results of all of these efforts, in the different parts of the country, has been a marked reduction in the percentage of illiteracy, considered as a total or by states as wholes. But owing to the growth of the country the total number of illiterates has a little more than held its own during the past forty years. (For full detailed figures, by states and for the decennial periods, as well as by race, sex, and ages, see the *Reports of the United States Census*. The Thirteenth Census, for 1910, gives the latest figures available.)

An analysis of the figures contained in these reports gives the following results. In thirty years the percentage of illiterates, ten years of age or over, has been cut in two (17.0 per cent in 1880; 13.3 per cent in 1890, 10.7 per cent in 1900; and 7.7 per cent in 1910). The percentage of illiteracy among the female sex is still slightly greater than for the males, though it has been reduced much more rapidly. Among persons between the ages of ten and twenty-five, however, the percentage of illiteracy among the females is less than among the males. The percentage of illiteracy among the negroes is still high (30.5 per cent in 1910), though this has been more than cut in half during the past

thirty years. The large percentage of illiterates among the colored race in a few of the old slave states raises the average for the race above what it would be for most of the Southern states. Among the white population alone, the percentage of illiteracy has been nearly cut in two also during the past thirty years (9.4 per cent in 1880; 7.7 per cent in 1890, 6.2 per cent in 1900; and 4.9 per cent in 1910). This high average for the country as a whole is the result of adding in the large number of illiterates of foreign birth (native-born whites, 3.0 per cent; foreign-born whites, 12.8 per cent), just as the large number of illiterates among the native-born population is the result of adding in the illiterates of the colored race.

Illiteracy among children has decreased greatly everywhere, and illiteracy is less prevalent in the cities of 25,000 population and over, despite their large foreign-born element, than in the small towns and country districts. The percentage of illiterates among the children of native-born parents is, strange to say, much greater than among the native-born children of foreign-born parents. In the Southern states there are relatively few foreign-born people, and the problem of illiteracy is among the negroes and poor whites. In the Northern and Eastern states there are relatively few negroes, but a large foreign-born population, so that the problem there is among the foreign-born in the cities and the native whites of the rural districts. In the western part of the North Central Division the foreign-born is largely from the north and west of Europe and largely Teutonic in stock, the rural schools are good, and the percentage of illiteracy is the lowest to be found in the United States. Kansas, Nebraska, Iowa, Minnesota, and the two Dakotas are situated in this group, and all have a very low percentage of illiteracy. In the mountain and Western states, if we omit a relatively small number of Indians, the illiteracy is almost entirely among a foreign-born mining and agricultural element in the population.

One significant thing about the tables published, when analyzed closely by states, is the growing illiteracy in the villages and rural sections of a number of the states, particularly the older states. This is partly due to the incoming of a cheaper foreign-born agricultural laborer, and in part to the inefficiency of the rural school and the lack of the enforcement of compulsory education laws by country people. The first is one which is likely to cause the illiteracy of country districts to increase rapidly during the next few decades. As scientific agriculture, carried on on both an extensive and an intensive scale, takes the place of the old style of farming, the size of farms and the number of large farms worked by a scientific agricultural superintendent and cheap foreign labor may both be expected to increase. The problem of education in rural communities will become more and more acute, and the need of a



reorganization of rural education along rational administrative lines will be increasingly felt. (See article on RURAL SCHOOL PROBLEM)

The idea of free schools for all, supported by the taxation of all, is an expression of the fear of an ignorant citizenship. As the problems of government increase in number and complexity, and as the franchise is extended to new peoples and in new directions, the national peril of an ignorant and an untrained citizenship is felt with increasing force. The good of the community and of the State, as much as of the individual, demand as high a general level of intelligence on the part of the masses as is within reasonable attainment, and nowhere is this more forcibly pushed upon the attention of statesmen than in a democracy such as our own. The deeper this conception takes hold of the national consciousness, the more marked will be the tendency not only to stamp out illiteracy in the usual technical sense of the term, but to insist upon the attainment of at least the rudiments of a common-school education before the child is allowed to leave the school and begin work. The recent tendency of our American states to revise their compulsory education laws so as to require attendance at school every day that the schools are in session, the extension of the compulsory education period from fourteen to sixteen, and the Massachusetts insistence upon the ability to undertake the work of the fourth school grade to be considered able to read and write, are all tendencies in this direction. The German and French requirements of the completion of certain grades of work before leaving school are similar illustrations of this tendency.

E P C

See also articles on ATTENDANCE, COMPULSORY; CHILD LABOR; CHILDHOOD, LEGISLATION FOR THE CONSERVATION AND PROTECTION OF, and LEAVING CERTIFICATES. For the last available statutes on illiteracy in any country or state, see the article on the school system of that country or state.

**ILLUSION** — In many cases the process of perception is so disturbed by the conditions under which it takes place that the resulting image or mental process is not adequate as a representative of the external object from which the percept was derived. Thus if for any reason one sees an object as very small when he should see it as large, an illusion is said to arise. Such an illusion occurs when we look upon human beings from a great height. If we looked at them at the same distance in a horizontal direction, we should see them as larger than when we look down upon them from above. The contrast between two such cases of perception makes it clear that one or the other of these percepts is not adequate to represent the external object. Simple geometrical figures illustrate very clearly what is meant by an illusion. Figure I shows two horizontal lines which are of exactly the same

length. The additional oblique lines, however, so disturb the process of perception that we are

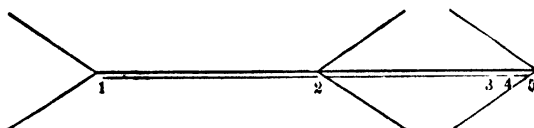


Fig I

unable to recognize the two horizontal lines as equal to each other. In Figure II the long lines are parallel to each other, but the intercepting oblique lines so disturb perception

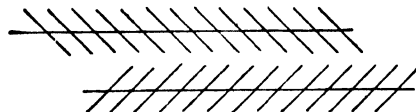


Fig II

that we see the long lines as converging and diverging, not as parallel.

The reason why these illusions persist in adult life seems to be that there is no motive which would lead us to overcome them. Indeed, the motive is in some cases very strong for the maintenance of certain regular, typical forms of interpretation which are illusory. Thus, it is an illusion when we see a reflected object behind the mirror, but this illusion is due to the general perceptual habit of recognizing all objects as placed in the direction from which light comes, and it would be disastrous to our mental life to overcome this natural perceptual habit. The presence of the illusions is not a large consideration in educational discussions so long as we deal with the practical side of school work. For purposes of scientific study of perception, however, illusions lend themselves as very helpful instances of complexity which are capable of ready analysis and experimental study.

C H J

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**ILLUSTRATIVE DRAWING** — In the kindergarten and the primary grades drawing is used as a means of expression, paralleling speech, dramatization, song, and play, and preceding written composition. The drawing is kept spontaneous both in selection of fact and invention of form, no direct method being used to improve the form and technique chosen by the child to illustrate, exposit, or narrate his meaning. Later when he begins to write, the making of illustrative pictures accompanies his written compositions. This spontaneous drawing frequently goes under the term "illustrative drawing."

H. S.

See DRAWING.

## IMAGE

**IMAGE.** — A term used in general to describe the experience which one has when he remembers anything. Primarily the term is applied to visual memory. Thus one has the image of a face which he recognized yesterday. Secondly the term is carried over to refer to auditory and tactual memories and all other recalled experiences. Thus one is said to have an auditory image of the word which he heard an hour ago. Images have different degrees of vividness, completeness, and assertiveness. Thus certain individuals see clear visual reproductions whenever they try to recall their past visual experiences, others have very dim reproductions. An image may lack certain of the elements which the original percept contained. Thus one recalls a building, but is quite unable to supply in his image the details of architectural devices which he originally saw. Finally, one may have an image which haunts him and demands his attention, while on the other hand he may be able easily to set aside the experience as a mere trivial memory. In ordinary usage the term "image" is broadly synonymous with the term "idea." More strictly employed, the image is only one phase of the idea, namely, the content phase, whereas the term "idea" (*q.v.*) refers to the general processes of comparison present in all complex thought.

C. H. J.

See **GENERIC IMAGE**; **IMAGINATIONS**; **MEMORY**.

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**IMAGELESS THOUGHT** — The use of this expression has lately arisen in psychology in protest against the doctrine that thinking and all conscious processes are composed entirely of sensory images, along with present sensations. Thought was regarded as a combination or sequence of pictures, either visible to the "inner eye," or audible to the inner ear, etc., and the practical inference was sometimes drawn that the way to develop thinking power is to cultivate the powers of imagery. When Galton found that good thinkers were often deficient in powers of imagery, at least of visual imagery, doubt was thrown on the image doctrine. It had to be admitted that the image was often a very inadequate picture of the object of thought. The conception of *meaning* (*q.v.*) now arose, an image, however imperfect as a picture, might symbolize or stand for a thing or fact, and serve the purpose of thought as well as a complete and highly colored mental picture. The meaning was the important thing from a practical point of view, but was supposed to be very elusive in consciousness, so that introspection would show only the images with vague halos of meaning and intangible feelings of the tendencies of the image. In consciousness the image was still supposed to be the prominent

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feature. But recent experimental studies, in which the effort has been made to describe what is present in mind during actual thinking processes, have found that oftentimes the meaning is clear and prominent in consciousness, while the image, if present at all, is so elusive as to escape detection. Such "imageless thought" is now an admitted fact in some individuals. Whether it is an ultimate fact, as some contend, or whether it is to be explained away as due to a blending of many obscure images, or whether it is composed of sensations of muscular tension and movement (which are sure to accompany any thinking activity), or whether it is a nearly unconscious and automatic process, resulting from previous training in thinking on a given subject, — all these alternatives are still open, as the psychology of thinking stands to-day. From the practical point of view, it would certainly seem that the cultivation of imagery — however valuable this may be on its own account — is not to be regarded as essential to the development of powers of thinking. What is essential is the ability to grasp meanings and relations, and this may best be made the direct object in view — success being tested by ability to handle meanings and relations rather than by ability to handle images.

R. S. W.

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**IMAGERY.** — See **IMAGE**, **IMAGELESS THOUGHT**, **IMAGINATION**; **MEMORY**, also **EYE-AND EAR-MINDEDNESS**.

**IMAGINARY NUMBERS.** — See **COMPLEX NUMBERS**.

**IMAGINATION.** — This term is employed to indicate that the content of consciousness is made up of images derived from past experiences. In view of the fact that human conscious experience deals very largely with visual content, the word "image" is appropriate in the description of most processes. Imagination is related to memory. In memory the image is an exact reproduction of the earlier experience, or in so far as it departs from the exact reproduction of the earlier experience, it is defective. On the other hand, in imagination memory images are more or less readjusted. Elements of a number of different memories may be brought together in a single new image. Thus, one may construct an imaginary scene in which a number of different actors are brought together. These different actors may each of them be remembered characters, but the whole scene will be an imaginary scene in the sense that these particular persons were never presented simultaneously in experience.

The power which an individual has of thus rearranging his ideas is undoubtedly a very late

product in animal evolution. The higher forms of animal life undoubtedly have memory images, but they do not have the power of working over these memory images into new combinations. The behavior of animals goes to indicate that they never succeed in thinking of new combinations which they may work out in the environment. New combinations in the environment, as appear in the human construction of machinery, indicate a very high development of the power of imagination. For these recombinations of material objects must be anticipated by some recombinations of ideas in the mind. The earlier stages of imagination appear in mythology. Here primitive man, impelled by his desire to explain nature, brought together ideas which are not presented in this combination in his actual experience. Such primitive imagination may be described as mental play. The myths which resulted were of importance not merely in satisfying the momentary demand for an explanation of given phenomena, but they also cultivated the power of mental recombination and furnished the experience out of which grew the principles by which the products of imagination could be criticized, for as soon as primitive man began to consider explanatory systems of ideas he found himself in conflict with others who had made similar efforts to imagine explanations, and each thinker was thus impelled to work out these combinations of ideas which would most validly represent the external conditions. He ultimately became critical of his own imaginations, and abandoned the mythical explanation for a more scientific investigation of the facts. This scientific investigation required, no less than the earlier mythological explanation, a recombination of ideas. But this recombination of ideas was undertaken more critically than the primitive imaginations.

There grew up as a result of this more critical type of intellectual effort what is known as scientific imagination. The scientist has no hesitation in combining ideas in a form which is not immediately suggested by direct observation. Thus in modern physics, light is explained as a system of vibrations and is usually illustrated in classroom work by various gross forms of wave motion which are explained to the student to be representations which he may use in constructing an imaginary picture of what actually goes on when light travels through space. The student is warned during such demonstrations that the pictures which are furnished to him are not exact representations of light vibrations, but merely material which he may use in constructive thinking.

The importance of such constructive thinking for human mental life is unlimited. As soon as man learned to recombine his ideas through imagination, he gained a power over his external environment which he could not have so long as his images were merely reproductions of past experiences. He could now bring together,

first in thought and afterwards in a practical way, elements of his experience which nature would never bring together. He could plan a complete transformation of his surroundings. He could lay out a plan reaching into the future and involving combinations that no individual has ever seen.

Children are sometimes said to be more imaginative than adults. The statement in this unqualified form is not justified by a study of mental development. Mental development progresses in the direction of more and more active recombinations of experiences. Greater activity in this case does not mean that the individual is likely in the later stage of mental life to make more fantastic combinations of experiences. For example, the adult who is acquainted with the laws of zoology cannot imagine a dragon with the same confidence that a child imagines a dragon breathing fire. The adult is limited in his possibilities of imagination because he knows that animal tissue would be injured by contact with fire. In this sense, therefore, his imagination is restricted by his larger experiences. On the other hand, the adult is capable within the limits of his knowledge of physics and chemistry of thinking of more combinations than the child could possibly imagine. He may work out the mechanical principles of physics in a great variety of different kinds of imagery. He has freedom, therefore, to make mental combinations according to certain laws of experience. Indeed, he may for purposes of fiction abandon some of the rigid laws of physics which he knows. He may for example think of various types of flying machines which he knows could not be actually constructed. When such fantastic imaginations are indulged in by adults, they give pleasure and amusement, but they do not attract the same type of belief that they do in young children. The principles of criticism here operate to protect the adult from any serious consideration of his fancies. The term "fancy" is used to mark off these imaginations which are free and amusing, but are not undertaken for serious practical purposes. In the child there is a confusion between fancies and serious imaginings, because the child is not supplied with the canons of criticism which the adult possesses.

Adult imaginations are accordingly more critical, while they are at the same time more numerous and more varied in type. Imaginations may be classified from various points of view. Literary imagination is that type of imagination in which combinations of characteristics and events are worked out for purposes of entertainment or instruction. Scientific imagination is that type of imagination in which the forces of nature are thought of for purposes of explaining phenomena. Mechanical imagination is that type of imagination which is exhibited by the inventor.

The cultivation of the imagination is undoubt-

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edly an important part of the work of the school. There is danger in school instruction that the child's efforts to make combinations of ideas will be unduly suppressed by the critical teacher. The child whose combinations of ideas are thus suppressed is likely to lose the tendency which he naturally exhibits, because he will regard criticisms as unfavorable to all activity of the imagination. The skillful teacher should lead the child to recognize the value of constructive, critical imagination as distinguished from mere fancy. There should be no abatement of the power to recombine ideas in the forms other than those which are dictated by actual experience, but there should be a gradual increase in the critical power which the child exhibits in the examination and classification of his own imaginations. Where the child shows a disposition to use only one type of mental imagery, he should be encouraged to broaden the scope of his imagination. (See EYE- AND EAR-MINDEDNESS.) The practical interest which the individual attempts to work out constitutes a strong incentive for the cultivation of imagination, for whenever a person is trained to attack intelligently a new situation, he will naturally fall into the way of planning beforehand for this situation. Planning in advance is always a form of imagination.

C. H. J.

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**IMBECILES, EDUCATION OF** — See DEFECTIVES, SCHOOLS FOR; IDIOCY.

**IMBECILITY.** — A term used to describe a degree of mental deficiency severer than that of the feeble-minded (*q.v.*), but superior to that of the idiot (*q.v.*). According to the definition accepted by the British Royal Commission on the care and control of the feeble-minded, imbeciles are "persons who are capable of earning a living under favorable circumstances, but are incapable from mental defect existing from birth or from an early age (*a*) of competing on equal terms with their normal fellows; or (*b*) of managing themselves and their affairs with ordinary prudence."

From the institutional standpoint the group ranges from the child "who plays a little and tries to help but can do nothing alone, to those who can do simple tasks of short duration, such as washing dishes, scrubbing floors, or sweeping" (Goddard). Because of the frequency of moral weakness and deficiency among imbeciles, they are commonly grouped also according to the degree of moral sense, as moral imbeciles of high, middle, or low grade. See IDIOCY.

Tredgold estimates that the number of imbeciles (in England) corresponds to 0.73 per thousand of the population, being about "half as numerous as the adult feeble-minded,

## IMITATION

and about three times as numerous as idiots." There is a slight preponderance of the male sex.  
W. F. D.

See DEFECTIVES, SCHOOLS FOR

### Reference: —

See under DEFECTIVES and IDIOCY.

**IMITATION.** — The term is used in ordinary language to designate any repetition of any act or thought which has been noted by an observer. Thus, one imitates the facial expression of another, or his mode of speech. The term has been brought into prominence in scientific discussions through the work of Gabriel Tarde, who in his *Les Lois de l'Imitation* points out that imitation is a fundamental fact underlying all social development. The customs of society are imitated from generation to generation. The fashions of the day are imitated by large groups of people without any consciousness of the social solidarity which is derived from this common mode of behavior. There is developed through these various forms of imitation a body of experiences which is common to all of the members of a given social group. In complex society the various imitations which tend to set themselves up are frequently found to be in conflict, thus the tendency toward elaborate fashions in dress is constantly limited by the counter-tendency toward simpler fashions. The conflict of tendencies leads to individual variation from the example offered at any given time, and, as a result, there are new examples to be followed. Complex social examples are thus products of conflict.

This general doctrine of Tarde has been elaborated by a number of recent writers. Royce calls attention to the fundamental importance of imitation as a means of social inheritance. The same doctrine is taken up by Baldwin in his *Mental Development in the Child and Race*, and in *Social and Ethical Interpretations*. With these later writers, imitation takes on a significance which is somewhat technical and broader than the significance which it has either with Tarde or in the ordinary use of the term. Baldwin uses the term to cover that case in which an individual repeats an act because he has himself gone through the act. In such a case, one imitates himself, and sets up what Baldwin terms a circular reaction. The principle of imitation is thus introduced into individual psychology as well as into general social psychology, and the relation between the individual's acts and his own imagery is brought under the same general principle as the individual's responses to his social environment. The term "imitation" in this broader sense is closely related to the processes which are described under SYMPATHY (*q.v.*).

The term "social heredity" has very frequently been used in connection with all of the processes here under discussion. Society

tends to perpetuate itself in the new individual in a fashion analogous to that in which the physical characteristics of the earlier generation tend to perpetuate themselves in the physical characteristics of the new generation. Since modes of behavior, such as acts of courtesy, cannot be transmitted through physical structure, they would tend to lapse if they were not maintained through imitation from generation to generation. Thus, imitation gives uniformity to social practices, and consequently is to be treated as a form of supplementary inheritance extending beyond physical inheritance, and making effective the established forms of social practice. C. H. J.

See SYMPATHY; SOCIAL HEREDITY

**Imitation in Education.** — Large reliance upon imitation in education has been defended upon two grounds, one psychological, the other sociological. Psychologically, it is claimed that out-of-school experience shows that the child acquires the larger part of his skill in various directions by imitation, so that economy and efficiency require that it be the chief resource for learning in school. Socially, it is contended that the chief distinguishing feature of social life is identity of mental contents, especially of thought and beliefs, on the part of the various individuals who constitute society, and that this identity is secured by imitation. Largely under the influence of Tarde, older biological theories of society were replaced by "psychological" conceptions of society, and imitation was made the chief, if not the sole, category of social psychology. If this doctrine be accepted, appeal to imitation is not merely a valuable psychological expedient, but is an ethical necessity.

Both of these conceptions are questionable. A common fallacy seems to underlie them both. Wherever there is a social group, people are found doing the same sort of things; and, what is even more important, believing the same sort of things and using the same standards of valuation. Since it is demonstrable that this similarity is acquired, and since it is certain that the younger members of society have learned from the older, it is an easy conclusion that the likeness is due to imitation. But this explanation hardly does more than to take a result and then give it the name of a cause or force. The certain fact that persons do, externally viewed, imitate one another, that is, do alike and think alike, and that this community is essential to society is translated over into a belief that imitation is a natural internal force, working to bring about the likeness. Closer inquiry shows, however, that other causes are chiefly responsible, and that so far as there is a distinctive psychological tendency to imitate, it works effectively only in subordination to these other factors.

Upon the personal side, the initial factor is the tendency of native impulses and acquired

habits to complete or realize themselves in some external form. The child spontaneously, naturally or instinctively as we say, tries to effect something, urged on by the force of his own impulsive tendency. He reaches out his hand, makes babbling noises, tries to throw a ball, to walk, etc. Intent upon his end, he unconsciously selects and adapts anything he notes that might help him. He does what he sees others do in the same situation, not in order to imitate them, — a matter of which he may be quite unconscious, — but as a way of executing his own inchoate tendency. The mere imitation of others, apart from selective use, is found in imbeciles, in the less intelligent children, and in the more mechanical and empty moments of intelligent children. When reliance upon imitation is urged in teaching, the essential thing in the natural situation, personal initiative in a certain direction, is forgotten, and there is substituted for it a servile dependence upon the ends of others. Since the process of selecting and adapting the observed actions of others to one's own results involves intelligence, while taking the acts of others as one's ends abrogates judgment, it is not surprising that objection is made out of school to the latter process.

Further examination shows that imitation, even in its subordinate rôle, is properly called such from without, not from within. Psychologically what occurs is a case of the wider principle of sensori-motor adaptation. While the human infant is not limited to predetermined coordinations of sensory stimulus and motor response, as are the young of lower animals, the necessities of life require that there be some preference for certain forms of behavior in connection with certain modes of excitation. A stimulus of light, for example, at once induces movement of the eyes in fixing and following it. This act operates in turn as stimulus to the body to throw itself into a certain posture, to the arm and hand to reach, and, at times, to follow by tracing the movements of the light. Persons watching a runner, a baseball batter, or one performing a gymnastic feat unintentionally sway the body sympathetically. Externally viewed, there is acceptance of another as a model for copy, psychologically viewed, there is the only completion of the sensori-motor coordination involved in every act of perception. Accordingly, from the side of individual development, "imitation" is but a species of a wider genus. Persons act much alike and think much alike because they are subject to the same stimuli and are urged on by the same needs.

The case works out in a similar way from the social side. Mere imitation would never even make a beginning of a society, because it would only give a number of persons doing the same thing at the same time. A society involves diversity of activities on the part of different persons (division of labor, in

a wide sense of that term) and cooperation of different acts to a common end. But in addition to this co-adaptation of different acts to a single result (which is found in machinery), there must be also an intellectual and emotional appreciation of the common end and of the relation of the diverse individuals to it. This fact has been partially recognized in Baldwin's version of Tarde's theory, for he criticizes Tarde on the ground that his doctrine would apply equally well to a collection of tuning forks where one vibrates in response to another. Consequently he amends the conception to read imitation of *thoughts*, or *mental contents*, not of acts. In effect, this is to surrender the idea of imitation and keep merely the name, for thoughts or mental contents as such, cannot possibly be imitated, being invisible and unobservable. And the details of Baldwin's account show that what he really is dealing with is the various processes by which one person *arrives* at community of beliefs and ideas with others. This confirms our statement that the so-called "imitation" is simply a name for the fact that different persons do, in the same community, think alike, that likeness of thought being necessary to social life, but that it is not a causal factor by which this community of ideas and emotions is brought about.

Educationally, the emphasis upon imitation as the essential fact about society not only fails to throw light upon the causal forces by which social direction is brought about, but in a progressive society sets up a false ethical ideal. It makes identity of belief a good, and the supreme social good, just by itself. Such a standard obtains only in static communities, controlled by conformity to custom, and it is a symptom and a cause of their stationary nature. The intellectual and moral progress of the human race has come through first tolerating and then encouraging divergencies and diversities of thought, — the essence of individuality, — and through the conception that mere identity of thoughts is not an end in itself, but an incident of the accomplishment of other ends. More specifically, it is quite contrary to the spirit of a democratic and progressive society to set up as a conscious end the idea that one, even if he be only an immature child, shall repeat the acts of another so as to arrive at a state of passive acquiescence in the ideas of others. Whether as a psychological method or as a social standard, imitation occupies a subordinate position. J. D.

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## IMMIGRATION AND EDUCATION. —

Immigration creates duties for the administration of schools by introducing into the body of citizens elements which are alien in speech, and are generally of lower intellectual attainments than the mass of the community. Broadly speaking, the problem of assimilating the immigrant is the problem of overcoming the contrasts between his condition and that of the older resident, of wiping out the inequalities of social condition introduced by his coming among us. So far as these inequalities result from a different upbringing, the problem of assimilation is that of education in its largest sense. But the educative value of environment, of laws and of institutions, of contact with other and unaccustomed modes of life and thought, are not here in question. It is also impossible here to discuss the difficulties which arise from the places of origin of immigrants. The specific subject to be considered is how far the established agencies of education, the schools, may and do contribute to the assimilation of the immigrant.

It is necessary, therefore, to have not only a very clear view of what the problem is, but also how far the schools are able to affect it. Before going into the details of the situation created by immigration, it may be well to remember the necessary limitations upon the activities of the school administration, and to bear in mind that after the age of fourteen years has been passed the influence of the school system upon any class of individuals depends upon their consent. Our subject, therefore, falls naturally into three divisions, the influence of the schools (a) upon the adult immigrant, (b) upon the child immigrant, and (c) upon the second generation, or children of native birth and foreign parentage. In its first phase, the predominant influence of the school concerns language, in its third phase, general education. In the second phase the two influences intermingle in varying proportions.

**Statistics of Immigration** — The immigrants arriving in the United States are largely adults. The figures published by the Commissioner-General of Immigration show that of 9,555,673 immigrants in the years 1889 to 1910, 8,398,624 or 87.9 per cent, were over fourteen years of age. How widely this proportion departs from a normal age distribution of the population can be seen from the fact that in 1900 among the native whites only 61.1 per cent were over fourteen years of age.

The figures cited show the predominance of the adults among the immigrants. The following table shows the races which in the fiscal years ending June 30, 1899, to June 30, 1910, have contributed to the immigration to the United States. For convenience of reference the proportion of persons over fourteen years of age and the proportion of males and females have been added: —

# IMMIGRATION AND EDUCATION

IMMIGRANTS FOR YEARS ENDING JUNE 30,  
1899 TO 1910

RACE OR PEOPLE	TOTAL NUMBER OF IMMI- GRANTS	PER CENT		
		Male	Female	Over 14 Years of Age
African (black)	33,630	62.2	37.8	89.7
Armenian	26,498	76.5	23.5	88.8
Bohemian and Mora- vian	100,189	57.0	43.0	79.6
Bulgarian, Servian, and Montenegrin	97,391	95.7	4.3	98.2
Chinese	22,590	96.0	4.0	95.5
Croatian and Sloven- ian	335,543	84.9	15.1	95.7
Cuban	44,211	68.5	31.5	82.4
Dalmatian, Bosnian, and Herzegovinian	31,696	92.3	7.7	97.4
Dutch and Flemish	87,658	65.7	34.3	78.6
East Indian	5,786	98.0	2.0	98.9
English	408,614	61.5	38.5	85.0
Finnish	151,774	66.1	33.9	90.9
French	115,783	58.1	41.9	84.3
German	754,375	59.4	40.6	83.0
Greek	216,962	95.1	4.9	96.2
Hebrew	1,074,442	56.6	43.4	75.1
Irish	439,724	47.9	52.1	94.7
Italian, North	372,668	78.3	21.7	91.1
Italian, South	1,911,933	78.6	21.4	88.4
Japanese	148,729	83.8	16.2	98.3
Korean	7,790	90.8	9.2	93.2
Lithuanian	175,258	70.6	29.4	92.1
Magyar	338,151	72.2	27.8	90.8
Mexican	41,914	66.0	34.0	78.1
Pacific Islander	357	78.4	21.6	94.1
Polish	949,064	69.5	30.5	90.8
Portuguese	72,897	59.5	40.5	76.7
Roumanian	82,704	91.0	9.0	97.7
Russian	83,574	85.0	15.0	92.7
Ruthenian (Russiak)	147,375	74.4	25.6	95.5
Scandinavian	586,306	61.8	38.2	90.5
Scotch	136,842	63.5	36.5	84.6
Slovak	377,527	70.5	29.5	90.7
Spanish	51,051	82.8	17.2	90.9
Spanish American	10,669	69.9	30.1	84.4
Syrian	56,909	67.9	32.1	84.1
Turkish	12,954	96.3	3.7	97.8
Welsh	20,752	65.1	34.9	82.3
West Indian (ex- cept Cuban)	11,569	57.8	42.2	86.3
Other peoples	11,735	92.0	8.0	95.5
Not specified	77	76.6	23.4	87.0
Total	9,555,673	69.5	30.5	87.9

In the entire number here given the non-English-speaking races predominate. They constitute an aggregate of 8,549,741, or 89.5 per cent of the total. There is quite a contrast between these figures and those of the census in which we find reflected the influence of the older immigration. The earliest distribution of the foreign born by countries of birth is in the census of 1850. In this census there were enumerated 2,244,602 persons of foreign birth, of whom 756,079, or 33.8 per cent, were from non-English-speaking countries. On the other hand, the provisional figures of the census of 1910 show that of 13,342,500 foreign whites 9,571,700, or 71.7 per cent, are from non-English-speaking countries. In other words, recent immigration is bringing to our shores an increasing number of persons who do not know our language.

# IMMIGRATION AND EDUCATION

**Schools for Adult Immigrants**—So far as these persons are adults, and most of them are, the schools can as a rule help them to a knowledge of English only in so far as they show themselves willing to avail themselves of the opportunities which the evening schools afford. Originally established for the benefit of persons who had had no early opportunities for an elementary education, our evening schools no longer serve to any large extent to educate the native population in the three R's. Besides the higher grades and high school work maintained for those who wish to continue an education already begun, they serve principally to teach the English language and a few rudiments to foreigners. No comprehensive investigation has yet been undertaken as to the extent to which this service is being rendered by the evening schools of the country.

NUMBER OF IMMIGRANTS TO THE UNITED STATES 1892-3 TO 1910-1911 OF FOURTEEN YEARS OF AGE AND UPWARD, TOGETHER WITH THOSE UNABLE TO READ AND WRITE

From Reports—Bureau of Immigration

FISCAL YEAR ENDING JUNE 30	TOTAL	UNABLE TO READ AND WRITE	
		Number	Per Cent
1893	1,359,153	2,61,038	17.0
1894	1,227,062	2,39,773	17.5
1895	1,213,449	2,42,302	19.8
1896	1,290,526	78,130	26.9
1897	1,197,205	43,008	21.8
1898	1,191,032	43,057	22.5
1899	267,732	60,446	22.6
1900	393,948	93,576	23.8
1901	425,356	117,587	27.6
1902	574,680	162,188	28.2
1903	754,615	185,667	24.6
1904	702,720	168,188	24.0
1905	911,831	230,882	25.3
1906	964,462	265,068	27.5
1907	1,147,005	337,573	29.4
1908	670,722	171,293	25.5
1909	663,492	191,049	28.8
1910	921,061	253,569	27.5
1911	760,750	182,273	24.0

<sup>1</sup> Fifteen years and over

<sup>2</sup> Seventeen years and over

<sup>3</sup> See notes <sup>1</sup> and <sup>2</sup>

A few illustrations drawn from school reports of larger cities will show the importance and extent of this service which is rendered to the foreigner by the evening schools. In New York City in the school year 1909-1910 there were 80,369 pupils enrolled in the elementary evening schools, and of these 33,436 were foreigners learning English. In Newark in the same year there were 9135 pupils enrolled in the evening schools of elementary grade. Of these 3055 were in classes for teaching English to foreigners. The superintendent estimates further that among those in other evening schools a large proportion, certainly over one fourth, were

# IMMIGRATION AND EDUCATION

NUMBER AND PER CENT OF IMMIGRANTS ADMITTED TO THE UNITED STATES WHO WERE FOURTEEN YEARS OF AGE OR OVER AND WHO COULD NEITHER READ NOR WRITE, DURING THE FISCAL YEARS 1899 TO 1910, BY RACE OR PEOPLE

Compiled from Reports of the Commissioner-General of Immigration

RACE OR PEOPLE	NUMBER 14 YEARS OF AGE OR OVER ADMITTED	UNABLE TO READ OR WRITE	
		Number	Per Cent
African (black)	30,177	5,733	19 0
Armenian	23,523	5,624	23 9
Bohemian and Moravian	79,721	1,322	1 7
Bulgarian, Servian, and Montenegrin	95,596	39,903	41 7
Chinese	21,584	1,516	7 0
Croatian and Slovenian	320,977	115,785	36 1
Cuban	36,431	2,282	6 3
Dalmatian, Bosnian, and Herzegovinian	30,861	12,653	41 0
Dutch and Flemish	68,907	3,043	4 4
East Indian	5,724	2,703	47 2
English	347,458	3,647	1 0
Finnish	137,916	1,745	1 3
French	97,638	6,145	6 3
German	625,793	32,236	5 2
Greek	208,608	55,089	26 4
Hebrew	806,786	209,507	26 0
Irish	416,640	10,721	2 6
Italian, North	339,301	38,837	11 5
Italian, South	1,690,376	911,566	53 9
Japanese	146,172	35,956	24 6
Korean	7,259	2,763	38 1
Lithuanian	161,441	79,001	48 9
Magyar	307,082	35,004	11 4
Mexican	32,721	18,717	57 2
Pacific Islander	336	83	24 7
Polish	861,303	304,675	35 4
Portuguese	55,930	38,122	68 2
Roumanian	80,839	28,266	35 0
Russian	77,479	29,777	38 4
Ruthenian (Russiak)	140,775	75,165	53 4
Scandinavian	530,634	2,221	0 4
Scotch	115,788	767	0 7
Slovak	342,583	82,216	24 0
Spanish	46,418	6,724	14 5
Spanish-American	9,008	547	6 1
Syrian	47,834	25,496	53 3
Turkish	12,670	7,536	59 5
Welsh	17,076	322	1 9
West Indian (except Cuban)	9,983	320	3 2
Other peoples	11,209	5,001	44 6
Not specified	67	5	7 5
Total	8,398,624	2,238,801	26 7

<sup>1</sup> Including 693 " Hungarians " in 1899

<sup>2</sup> Including 35 " Hungarians " in 1899

of foreign birth In Jersey City in an enrollment of 2240 in evening schools 1122 were of foreign birth In Philadelphia in a total registration of 12,230 in elementary evening schools 6354 were of foreign birth Chicago in the school year 1907-1908 had 20,133 enrolled in all its evening schools, and among them were 12,344 in the foreign classes and 1267 other persons of foreign birth in other classes. There are also a very few interesting day classes

# IMMIGRATION AND EDUCATION

for foreign adults, which are frequented by persons, such as watchmen, who pursue their regular callings at night

**Illiteracy among Immigrants.** — The problem of the immigrant is not only one of language, but of general education. Unfortunately we possess no generally accepted standards by which education can be statistically measured, except for such slight minimum of education as is represented by the ability to read and write In the absence of other measures, this becomes important. It is a familiar fact that the immigrants do not measure up to the standard of literacy which prevails in the nation at large, and especially in the white population. The table on the preceding page summarizes by years the illiteracy of immigrants

There is in these figures no evidence of improvement during the period, but rather the reverse This change may be due in part to the shifting of the character of immigration. In this connection the table of illiteracy by races which precedes is of interest

An examination of this table reveals great diversity. Many of the races here represented show a less degree of illiteracy than was found in 1900 in the native white population of the United States (4 64 per cent) Others show a much larger percentage, which in several cases represents more than half the immigrants Some of the races represented in the table have been coming to the United States in greater or less number for many years These are the Dutch, English, Flemish, French, German, Irish, Portuguese, Scandinavian, Scotch, Spanish, and Welsh The remainder are comparatively newcomers Designating the former for convenience as the old and the latter as the new immigration, we have the following results as to illiteracy among the two classes in the period 1899 to 1910

## ARRIVALS 1899-1910, FOURTEEN YEARS OF AGE AND UPWARD

	TOTAL	ILLITERATE	PER CENT ILLITERATE
Old	2,122,282	103,948	4 9
New	6,276,342	2,134,863	34 0
Total	8,398,624	2,238,811	26 7

It would be a mistake to assume from these figures that immigrants are necessarily more illiterate than formerly They merely show that if immigration came to-day from the same countries as formerly there would be less illiteracy than at present In 1850, 42 per cent of the foreign born were Irish Ten years earlier, in 1841, the Irish census ascertained the fact that 53 per cent of the population were illiterate Hence we may infer that the illiteracy of the immigrant was as great sixty years ago as it is to-day.



## IMMIGRATION AND EDUCATION

The statistics of illiteracy among immigrants are in part borne out by the census figures for the illiteracy of the foreign born. The census figures are as follows. —

CENSUS	PER CENT ILLITERATE
1880	12 0
1890	13 1
1900	12 9
1910	12 8

The wide difference between these figures and those of the immigration authorities might be accounted for on the supposition that the older immigration had less illiteracy, and hence the percentage was less among the foreign born, with its many representatives of this class, than among the recent immigrants. As we have seen, this position is hardly tenable. The explanation may be in part that among the birds of passage who come and go there are more illiterates than among those who permanently remain in this country.

It is clear from the consideration which has already been given to the ages of the immigrants that the public school can do little toward reducing this illiteracy. Only a small proportion of the immigrants themselves come perforce under the operations of the school system, since relatively few are under fourteen years of age, the usual limit of compulsory school laws. Night schools can, as we have seen, do something, but their influence is limited. Those who in the struggle to get a foothold yet find time to avail themselves of the opportunities such schools afford, are for the most part those who have a reading knowledge of their own languages. Before considering the question of the relation of the schools to the small class of child immigrants, we may inquire how far the illiteracy of the immigrant and of the foreign born tends to perpetuate itself in the second generation.

### Illiteracy among Children of Foreign Parents.

— On this point the census enumerations bear gratifying testimony. The native whites of foreign parents have a smaller percentage of illiteracy than the native whites of native parentage. The testimony of the census of 1900 was as follows. —

NATIVE WHITE.	PER CENT ILLITERATE	
	North Atlantic	North Central
Native parents .	17	28
Foreign parents .	15	13

Instead of figures for the United States, those of the divisions where the foreign element is most numerous are given in order that the two groups may be compared under circumstances as nearly as possible identical. In each case the proportion of illiteracy is gratifyingly small, but it may be noted that in each group of states

## IMMIGRATION AND EDUCATION

mentioned it is less for the persons of foreign than of native parentage. This apparent advantage in favor of the foreign element is due to the fact that they are more largely city dwellers than the pure native stock, and enjoy on the whole better educational advantages. If the two groups be compared in the same localities, as, for instance, in the cities, there appears a slight advantage in favor of the purely native stock, though, as already noted, the amount of illiteracy for either class is insignificant. In the disappearance of the difference as respects illiteracy between native and foreign elements in the second generation we have indirect evidence of the service of the schools in assisting in the assimilation of the immigration.

**Schools and Young Immigrants** — We may now return to the question, what can the schools do for the child immigrant? This manifestly depends upon the age of the child, which determines the length of time which it will stay under the school influence. If the child is under school age at the time of its arrival in the United States, it enters the school with little more handicap than children of the same race who are born in this country. If, on the other hand, the child is twelve years old when it comes here, it is not likely to have more than two years' schooling.

Just how the children arriving in the United States are distributed as to ages is not apparent from the statistics of immigration. An investigation conducted by the Immigration Commission in twelve different cities in the United States showed that of 38,254 children having foreign fathers there were 8724, or 22.8 per cent, born abroad. Of the latter information was available as to the age of arrival in the United States, as follows: —

AGE	NUMBER	PER CENT
Under six years	4785	57 1
Six and seven years .	1647	19 7
Eight and nine years	1108	13 2
Ten years and over .	838	10 0
	8378	100 0

It appears that more than half the children had not yet reached the age of school attendance.

For the older child the problem of the public school is largely one of language rather than of general education. How can these children be taught to understand what is going on around them in the school? Where they are few in number the common expedient is to put them into the first grade and hope that they will gradually be able to take part in the school work. This is largely leaving them to work out their own salvation, but it places them in favorable position to do so. It introduces them to the English language in its simplest

forms, as the vocabulary of the teacher in first-grade instruction is of necessity limited to simple words and is combined into simple sentences. Better results are obtained when it is possible by reason of their number to place these pupils in a special class under a teacher skilled in teaching them English and awaiting a certain proficiency in English, before assigning them to the regular grades. Such classes are a regular feature of many school systems of our cities with a large immigrant population. The obstacle to the generalization of this system is that there are not enough children of this description in each of the schools to constitute special classes. This is in practice largely overcome by the habit of the immigrants of settling in definite localities in the cities where they find others of their race.

**Special Classes** — In New York City, where the special classes for foreigners are highly developed, the foreign-born child of eight years of age or under is usually placed in the regular grades, the special classes being considered necessary only for older pupils. With upwards of 600,000 pupils in the elementary schools of New York City in 1900, there were 1240 in these special classes. Cincinnati gives to the newly arrived children who are nine years of age or over training especially in English. One class suffices for the city. It is obvious that the needs of the older immigrant child, however important to the individual himself, do not present a problem of such magnitude that it taxes in any way the resources of the school system.

For the younger immigrant child, who was brought here by his parents as an infant, and who enters school at the same age as other children, the problem of language is of no special significance. It is not infrequently supposed that the language problem is the most serious one in the education of the child of foreign parents. The experience of the schools so far as the younger children are concerned, refutes this view. The foreign child who enters the first grade, or better still the kindergarten, has no unusual difficulty. The language of the schoolroom is so simple that its comprehension is readily acquired and the child advances at an equal pace in his knowledge of English and his studies. It is understood that in the Philippine Islands no difficulty is encountered in teaching in the English language, and the writer had a like experience in conducting the schools of Porto Rico. In these instances English is used as a medium of instruction when there is far less English as a background in the environment of the child than in our American cities. It is not contended that for these very young children an ignorance of English is not a factor of some importance. But its importance consists not in a direct impediment to the progress of the child, but in its significance as an indication of a home environment unfavorable to the school progress of the children.

**Native Children of Foreign Parents.** — Our discussion of the relation of the schools to the immigrant children has brought us by natural stages to the consideration of a group among them, in which the fact of foreign birth has little significance except as it involves foreign parentage. There is in fact little difference ten years later between the child who was brought into this country as an infant in arms and his one or two years younger brother or sister who was born in this country. We may therefore now inquire as to the relation of the schools to children of foreign parentage.

The native children of foreign parentage in our schools represent the offspring of many races, which may or may not vary from the native white American in language, but are supposed to vary to at least some extent in traditions, ideals, and aspirations. Such differences appear, so far as the record goes, to have had little effect in perpetuating among the second generation that great degree of ignorance which we term illiteracy. It may, however, be that if we could establish some higher standard of proficiency it would be seen that there was some divergence between the progress of children of native as compared with foreign parentage. Considerable light can be had on the problems of school advancement by a study of the facts of grades and ages of the pupils, and especially of the relation of the two expressed in the now familiar concept of retardation (*q v*). The investigations of the Immigration Commission in 1908 conducted by the writer, the results of which have been only partially published, cover a wide range, embracing a study of pupils in thirty-seven different cities. These investigations distinguish pupils by parentage determined by the race of the father. The contrast which here concerns us is between white children having fathers born in this country, and those whose fathers were born abroad. In the latter group are included native whites of foreign parentage, the predominant element, and foreign white, but as we have already seen, the last-named are comparatively few in number. It would exceed the limits of space to give anything more than a few brief notes of the main results of this investigation.

PUPILS IN SCHOOL AT EACH AGE FOR 1000  
AT AGE OF NINE YEARS

CHILDREN OF	5 YEARS	6 YEARS	7 YEARS
Native fathers . .	84	733	943
Foreign fathers . .	89	772	934

The figures for the ages are used to establish certain probabilities in regard to entering and leaving school. Pupils in school in the early ages are compared with the estimated number at nine years of age computed by taking the average of those reporting the three ages eight,

## IMMIGRATION AND EDUCATION

nine, and ten years. The results in proportions are given on previous page.

In like manner we can compare the older children in school with the computed number at the age of eleven.

PUPILS IN SCHOOL AT EACH AGE FOR 1000 AT AGE OF ELEVEN YEARS

CHILDREN OF	13 YEARS	14 YEARS	15 YEARS	16 YEARS	17 YEARS	18 YEARS
Native fathers	963	769	503	297	173	136
Foreign fathers	959	665	333	145	71	57

These parallel figures show clearly that there is very little difference between the children of native fathers and those of foreign fathers with respect to their early entrance in the schools. There is, however, a smaller representation of the children beyond the school age among those whose parents are foreign than among those whose parents are native. Such a smaller representation might be due in the case of individual races to the fact that in these ages there were fewer children in the community. But with respect to the children of foreign parentage as a whole, such an explanation is not valid, and the more obvious one that children of this class drop out of schools sooner than those whose parents are native applies.

Confirmation of the conclusion that the children of foreign parentage leave school at an earlier age than those of native is found in the following figures, which distribute the children among the different schools.

PER CENT OF ALL PUPILS IN DIFFERENT KINDS OF SCHOOLS

CHILDREN OF	KINDER- GARTEN	PRIMARY	GRAMMAR	HIGH SCHOOL
Native fathers	4.3	52.1	34.5	9.1
Foreign fathers	4.4	57.6	33.3	4.7

It will be noted that in the grammar and high schools where the children are of older age the proportions are less for the children of foreign parents than those of native parents.

With respect to the progress of children within the schools, we have a convenient measure in the concept of retardation. This is calculated in the following ratios for all elementary pupils and also for those pupils who are ten, eleven, and twelve years of age.

PER CENT OF PUPILS WHO ARE RETARDED

CHILDREN OF	ALL ELEMENTARY	PUPILS, 10, 11, AND 12 YEARS OF AGE
Native fathers	34.1	42.0
Foreign fathers	36.0	46.2

## IMMIGRATION AND EDUCATION

By both methods of calculation it appears that the retardation of the children of foreign parents is somewhat greater than those of native parents, but the most remarkable result of these investigations is not that the difference is so great, but that the difference is so small. In other words, this investigation confirms in general terms the showing of the census that so far as intellectual attainments are concerned any difference between the native and the foreign stock practically disappears in the second generation.

It is to be noted that in the foregoing percentages in the investigation of the Immigration Commission we are dealing with the pupils of foreign stock, and not merely with those of foreign parentage. Had the investigation eliminated the children of foreign stock who were born abroad, it is more than likely that even the small differences which have been observed would disappear in the contrast between the children born in the United States of foreign parents compared with those born of native parents. In a more limited investigation undertaken by the commission, where it was possible to make this distinction, there were a number of cities in which the retardation of the children born in the United States of foreign parents was even less than that of purely native children.

This special investigation brought out clearly the fact that the language inherited by children of foreign birth was not in itself a serious obstacle to the progress of children in American schools. The backwardness of the foreign child and the child of foreign descent, so far as it is established by this investigation, appears as a result of various conditions of home life which are unfavorable to the best progress of the children in the school. However great the duties which immigration creates for the administration of schools in the United States, the records show that the schools have in large degree mastered those duties and have contributed in no small measure to the gradual process of assimilation by which the foreign elements are merged into the body of the American people.

R P F

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- Immigration and Passenger Movement at Ports of the United States* (Washington, Annual)
- U. S. CONGRESS. *Report of the Immigration Commission* (Washington, 1911)

## IMMUNITIES

Much periodical literature will be found under the title *Immigration*, in Poole's *Index to Periodical Literature* and in the *Readers' Guide to Periodical Literature* (Cumulated)

**IMMUNITIES.** — See EXEMPTIONS, SCHOOL MANAGEMENT.

**IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY** — See LONDON, UNIVERSITY OF.

**IMPRESSION** — A general word referring to sensory mental processes. Thus one receives a visual impression from a bright object, an auditory impression from a source of sound. Practically synonymous with the word "sensation" In ordinary parlance, the word is used with a somewhat more general sense to refer to striking experiences as well as simple sensory processes  
C. H. J.

See SENSATION.

**IMPRESSION** — In Method — The traditional methods of teaching in the lower schools have been for the large part dogmatic and authoritative. They called for a receptive attitude on the part of the child, rather than one which is active. There is, however, a vigorous reaction expressing itself against such modes of procedure. Its effects are noted in the effort to introduce subjects which call for increased motor and mental activity upon the part of the child, thus manual training, singing, drawing, and play have grown in favor. A similar effect is found in the domain of teaching method. Teaching the children to study rather than merely to memorize is a movement toward the development of a larger initiative in the pupil. Dramatization and "action work" as modes of instruction are other influences suggesting increased emphasis by the modern teacher on the self-activity of the child. The popular pedagogical phrase, "No impression without expression," summarizes the modern psychological attitude toward instruction.  
H. S.

See TEACHING, PRINCIPLES OF; MOTOR ACTIVITY

**IMPULSE** — Activity which is not preceded by deliberation, which follows immediately upon an external impression and is consequently likely to be relatively unintelligent, is described as impulsive. The term "impulse" is used not only for the above described type of activity, but it is used as a general term to indicate any tendency on the part of individuals toward definite lines of action. That is, there is a general impulse toward imitation (*q.v.*), an impulse toward self-preservation. (See INSTINCT) Impulsive activity is characteristic of undeveloped individuals. The savage is impulsive in his activities rather than deliberate. The child is impulsive.

C. H. J.

## INCIDENTAL EDUCATION

### References: —

GIDDINGS, F. H. *Principles of Sociology*. (New York, 1896.)  
WUNDT, W. *Outlines of Psychology*. (Leipzig, 1897.)

**IMPURITIES IN THE AIR OF SCHOOL-ROOMS.** — See AIR OF THE SCHOOLROOM; CLEANLINESS OF THE SCHOOLROOM; HEATING AND VENTILATION.

**INATTENTION.** — See ATTENTION.

**INCENTIVES.** — See REWARDS AND PUNISHMENTS, also ATTENTION; INTEREST, MOTIVES; SCHOOL MANAGEMENT.

**INCEPTION.** — (Latin *incipere*, to begin, commence) The ceremony of admission to the rank or grade of master or doctor in the medieval universities. With it was connected the entrance on the teaching career by actual performance of duties pertaining to it. Two influences may be traced in the ceremony of inception: (1) Of Roman law, "according to which a man was invested with the *de facto* possession of his office by an actual and solemn performance of its functions" (Rashdall), and (2) the guild initiation of a master by older members, and possibly the ceremony of investiture of a knight. The ceremony at Paris University was performed in the schools of the respective faculties, and consisted of the placing of the cap or *biretta* on the candidate's head and the granting of the ring and the book by his former master, who also conferred on him a kiss and a benediction. The inceptor was then placed in the master's chair and delivered a lecture or held a disputation. The expenses of the ceremony were considerably increased by the custom of making presents to the older master, of contributing to the society's funds, and of giving a banquet to the new colleagues. Inception became in time more important than the Chancellor's license to teach, and corresponded in every way to the compulsion to belong to a guild before a trade or craft could be practiced.

The inception or *principium* was common in Paris and the northern universities, at Bologna the corresponding ceremony or public examination was known as the *conventus*, which was conducted in the cathedral and was more elaborate and expensive than at Paris. (Compare the use of the term commencement (*q.v.*) for the graduation ceremonies in American universities.)

See DEGREES; UNIVERSITIES.

**INCIDENTAL EDUCATION.** — It is held by some that a certain mental capacity can be trained without explicit attention to this particular faculty. Thus, if we carry on a course in history, there may be an incidental training of the moral sense. The possibilities of leaving certain phases of education to be taken

## INCIDENTAL METHOD

care of in a secondary way in connection with major forms of training has been much discussed. It would be economical, if we could relegate the training in reading to the science class, devoting the major attention in this class to the subject matter, and yet securing incidentally for the children the ability to use language. A distinction of importance should undoubtedly be made in these discussions. A certain type of training may be incidental from the point of view of the child, but explicit and primary from the point of view of the teacher. On the other hand, a certain type of training may be incidental both for the teacher and for the child. In this latter case the training which is treated as incidental is likely to be neglected altogether. In the former case, while the child regards himself as working for a given end, he may be induced through skillful guidance to carry on a variety of activities which will conduce to training in a number of different directions. The secondary lines of training are incidental in this case only for the child, not for the teacher. C. H. J.

See FORMAL EDUCATION; FAMILY EDUCATION.

**INCIDENTAL METHOD** — Any plan calling for the teaching of a series of facts, forms, or skills incident to the systematic study of some other subject utilizes the "incidental" method of teaching. Arithmetic, spelling, and grammar are among the subjects that are sometimes taught incidentally. Thus if arithmetic is not taught systematically as a subject till the third school year, it is taught incidentally during the first two years, that is, such arithmetical facts are taught as occur in the normal experience of the child or within the other school subjects. Again, those who propose that the subject of grammar should not be taught as a separate subject suggest that its important and useful facts might be taught as mere incidents of written composition. A still further instance is found where it is urged that spelling should be discontinued as a subject with the close of the sixth school year and taught incidentally thereafter.

H. S.

See METHODS, TEACHING

**INCIDENTAL PERIOD.** — In arranging the school program it is the practice in some schools to leave certain class periods unassigned to a specific activity, such as a recitation in arithmetic or a study period in history. These hours are termed "free" or "unassigned" periods, and are utilized by the teacher only as special need occurs, such as the need to bring up a class in language, or to render additional assistance to individuals who are behind in their work. Because of the use of such time for incidental needs that arise in the course of the regular teaching, they are termed "incidental periods".

H. S.

## INDETERMINATE EQUATIONS

**INCOHERENCE.** — See SPEECH DEFECTS

### INCOMMENSURABLE QUANTITIES —

Quantities that have no common measure with a quantity arbitrarily taken as the unit. For example, if the side of a square is taken as unity, the diagonal of the square is incommensurable with it, and numerically it is represented by  $\sqrt{2}$ . The number  $\sqrt{2}$  is called an incommensurable number, there being no integer or common fraction that will exactly divide it and unity. Incommensurable numbers have of late been the subject of extended study, notably by Dedekind and G. Cantor.

From the standpoint of the secondary school, the interest in incommensurable numbers and magnitudes centers in the work in radicals in algebra and in the so-called "incommensurable cases" in geometry. The scientific study of incommensurable numbers is so recent that no attempt has been made to introduce the modern theory into elementary algebra. On the other hand, the study of incommensurable lines, surfaces, and volumes found place in Euclid's *Elements*, and hence it still appears in many textbooks in plane and solid geometry. A popular treatment of the subject from the numerical standpoint would be quite as easy as one that relates to geometry. It is, however, the growing opinion that the concept is too abstract for the immature mind of the high-school pupil. The treatment of the subject in the current geometries is not scientific, and, since it is merely a popular introduction to the theory and is understood by a relatively small number of pupils, it is, at the present time, passing out of the high-school curriculum in the United States. It is felt that its place is in the calculus, where the theory of limits is treated with some approach to scientific rigor. It is entirely proper, in the secondary school, to speak of the incommensurable, both in algebra and geometry, explaining its general nature. Any serious attempt at a scientific treatment of the subject is, however, out of place at this point in the pupil's education.

D. E. S.

**INCORRIGIBLE CHILD** — See EXCEPTIONAL CHILDREN, SPECIAL CLASSES; TRUANT SCHOOLS

**INCUBATION PERIOD OF DISEASES.** — See CONTAGIOUS DISEASES

**INDEPENDENT WORK.** — See SCHOOL MANAGEMENT.

**INDETERMINATE EQUATIONS.** — An equation is said to be indeterminate when there are indefinitely many roots that satisfy it. For example,  $x + y = 4$  is satisfied by the following pairs of roots (0, 4), (1, 3), (2, 2), (3, 1), (4, 0), (5, -1), and so on indefinitely, and by an infinite number of non-integral roots,

such as  $(3\frac{1}{2}, \frac{1}{2})$ ,  $(7\frac{1}{2}, -3\frac{1}{2})$ , and  $(\sqrt{2}, 4-\sqrt{2})$ . A system of equations is indeterminate when there are indefinitely many roots that satisfy each and every one of the equations. In general, if there are  $n$  equations and  $n+1$  unknown quantities, the system is indeterminate. The subject of indeterminate equations, particularly of the second degree, was first studied extensively by Diophantus ( $qv$ ), and hence such equations are often called Diophantine equations. An indeterminate equation may have only a limited number of positive integral roots, as in the case of  $x+y=4$ , or it may have an unlimited number of such roots, as in the case of  $x-y=4$ . In the older textbooks on algebra the former of these two kinds of equation often appeared, with the direction that the equation was to be solved in positive integers. At present, so crowded has the course in elementary algebra become, the subject plays practically no part in the work preparatory to the American college, although it is found occasionally in the college course. Since it does not lead to any other theory of much importance, it is generally felt that the time which an extended study of the subject would require may better be devoted to other work. The subject of alligation ( $qv$ ) is an early phase of this one, representing a crude form of indeterminate analysis applied originally to questions of the mixing of metal in coinage.

Aside from the general subject of indeterminate equations, there is the special question as to when an equation or a system of equations is determinate, and this properly forms a significant topic in elementary algebra. In this connection the graphic representation of an equation is helpful.

As an example of an indeterminate equation of the second degree, suppose two positive integers are to be found such that if their product is taken from the sum of their squares the difference shall be a square. In other words, required to solve the equation

$$x^2 + y^2 - xy = \text{a square, say } z^2,$$

in positive integers. The equation is satisfied if  $x = 2mn - n^2$ ,  $y = m^2 - n^2$ ,  $z = m^2 - mn + n^2$ , and special solutions may be obtained by substituting any positive integers for  $m$  and  $n$ , with the limitation that  $m$  shall be greater than  $n$ .

D E S

**INDETERMINATE FORMS** — Certain quantities met in algebra are in forms such that it is frequently impossible to determine their value. For example,  $\frac{0}{0}$ ,  $\frac{\infty}{\infty}$ ,  $\infty^0$  are such forms. In the secondary school such expressions are properly avoided, being relegated to the calculus where they have place. When met in elementary algebra, as in the case of  $(a-b) \div (a-b)$  when  $a=b$ , they are best

passed over without reference to the fundamental principle of limits that is involved. It is sufficient, when the symbol  $\frac{0}{0}$  arises in the interpretation of a problem in elementary algebra, to say that  $a \cdot 0 = 0$ , where  $a$  is any finite number; whence, if we think of 0 as being admitted as a possible divisor, we have  $a = \frac{0}{0}$ . It is therefore reasonable to define

the form  $\frac{0}{0}$  as standing for indetermination.

While not satisfactory as a scientific proof, this simple explanation of the reasonableness of the definition is sufficient for elementary algebra.

D E S

**INDEX OF PROHIBITED BOOKS** — See LITERARY CENSORSHIP.

**INDEXES** — See BIBLIOGRAPHIES OF EDUCATION.

**INDIA, EDUCATION IN.** — **Political Organization of the Empire.** — Strictly speaking, the term British India applies only to the divisions under direct British administration, and does not include the native states which are indirectly under British rule. The native states have independent control of their educational affairs, but they are rapidly adopting the system developed for British India. For purposes of administration, India is divided into nine great provinces, namely, Madras, Bombay, Bengal, Eastern Bengal, and Assam, united provinces of Agra and Oudh, Punjab, Central Provinces, Northwest Frontier Provinces, and Burma. There are also the following minor charges: Coorg, Ajmer-Merwara, British Baluchistan, and the Andaman Islands. Each of the nine provinces is under the administration of a governor, or a lieutenant-governor. The governors of Madras and Bombay are appointed by the Crown; the remaining chief officers are appointed by the Governor-General with the approval of the Crown. The minor charges are each under a chief commissioner.

Each province is usually broken up into divisions under commissioners, and these, again, are divided into districts — numbering in all about 259 — which are the units of local administration. The supreme executive authority in India is vested in the Governor-General in Council, often styled the Governor of India. He is appointed by the crown, and usually holds office for five years. The control of the Governor-General extends to all the provinces, but they enjoy a large degree of administrative independence varying with their importance. The local government of British India is vested in municipal boards, the members of which are, in large majority, elected by the ratepayers (Acts of 1882-1884). For rural

tracts, there are district and local boards which are in charge of roads, district schools, and hospitals

The area of the British provinces is 1,097,901 square miles, the population (census 1901), 232,072,832, the average population per square mile, 211. The area of the native states is 690,272 square miles, the population (census 1901), 61,325,376, population per square mile, 189. The totals for India are, then: area, 1,766,642 square miles, population, 294,361,056, population per square mile (census 1901), 167. The total as given in census of 1911 is 320,132,537.

**Ancient Systems of Education** — *The Hindu System*. — The endeavor of the British government to engraft a system of modern education upon its Indian Empire is impressive by reason of the enormous population dealt with, and the character of the native civilization and culture. From time immemorial India has been a land of schools, of literature, and of philosophy, inseparably associated with the religions which dominated its people before the advent of the English, and have profoundly affected the course and progress of education under their auspices. The first of these, the Hindu religion, gave to the land the Vedic literature, the Brahmins or priestly class, and the caste system, in other words, all that has proved vital and permanent in Hindu higher education.

The Vedas reveal the religious ideas and the movement of this Aryan people from the time they began their invasions of India, swept onward from the Indus to the Ganges, overcame or scattered the indigenous tribes, and eventually organized kingdoms each under its own ruler, but all dominated by the powerful priesthood.

In the absence of chronological records, all dates in the early history of India are inferences chiefly from the Hindu language and literature; but it is generally agreed that the Brahmanic period began about 500 B.C. and continued with little abatement of power to the thirteenth century of our era. The Brahmins were the priests, teachers, and lawgivers of the people, the custodians of the Vedic hymns and authors of the whole body of literature based upon them — the mythologies, rituals, commentaries, and laws — for all of which they claimed divine sanction. This sacred literature, together with heroic, secular poems and a crude science, also of Brahmanic origin, were the substance of Hindu higher education. The Brahmins determined the limits of knowledge for the castes below themselves, the *Kshatriyas* (warriors), the *Vaisyas* (husbandmen), and the *Sudras* (artisans and traders). Below the *Sudras* was an undefined mass of people, the indigenous tribes, low-down Aryans, and mixed peoples, indiscriminately termed *Pariahs* (outcasts). For these there were no rights nor privileges, and no instruction excepting what filtered down through the

all-pervading religious ceremonies — incantations, sacrifices, and idol worship — still maintained in parts of India.

On account of the difficulties of Sanskrit, the language of the Vedic literature, the Brahmins had a practical monopoly of learning, the majority merely learned by rote the hymns and prayers and ritual used in the religious ceremonies, leaving to the few that lifelong absorption in learning which was one condition of attaining supreme bliss.

The sacred obligation to teach, laid upon every one of the higher caste, was accomplished in general by oral instruction, which imparted to the privileged the religious ideas and caste obligations that made up the chief concern of life. As the social organization developed, there gradually grew up separate schools of literature, of law, of Vedanta, and even separate schools of astrology or astronomy and of medicine.

While the Brahmanic or Sanskrit schools of learning reached but a small fringe of the immense population, the village school had a much wider range. It was an integral part of the village life, which, like the caste system, illustrates the organizing genius of the Brahmins. The soil, chief source of wealth in that agricultural land, was controlled by the community, though not to the exclusion of private ownership. The civil offices — headman, accountant, priest, schoolmaster, etc. — were hereditary in families, and carried for the incumbent an allotment from the village land. The various industrial arts, carpentry, pottery, weaving in cotton and silk, leather work, stone cutting, and the higher arts fostered by royal luxury and by the religious ceremonies, — architecture, sculpture, and the goldsmith's art, — were also hereditary. The craftsman, like the civil officers, had his allotment of the village lands, and he was, moreover, a member of a guild which had rights and obligations of its own. Thus industrial art was a product of family training.

The village school (*pathshala*), like the village itself, was founded on the sanction of the *Shastras* (books of sacred laws). In its primitive form it was a mere class of village boys from five years of age to ten or twelve years, sons of petty landowners, traders, and cultivators, assembled around the master, under a spreading tree or in a shed. The instruction was oral, and as each boy had his own task, the older pupils taught the younger. Tracing the letters on a sandboard with the fingers, and afterwards on the ground with a crayon, constituted the earliest exercises; later, words and sentences were written on palm leaf or on prepared wooden tablets, with a reed pen dipped in charcoal ink, the numeration tables, money, weights, measures, and simple accounts completed the course of instruction. In some parts of India, especially in the Punjab, there were attempts at regular gradation of

classes, and in the trading centers, there was a class of schools termed *Landé*, in which boys learned to write a special business character. The village schools, in which only the vernacular language was used, were entirely distinct from the Sanskrit colleges (*tois*). The former had an eminently practical aim; whatever formative influence they exercised was due to the personal character of the teacher, to the ethical maxims which were copied and recited, and to the stories and verses rehearsed to the pupils.

The Brahmanic system of caste and caste education in its full development was limited to the "middle land" of India; that is, to the region north of the Vindhya range comprising the river systems of upper India with their fertile valleys; but the village system and the religion of Brahma spread throughout India.

*Antagonistic Influences* — Every religious movement that subsequently developed in India was a reaction against Brahmanic domination, the tyranny of caste, and the monopoly of learning. Chief among these reactions was Buddhism, which prevailed over Northern India from the sixth century B C to the eighth century A D, when it was driven out of the Indian peninsula by the persecutions of the Brahmans. Buddhism left no schools in the land, but it struck at the heart of Brahmanism by its doctrines and its recognition of secular teachers. (See *BUDDHA AND BUDDHISM*.) A similar influence was exerted by the Sikhs, the Protestants of the Punjab, who arose in the fifteenth century, and whose schools remain to the present time.

*Mohammedanism* — The Mohammedan religion was introduced into India by an alien people in the eleventh century, and its power and permanence were assured by the establishment of the Mogul empire in the sixteenth century. The first revelation to Mohammed is contained in a single verse of the Koran: "Read in the name of thy Lord!" In obedience to this command, every mosque in India, like the cathedrals of Europe, had a school attached, in which children were taught the Arabic alphabet and selected verses of the Koran. In the higher schools, which were supported by imperial grants and private bounty, learned Mohammedans taught Arabic, the sacred language of the Koran, and Persian, the language of the royal circle and of the courts of law, where Moslem rule was established. To the study of language were added rhetoric, logic, literature, law, and crude science. All students were welcome, and the Persian schools became a common meeting ground for Hindu and Moslem youths, even women were not ignored in the scheme of universal instruction.

The Moslem teachings operated as an organizing influence among the outcasts and the aboriginal tribes, and at the same time they

modified the rigid caste notions of the Brahmans themselves. As a consequence, many treasures of Vedic literature were translated into the vernaculars.

At the advent of British rule in the seventeenth century the population of India was comprised substantially in the two great bodies, Hindus and Mohammedans, in about the proportion of four to one. In this comparison aborigines, who in 1872 numbered five and a half million in a total of 191,096,603, are not included. Unlike as were the principles of the two systems, the effects of their intellectual disciplines were similar. Both gave excessive development to the memory and fostered a passion for abstract reasoning, qualities which must be kept in mind in the endeavor to estimate the progress of Western education in the empire. Schools of both systems, in number about 40,000, are still in operation, as shown by the government reports. Many of the old village schools have been transformed into modern primary schools, and a few Sanskrit and Persian higher schools partially transformed into modern colleges.

As to the existence, general character, and wide diffusion of the ancient schools, all authorities agree; but no statistical measure of their operations was attempted before the English occupancy. Investigations carried on in three presidencies, Madras, Bombay, and Bengal, between 1823 and 1835, showed about the same condition in all. The most complete of these investigations was made in Bengal by Mr W Adams, who reports 3355 schools with 41,247 pupils in a population of 7,789,189. Mr Adams estimated that of the adult male population about 5.55 per cent could read and write.

*The Transition Period* — The British East India Company was incorporated by the British Government in 1600, under the title of the Governor and Company of Merchants of London trading in the East Indies, and soon after received the charge of Bengal from the Emperor of Delhi. During the first century of the Company's operations nothing was done in regard to education in their ever-increasing domain. The work was begun by missionaries, who followed the traders early in the eighteenth century, and for a hundred years more the record of English educational effort in India is solely that of missionary zeal reinforced at a few points by private undertakings. No action was taken by the government in the matter until 1813, when, upon the renewal of the East India Company's charter, a clause was introduced providing for an annual expenditure of 100,000 rupees (equivalent at that time to \$50,000), by the Company's Court of Directors, for education in India. The appropriation was expended largely in scholarships to enable promising students to attend the existing schools, and for some time the government merely supplemented mission-



ary and private agencies with a constantly increasing effort at their organization. The entire period, from the beginning of the eighteenth century until the middle of the nineteenth, when the Indian government was charged with full responsibility for the education of the native population, may be regarded as a period of transition from ancient to modern conditions. It prepared the way for a general system of native education on European lines and under government direction. Two essential conditions of the system were worked out in missionary schools: the use of the vernaculars in the instruction of the masses, and the place of English in the scheme of higher education. The former was accomplished by the work of Carey, Ward, and Marshman in the Baptist mission at Serampore. These men, all oriental scholars of note, devoted themselves to the double task of teaching the humbler natives and translating modern textbooks into the languages familiar to Hindu and Mohammedan scholars. The question of English was practically settled by the action of Dr. Alexander Duff, who arrived at Calcutta in 1830 as the representative of the General Assembly of the Scotch Church. Ignoring all precedents, this energetic leader at once opened a school in Calcutta with the express purpose of making English the medium of instruction in the science and literature of Europe. The success of the school and Dr. Duff's articles on the subject, in the home papers, played a prominent part in the famous controversy of 1834.

While the mission schools were thus pushing forward on new lines, the private institutions established during this period — the Mohammedan College founded by Warren Hastings in Calcutta in 1780 and a Sanskrit College established in 1791 at Benares by a wealthy English resident — followed oriental models, and thus prevented a sudden and disastrous break between old interests and new purposes.

In 1823 the Indian government created a committee of public instruction to take charge of the annual appropriation for the work and of the institutions which had come under government control. These included one English and six oriental colleges, together with a number of elementary schools in Bengal. The committee became the organ of the government for education, and local committees were appointed to supervise the institutions that had the benefit of the fund, and to report to the central committee. In 1833 the annual appropriation was increased from 100,000 to 1,000,000 rupees (\$50,000 to \$500,000), after a hot debate over the question of the language to be adopted as the medium of higher education fostered by the government in India.

The opportune arrival of Lord Macaulay in India as the Legislative Member on the council of the Governor-General settled the controversy in favor of the English language. Ma-

caulay's Minute on the subject, bearing date Feb. 2, 1835, was followed by a proclamation issued by the Governor-General, Lord Bentinck, on the 7th of March of the same year, which declared that "the chief aim of the educational policy of Government should be to promote a knowledge of European literature and science." The use of the government grants in printing oriental books was discontinued, and the funds thus set free were thenceforth applied to promoting European studies through the medium of the English.

As a consequence of this decision English schools were opened in all the provinces. Hoogly College (Bengal), established in 1836, enrolled 1200 students, and an annex was at once provided. Statistics for 1843 gave a total of fifty-one schools and colleges under the government, comprising 8200 scholars. Of these 5132 were studying English. Moreover, Christian, Mohammedan, and Hindu boys, without regard to caste, came together, prompted by the common desire to learn the English language. The motive was obvious, the experience of centuries had taught the natives the advantage of knowing the language of their rulers, in the case of English, expectation was stimulated by the declared purposes of the government to admit trained natives to posts of importance. The principles laid down in Macaulay's Minute have never since been surrendered, but the claims of the classic learning of India were recognized in 1839 by a minute restoring for its maintenance an annual grant of 25,000 rupees.

During this period advance was made in all the provinces. In Bengal higher education received chief attention, in the Bombay Presidency the foundations of a public system of education were firmly laid by the vigorous action of Governor Elphinstone, in Madras native and missionary influences prevailed, in the Northwestern Provinces a model system of vernacular schools was developed through the endeavors of Mr. Thomason, the Lieutenant-Governor, in the Punjab, which did not come under the authority of the Company till 1849, a marked impetus was given to the indigenous schools and colleges.

Before the close of the period all the agencies of education, still at work in British India, missionary and private, municipal, provincial, and governmental, were fully established.

**The Government System — Departmental Period.** — In 1853, when the renewal of the East India Company's charter was under consideration, the feeling of the English nation, aroused to the responsibility for this distant possession, found free expression. In the year following the education of the whole people of India was assumed as a state duty, and the Court of Directors "laid down with fulness and precision the principles that were to guide the Indian Government in the performance of this great task." Their dispatch of 1854

forms the permanent charter of education in India. In a sense this celebrated document was simply the declaration of principles drawn from the experience of a century, and already formulated in Lord Macaulay's Minute and in orders issued by Lord Bentinck and Lord Auckland, acting in their capacity as Governors-General. But the Minute of 1854 gave to these principles the commanding sanction of the British government, and expressed the conviction and will of a nation. The main features of the policy thus announced were (1) the constitution of departments in the several provinces or presidencies for the administration of education, (2) the establishment of universities at the presidency towns; (3) the support of training schools for teachers; (4) the maintenance of the existing government colleges and high schools, and the increase of their number when necessary; (5) the establishment of new middle schools; (6) increased attention to vernacular schools, indigenous or other, for elementary education, (7) the introduction of a system of government grants in aid; and (8) inspection and periodical reports.

The instructions advised the largest freedom to local initiative, and insisted that government aid for education should supplement and be proportioned to the local expenditure. The importance of higher education was emphasized both in deference to the spirit of the people and as a means of preparing natives to enter in due proportion upon administrative and official careers; the importance of female education was urged, and as regards government institutions, it was ordered that the "education conveyed in them should be strictly secular."

Special reference was made in the dispatch to the need of colleges of medicine and civil engineering, and grants were authorized for schools of industry and design after the model of schools maintained by Dr Hunter at Madras, and by Sir Jamsetjee Jeejeebhoy at Bombay. The plan worked out by Dr Monat of the Bengal committee, for an agricultural division in each *zillah* or district school, was also endorsed. It was an all-inclusive scheme anticipating demands which have not yet been fully met in highly advanced nations, and which in India had necessarily to wait upon the slow disintegration of long-established institutions, customs, and prejudices.

In 1858 the East India Company ceased to exist and the government of India passed to the Crown. There followed the Dispatch of 1859, issued by the Secretary of State for India, which reiterated and confirmed the provisions of the earlier dispatch, with a single exception. The grant-in-aid system had failed to promote vernacular education, and it was declared that this purpose could only be realized by the direct action of the provincial governments.

*The Commission of 1882* — The system of

education, started under government auspices and aided by grants from the general treasury, was mainly dependent for its development upon the education departments of the several provinces. These departments naturally favored the interests of higher education, which course accorded with the prevailing native tendencies. For fifty years very little progress was made in the work of popular instruction; a mere fringe of the people in the immediate vicinity of the presidency towns was reached. Moreover, the select company of native students that passed through the schools and colleges, so far from helping to raise the average level of the nation, were drawn away from its vital concerns. The education problem was complicated, also, by other conditions fostered by English rule, especially as these had tended to exalt the Hindu race, the powerful Marathas of the south and the quick-witted Bengali, above their former masters, the Mohammedans. The menace of the situation was fully comprehended by Lord Ripon, Viceroy of India from 1880 to 1884, and in the second year of his administration he created a commission charged with the duty of examining into the educational system and advising as to the means of overcoming the dense ignorance of the masses and welding together the antagonistic races by common interests and sentiments. The Commission, which was remarkable both in its membership and its exhaustive methods, adhered strictly to the principles of the Dispatch of 1854, but urged as a matter of supreme importance the spread and financial support of primary education. For this purpose it was declared that native methods must be followed, particular attention paid to the education of women; the confidence of the Mohammedans secured; and the backward races brought under modern influences. The most important outcome of the labors of this commission was the increase of the central authority in the general direction of education. The change in this respect is indicated by the series of quinquennial reports on the progress of education in India issued under government orders, the first of the series covering the period 1881-1882 to 1886-1887, and by the creation in 1902 of the office of Director-General of Education in India.

*The Commission of 1904* — The resolution of 1904 was the outcome of special inquiries and conferences ordered by Lord Curzon, in view of unsatisfactory conditions disclosed by the third quinquennial report (1892-1893 to 1896-1897) on the progress of education. From this report it appeared that after a temporary advance, primary education was on the decline. The political development that had taken place since 1882 made the evil more alarming than at the earlier date, at the same time the relation of primary education to the entire system was more fully comprehended than ever before. The higher institutions had stimulated

an artificial craving for official life, and like the inferior schools had failed to reach the vital interests of the country, its industrial needs and social welfare. Hence the Resolution comprehended the whole system in a common criticism and called for reform in its conscious aims and formal processes. Special stress was placed upon the need of higher schools of agriculture and technical arts, upon instruction in science and its practical applications which foster observation and reflection upon natural phenomena as a feature of secondary schools.

The resolution voiced the convictions of many of the leading minds of the Empire, but it went far beyond the expression of opinion, and in no uncertain terms declared the purpose of the viceroy to employ all the forces at his command for the accomplishment of the proposed reforms. The sincerity of this purpose is indicated by subsequent reports. These ceased to be merely exhaustive summaries, and gave signs of vigorous activity. This is especially true of the series of occasional reports issued from the office of the Director-General. These deal with particular phases of education, point out defects, furnish suggestions, and follow instruction with the record of expert inspection. The effect is seen in the practical tendencies everywhere imparted to education and in increased appropriations for the work. The example is followed by native chiefs who are responsible for education in their respective states. In schools for princes conducted under the joint supervision of British and native authorities, these future rulers become habituated to western ideas and not only apply the educational system of the British provinces to their own states but in several instances set the advanced pace.

**Features of the System** — The reduction of the provincial reports on education to a unified scheme of statistical presentation was one of the chief outcomes of the Commission of 1882. Maintained by the subsequent quinquennial reports, this scheme makes it possible to grasp the common features of the system of education as it has worked out in the different provinces, and thus to form some conception of the state and progress of the work in spite of its magnitude and almost infinite variety of detail.

**Administration.** — The Director-General of Education in India has no authority over schools and colleges, the work of his office being that of general supervision and advice, made effective by his voice in the distribution of government appropriations for education. The provincial education departments administer the government appropriation and have general direction of public education in their respective divisions, and, in some cases, the direct management of public schools. As a rule, however, these are under the control of district, rural, or municipal boards. Departmental super-

vision is maintained by means of inspectors, of whom the larger proportion are recruited in England. The principals of the government colleges, and a certain proportion of the professors are also drawn directly from England.

By their examinations and the power of affiliating colleges, the universities have from the first controlled the system of higher education. Additional powers were conferred upon them by the Universities Act of Mar. 21, 1904, embodying the reforms proposed by the resolution issued by Lord Curzon. The act authorized the universities to institute regular inspection of the colleges and provide for their transformation into teaching bodies with power to make full provision for the promotion of study and research.

Colleges and secondary schools come within the sphere of university influence. The colleges are subdivided into (a) arts colleges, of which the majority are English, and a few oriental, and (b) professional colleges of law, medicine, and engineering. Their courses of instruction are regulated by the degree examinations. Secondary schools are subdivided into (a) high and (b) middle schools, the former teach up to the matriculation standard and are all English schools. The middle secondary schools may be either English or vernacular schools, the latter correlate with the primary schools and in the majority of the provinces are classed with them. There are also special schools, of which the most important are for training teachers, others are technical and industrial.

All schools and colleges recognized by the education department are classed as public, hence, the term applies to institutions established and maintained by public authorities, and also to those under private management which conform to the official regulations. The latter, which are established and conducted by religious or other associations, and also by private individuals, may be aided by public funds, or unaided and simply recognized.

It is necessary to have these distinctions in mind in order to understand the detailed statistics presented in the government reports, they are of interest also as illustrating the course of the English government in utilizing all the agencies of education and gradually bringing them into a well-ordered system. The distinction between institutions under public and those under private management may, however, be disregarded in a summarized statement of their operations.

**Sources of Income** — The expenditures for education are met by (1) provincial revenues, (2) local or district funds; (3) municipal funds, (4) fees, and (5) other private funds. Provincial revenues consist of that portion of general taxation allotted to a province which the local government devotes to education.

Local funds properly consist of that portion of local taxation which district or local boards devote to education. The system of local taxa-

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tion varies greatly in the several provinces. In some cases there is a fixed cess, or rate, on agricultural lands for education; in others, a proportion of the general land tax (cess) must be devoted to education, in others, tolls and similar levies take the place of a land tax. Municipal funds simply consist of that portion of municipal taxation which is devoted to education. One of the features of the visit of the King-Emperor to India in 1911 was the announcement of a grant of fifty lakhs (\$1,666,665) "to the promotion of truly popular education." Further grants in future years are also promised.

**Operations of the System — Enrollment** — From the latest quinquennial report covering the period 1902 to 1907, it appears that the enrollment in all classes of institutions sustaining any relation to the government was, at the latter date, 4,744,480. If to this number be added the 644,152 students in schools known to, but having no relation with, the education department — that is, Arabic, Sanskrit, and indigenous vernacular schools, the grand total is 5,388,632, pupils and students. Disregarding the independent indigenous schools, the distribution of the pupils in the different classes of public institutions at the beginning and end of the period covered by the quinquennial report, and also for the later year 1908, is shown in the following table —

PUPILS BY CLASSES OF INSTITUTIONS

	1901-1902	1906-1907	Per cent of Increase	1908
Arts colleges	17,651	18,918	7.1	25,736
Professional colleges	5,358	6,250	16.6	
Secondary schools	622,768	713,342	14.5	754,267
Primary schools	3,204,436	3,937,866	22.9	4,190,14
Special schools	36,380	68,104	87.0	102,002
Total	3,886,493	4,744,480	22.0	5,708,238
Number in institutions under private management	2,646,852	3,088,513	16.6	
Number in institutions under public management	1,239,641	1,655,967	33.5	

**Relative Status of the Several Provinces in Regard to Education** — While the recent action of the central government of India has imparted vigor and unity to the educational work, it is, after all, an interest over which each province has independent control; hence, for an adequate conception of its development each province should be viewed separately. The following summary, covering the enrollment in all classes of institutions by provinces, may suffice to show the relative extent and vigor of modern education in each.

The statistics following fall into two groups: one pertaining to popular education as the term is generally understood; the other to the education of those classes from whom the directive forces of the Empire, the professions, the civil service, etc., are recruited.

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PROVINCES	POPULATION	PUPILS IN PUBLIC INSTITUTIONS		Ratio of total pupils in 1906-1907 to population
		1901-1902	1906-1907	
Madras	38,210,362	740,628	875,666	2.3
Bombay	25,471,368	568,902	646,777	2.5
Bengal	52,669,869	1,548,022	1,215,014	2.3
United Provinces	47,691,782	368,495	536,897	1.1
Punjab	20,330,339	182,303	234,895	1.2
Burma	10,477,508	162,748	227,128	2.2
Eastern Bengal and Assam	30,788,134	102,463 <sup>1</sup>	749,687	2.4
Central Provinces and Berar	13,319,519	195,652	237,100	1.7
Coorg	180,607	4,325	4,355	2.4
North-West Frontier Province	2,125,480	12,955	16,961	0.7
Totals	241,264,968	3,886,493	4,744,480	2.0

<sup>1</sup> Assam only

The enrollment in primary schools is the natural index to the state of popular education in a country; but on account of the peculiar position of women in India, the number of girls in school must be disregarded in an estimate of general progress. The enrollment in schools for boys in 1907 was 3,631,000, equivalent to 20.5 per cent of the boys of school-going age. In other words, above fourteen million boys had not been brought into the primary schools. Nevertheless, the increase in this respect above 1902 was marked, amounting to 621,539, pupils, or an average annual increase of 124,307.

**Primary Education** — Formerly reading, writing, and elementary arithmetic were the limit of attainments for pupils in the vernacular schools. At present the following additional subjects are compulsory in the number of provinces indicated in each case by parenthesis: Kindergarten methods for infant classes (4), drawing (4); object lessons (5), geography (7); history as a separate subject (3), singing and recitations (2); hygiene (4); agriculture, either alone or included with object lessons (7), additional science subjects (2); mensuration (4), physical exercises (7). The following are optional in several provinces, but nowhere compulsory. English, Persian, and manual work for pupils above the infant classes.

This increased scope has been accompanied by special adjustments of the programs to the different demands of urban and rural life and by endeavors to excite the interest of pupils and parents in what are termed "middle vernacular schools." These schools, which in some provinces are classed with the secondary schools, are the crown of the vernacular system, upon them depends the welfare of the lower schools, since they supply to the latter the best qualified teachers. The enrollment in the middle schools increased from 158,706 in 1902 to 184,132 in 1907, or 16 per cent. Their normal growth,

however, is prevented by the fact that parents who are willing to keep their boys in school to the age of fifteen or sixteen years prefer an Anglo-vernacular school, since in most forms of clerical employment even a smattering of English has value. Unfortunately teaching pays less than the lower forms of clerical work, and this condition cannot be changed without an enormous expenditure. For the five years 1902 to 1907, the expenditure for primary education increased from 10,545,000 Rs (\$3,395,490) to 13,671,000 Rs (\$4,402,062), or from \$1.05 to \$1.11 per capita of enrollment. But this enrollment, as already shown, is a very small proportion of the total population of school age.

*Teachers of Primary, or Vernacular Schools* — The official reports of education in India, as a rule, give very meager data with respect to the teachers employed in the primary schools. There is a traditional respect for the office which gives the teacher some advantage, but the changing standards of social values threaten to undermine this influence, and the pecuniary considerations are assuming more and more importance. Hence the slight increase in the pay of teachers is noted as the chief element of recent improvement in the conditions of the service. Provision for training teachers is also increasing, and there has been marked advance in the standards and methods of preparation for the work, so far at least as these are set forth in official regulations. Madras, the only province that has recently reported the item, had, in 1907, a force of 30,000 teachers in the 21,379 primary schools for boys, enrolling 692,409 pupils. This is at the rate of one teacher for twenty-three pupils. In 1902 it was found that the average throughout India was one teacher to every twenty-six pupils.

During the quinquennium, salaries have been improved in the schools of Madras under public management, and a system of grading has been adopted which offers prospects of promotion in schools employing more than two teachers. In small schools, where the grading cannot be applied, the trained teachers receive about two rupees a month more than the untrained teachers. Under this system the minimum pay is eight rupees a month, from this amount it rises by successive increments to forty rupees or from \$2.59 to \$13. In eastern Bengal and Assam the salaries range from three to ten rupees a month.

*Teachers of Secondary Schools* — In respect to their financial status and qualifications, teachers of secondary schools differ radically from those employed in the vernacular or primary schools. As a rule, they are graduates of the colleges, and so far as possible the scholastic education is supplemented by professional training.

*Training Colleges and Schools* — The total number of training institutions for men teachers reported in 1907 was 318, with an enrollment of

8225 students. In these totals are included six training colleges for masters of secondary schools, with an enrollment of 270 students. For women teachers there were sixty-three training schools, with 1297 students. The total expenditure for these institutions in 1907 was 1,141,045 Rs (\$369,698).

*The Mohammedan Problem* — A favorable change in the attitude of the Mohammedans is indicated by the recent active cooperation on the part of many of their leaders in the provincial educational conferences, it may be inferred also from the fact that whereas in 1902 Mohammedans, who constitute 22.2 per cent of the population, furnished only 18.8 per cent of all pupils, in 1907 their proportion had risen to 19.5 per cent.

*Education of Girls* — Particular interest attaches also to the increase in the number of girls brought into the schools and to the endeavors to adapt the instruction to their aptitudes and social relations. The advance in this respect is due in great measure to the aroused interest of high-class natives in the promotion of the cause. A signal indication of this interest was the organization of a Social Reform conference in 1888 to consider means of ameliorating the condition of women in India. The conference, which was attended by 6000 persons, mostly Hindus, was held at Bombay at the same time as the notable assembly of the Indian National Congress. At the meeting referred to, the latter, which has become an organ for the expression of national aspirations, numbered 1889 representatives from every province of India. They gave strong support to the Reform Conference, and spread the spirit of its purposes throughout India.

This movement reaches to the very root of the social life of the nation, and marks the breaking up of the most stubborn of its traditional customs. Statistics as yet furnish no real measure of its importance, they are, rather, valuable as a point of departure for estimating its future progress. The total number of girls in all classes of public institutions in 1907, *i.e.* 579,648, was an increase of 186,480 above the total for 1902. They were distributed as follows: 273 in colleges; 61,237 in secondary schools, 513,248 in primary schools, 1267 in training schools for teachers, and the remainder in other special schools. It is interesting to note that about forty-two per cent of the girls under instruction were attending schools for boys. The total enrollment was equivalent to 3.2 per cent of the girls of school age, as against 22.7 per cent, the corresponding ratio for boys.

*Secondary Schools* — The courses of study in secondary schools are determined by the matriculation examinations of the universities. In several of the provinces measures have been taken to organize special courses in the secondary schools with a view to preparing young men for entrance upon business careers, but this movement has made little progress as

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vet, and fully 95 per cent of the boys who pass through the secondary schools pursue the course leading to the matriculation examination. It follows that secondary schools and universities, including the arts colleges and professional colleges affiliated to the latter, in

which students pursue their studies after matriculation, represent a continuous course of liberal and professional education. The secondary or preliminary course of study to the matriculation examination is represented in the following scheme —

COURSE IN SECONDARY SCHOOLS AS INDICATED BY THE REQUIREMENTS FOR MATRICULATION AT THE UNIVERSITIES AGE FOR MATRICULATION 16 (MADRAS AND PUNJAB, 15)

SUBJECTS <sup>1</sup>	REQUIREMENTS BY THE UNIVERSITIES				
	Calcutta	Madras	Bombay	Allahabad	Punjab
English . . . . .	Compulsory	Compulsory	Compulsory	Compulsory	Compulsory
Mathematics . . . . .					
Additional mathematics . .	Elective	None	None	None	None
History and geography . .	Separate and Elective	Combined and Compulsory	Combined and Compulsory	Combined and Compulsory	Combined and Compulsory
A second language . . . . .	Compulsory	Compulsory	Compulsory	Elective	Compulsory
A classical language . . . . .	Compulsory	Alternative with a foreign language and elective	Alternative with French but one of the two compulsory	Elective	Compulsory
An additional classical language .	Elective	None	None	Elective	Elective
An Indian vernacular . . . . .	Compulsory	Elective and alternative with a classical or foreign language	Compulsory	Elective	Elective
Science . . . . .	Elective	Compulsory	Compulsory	Elective	Elective

<sup>1</sup> The complete course is arranged for 10 years in the provinces of Madras, United Provinces, Burma, and Assam, for 11 years, Bombay, Bengal, and Central Provinces, for 9 years, in the Punjab

NOTE — Physiology and hygiene are elective at Punjab, agriculture and surveying elective at Allahabad, drawing at Allahabad and Punjab

*English in the Secondary Schools, Colleges, and Universities* — While the efforts to develop vernacular schools have not been fruitless, the teaching of English still remains the pivotal point of the government system of education. The stress of effort in the secondary schools is on this language. For example, of the total of 713,342 pupils (658,305 boys, 55,037 girls) enrolled in secondary schools, 423,317 (395,513 boys, 27,804 girls) were studying English, as against 164,031 taking a classical language and 611,391 (570,456 boys, 140,935 girls) a vernacular. Pupils who enter a higher institution pass the matriculation examination in which English is an invariable requirement. When the student has matriculated and entered college, his studies are pursued entirely in the English language, whether he chooses the arts or the science course. The only exception is the special course in oriental studies offered in the Punjab University. But of students in secondary schools, only a small number, about 11,000,

annually pass the matriculation examination, and still fewer push on for a university degree. The desire for English is evidently the sign not so much of a passion for modern learning, as of the stronger passion for an immediate means of livelihood and a passport to the favor of the rulers.

**Higher Education** — The number of advanced degrees conferred by the five universities in 1907 was 837. In this number Bachelor of Laws is represented by 638 diplomas, and Master of Arts by 195.

*Movements in Higher Education* — Among the important movements in India is that which is furnishing new motives to student life. These are supplied not only by the reorganization of the universities, including the expansion of their medical and engineering courses, but also by the development of agricultural education. The first step in this direction was taken in 1901 by the appointment of an Inspector-General of Agriculture aided by a nucleus

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TABLE SHOWING FOR EACH PROVINCE OF BRITISH INDIA THE NUMBER OF STUDENTS IN ARTS COLLEGES, AND THE RELATION OF THIS NUMBER TO THE ENROLLMENT IN SECONDARY SCHOOLS AND IN PRIMARY SCHOOLS

PROVINCES	NUMBER OF STUDENTS IN ARTS COLLEGES	FOR EVERY STUDENT IN ARTS COLLEGES THERE ARE ENROLLED IN	
		Secondary schools	Primary schools
Madras	4687	Pupils 26	Pupils 158
Bombay	2747	21	211
Bengal	5190	30	233
Eastern Bengal and Assam	1197	96	511
United Provinces	3068	28	144
Punjab	1598	42	101
Burma	135	392	1272
Central Province and Berar	274	169	692
Coorg	0		
Northwest Frontier Province	22	270	499

staff of agricultural experts. A further impulse was given to the work in 1903 by the donation of \$150,000 by an American gentleman, Mr Henry Phipps, the greater part of which sum was devoted to the establishment of the Imperial Agricultural College and Central Research Institute at Pusa in Berar. In 1905 the government of India announced the intention of setting aside twenty lakhs of rupees (\$644,000) annually for the development of agricultural experiment, research, demonstration, and instruction in India. Local governments and administrations were consulted as to the lines along which this development should be guided, and in an important dispatch, addressed to His Majesty's Secretary of State for India, the government of India defined its general policy.

The proposed scheme included the establishment in each important province of an agricultural college and research station, adequately equipped with laboratories and classrooms, and possessing a farm of suitable size, the institutions to be conducted on the same general plan as that of the central college at Pusa. Progress has already been made in the practical application of the scheme. The staff at Pusa has been recently increased by the appointment of a cotton specialist, and in the chief provinces a whole-time Director of Agriculture has been appointed, with a staff of assistants, consisting usually of the principal of the agricultural college, an agricultural chemist, an economic botanist, and one or two all-around agricultural experts. Nearly sixty experimental farms, in addition to the demonstration plots, have been established in various parts of the country.

Relations have also been established between the Education and Agricultural departments for the control of rural education, and arrangements have already been made in some of the provinces for training village schoolmasters, for short terms, either at an agricultural col-

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lege or at the ordinary training college if the latter has a farm attached. A system of forestry schools (*q v*) in affiliation with the central school at Dehra Dun is also in course of development.

The educational conference called by Lord Curzon at Simla in 1901 laid great stress upon technical education, and as an immediate result a system of state technical scholarships was instituted. The recipients are sent abroad to pursue definite courses of instruction in subjects connected with industrial science or research. During the quinquennium fifteen scholarships were awarded, and they are now granted at the rate of ten annually.

There are at present in India no technical institutions of the highest order, but this want will be supplied by the Indian Institute of Science, to be located at Bangalore, Mysore. The project owes its inception to the liberality of the late Mr J N Tata and his family, who have donated for the purpose property in Bombay estimated to yield an annual income of Rs 125,000 (about \$40,000) a year. The Mysore government and the central government have contributed liberally to the initial expenditure and permanent support of the Institute. It is intended primarily to be a center of post-graduate study and research, particularly in science, and conducted with a view to the application of science to Indian arts and industries. The constitution of the Institute will resemble that of a university which takes entire responsibility both of teaching and examination. Its diplomas will be restricted to its own students.

The material benefits of the English system of education are most strikingly shown in the awakened interest in the practical applications of science. To understand the spiritual change that is going on under the influence of new ideals it is necessary to study the Indian press, to follow the proceedings of the educational conferences, of the National Indian Association, of the Indian National Congress, and the scientific movements initiated and financed by native citizens. The new vernacular literature shows what British education has done for the preservation of the native tongues, and reveals the spirit of Western ideas and sentiments in a Hindu form. In like manner the new religious organizations, the Brahma Samaj and the Arya Samaj, embody religious conceptions borrowed largely from the West.

Notwithstanding frequent outbursts of wild or menacing passions on the part of native leaders, their social and political activities offer irresistible proofs of steady advance toward "a higher state of society and a nobler ideal of domestic and individual life." The movement thus summed up by Sir W. W. Hunter, one of the most eminent leaders England has furnished to this transforming Empire, has its root in the schools modeled after

**English types** Its final stage is foreshadowed in the recent admission of Hindus to the government Council

**Cost of Public Education** — The total expenditure in 1907 was 559 lakhs of rupees (\$17,999,200), as compared with 401 lakhs (\$12,912,200) in the year 1902, an increase of 39.4 per cent in five years. Omitting cost of administration, and other items pertaining to the system as a whole, the direct expenditure on public education was 45,579,102 rupees (\$14,512,071), which was applied as follows for university education, including arts colleges and professional colleges, 10.4 per cent, secondary schools, 33.1 per cent; primary schools, 34.1 per cent, special schools, 7.7 per cent, for buildings and equipment, 14.7. The proportion of the total expenditure borne by each contributing source, as already defined, was as follows: by provincial revenues (including government appropriations) 33 per cent, by local funds, 16.4 per cent, municipal funds, 3.6 per cent, fees, 26.5 per cent, all other private sources, 17.5 per cent; additional public sources, 3 per cent.

The realization of the vital importance of education to the uplift of India was emphasized by the central government in 1902 by an assignment of 40 lakhs (\$1,288,000) annually for this purpose. The greater part of this fund has been devoted to primary education. In 1905 the government made a definite assignment of 35 lakhs (\$1,127,000) annually for primary education. At the same time 5 lakhs (\$161,000) were assigned annually for universities and colleges, 2½ lakhs (\$80,500) for European education, and 2½ lakhs (\$80,500) for certain new departures in technical education. In addition, an appropriation of 20 lakhs (\$644,000) is made annually to the agricultural department, a large part of which is devoted to the improvement of agricultural colleges. The local governments have supplemented these assignments by further provision from their own resources, so that the expenditure on education from public funds in the year 1907 was 296 lakhs (\$9,531,200), as compared with 177 lakhs (\$5,699,400) in the year 1902, an increase of 67 per cent in the five years.

No detailed report of this vast system operating in nine great provinces, comprising a population three times as great as that of the United States, has been issued since the fifth quinquennial report, already cited, which brings the record to 1907. Official summaries for 1908 which have been given in a foregoing table show an increase of 20 per cent in the total number of pupils in public institutions above the total for 1907. It is worthy of note that while there was very slight increase in the registration in colleges of arts and professional schools, the increase in special schools, which include normal schools and technical institutions, was very nearly 50 per cent.

The total expenditure for public education, which was equivalent to \$18,000,000 in 1907, reached \$20,000,000 the following year.

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**INDIA, TRAINING FOR SERVICE IN.** — See PUBLIC SERVICE, TRAINING FOR

**INDIAN NUMERALS** — See NOTATION.

**INDIAN TERRITORY.** — Originally a separate territory, set apart largely for the homes of several of the civilized Indian tribes, but now included in the State of Oklahoma. Its area was 31,000 square miles, and its density of population in 1900 was 12.6 persons to the square mile. Of the total population in 1900, 77.2 per cent were white, 9.4 per cent were negroes, and 13.4 per cent were Indians.

See OKLAHOMA, STATE OF

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**INDIANA, STATE OF** — Indiana was organized as a separate territory in 1800, and was admitted to the Union as the nineteenth state in 1816. It is located in the North Central Division, and has a land area of 35,910 square miles. In size it is about three-fourths as large as Pennsylvania, and four and one-half times as large as Massachusetts. For administrative purposes, it is divided into ninety-two counties, and these are in turn divided into townships. Cities and incorporated towns are usually segregated parts of a township. In 1910 Indiana had a population of 2,700,876 and a density of population of 75.2 people to the square mile.

**Educational History** — The first school in the territory of which there is any record was taught by a French missionary at Vincennes in 1793, and the second school was opened at Charleston in 1803. The first act of an educational nature was passed by the first territorial legislature, meeting at Vincennes, in 1806. This established the Vincennes University, and gave to the new institution the seminary township granted by act of Congress in 1804 for the benefit of an institution of higher learning in the territory. This institution was opened in 1810, maintained a feeble existence for a time, and in 1824 was declared extinct and its lands forfeited for the benefit of the new Indiana Seminary, afterwards University, at Bloomington.

The constitution adopted in 1816 was particularly noteworthy in that it was the first to throw careful safeguards around the various lands given by Congress to the state for education, and in that it laid a mandate on the legislature, "as soon as circumstances will permit, to provide by law for a general system of education, ascending in regular gradation from township schools to a State University, wherein tuition shall be gratis and equally open to all." In 1816 the first school law was adopted. It merely provided for the appointment of a superintendent of the school section in each congressional township, who was to attend to the leasing of the land, and that, on petition of twenty householders in any congressional township, an election should be held to elect

three trustees for the township, who were to open schools and to encourage education. As no means of securing school revenue were provided, however, the law remained a dead letter. In 1818 the Governor was instructed to appoint a seminary trustee for each county, who was to accumulate and invest funds with a view to providing a county seminary for each county. In 1824 another law was enacted, which made the system consist of rural schools, the county seminary, and the state seminary, definitely provided for the election of three trustees in each township, and made the beginnings of the district system by giving the trustees power to subdivide the township, locate school districts, appoint district trustees, erect schoolhouses by the manual labor of able-bodied residents, and examine teachers for the schools of the township. This is the first general school law for the state. Again no funds were provided, so that any schools that were opened were supported by the rate bill and by private subscriptions.

In 1833 the district system was definitely substituted for the township system. Each district was to elect three district trustees for one-year terms, who should examine the teachers and manage the school. Each district could determine whether or not it would have a school, and no one was liable for school taxes unless he sent children to school. Religious and private schools were to share equally in the school revenue. By the laws of 1836 and 1837, householders might make contracts with teachers to teach their children, under certain conditions. In 1841 the culmination of the process of decentralization was reached by the enactment of a law which made the requirement of a teacher's certificate optional with the district trustees. In 1831 the beginnings of county supervision were made in a law which provided for the election of a school commissioner for each county, for a three-year term, whose duty it was to look after the funds of the local school corporations. In 1837 the beginnings of a county system for the examination of teachers was made by a law authorizing the circuit courts to appoint annually three examiners for each county, but district trustees were still allowed to give such further examinations as they saw fit. In 1843 the first state supervision was instituted by the designation of the State Treasurer to act *ex officio* as Superintendent of Common Schools, though the duties assigned to him were almost entirely financial. In 1841 all the property of the district was made liable for a district tax to build a schoolhouse, and the year 1849 marked the partial establishment of the principle of general taxation for schools. At the fall election of 1848 a popular vote of the state was taken on the question "Are you in favor of free schools?" the result being 78,523 for and 61,887 against. As an outcome of this vote, an optional law was enacted which provided for

a general tax of ten cents on all property, and a poll tax of twenty-five cents, this to remain in the counties where paid, and further permission was granted to levy a local tax for school buildings, furnishings, and tuition. The law was not to go into effect in any county until accepted by an affirmative vote of the people, which was finally done in 61 per cent of the counties. In counties accepting the law, the office of county school commissioner, established in 1831, was abolished, and his duties transferred to the auditor, the number of district trustees was reduced from three to one to the district; and a detailed system of reports and blanks was provided with a view to securing better administration. This law marks the beginnings of a change from the policy of decentralization which began in 1824 and reached its culmination in 1841.

Very little educational progress had been made under the old constitution, and the proposal to hold a convention to frame a new constitution was seized upon as an opportunity by the friends of education. The new constitution of 1851 made it the duty of the legislature "to provide by law for a general and uniform system of schools, wherein tuition shall be without charge, and equally open to all", enumerated the items that were to constitute the common school fund, and declared it to be a perpetual fund; forbade special and local legislation with reference to schools and school funds, and provided for the election of a State Superintendent of Public Instruction by popular election for two-year terms. The constitutional provisions with reference to education have remained unchanged since then.

The school law of 1852 contained the substance of the present system. A state school tax of ten cents, to be distributed on census, and local building and tuition taxes were provided for, and township libraries established. In addition to the office of State Superintendent of Public Instruction, a State Board of Education was created, a body which has done more than anything else to establish the present well organized system of the state. At first it was made up of state officials, but in 1865 it was changed to an *ex officio* body of school men. The development of the schools was somewhat retarded by a decision of the Supreme Court in 1854 that all local taxes for support were unconstitutional, and from then until 1867, when practically the same law was reenacted and later held to be constitutional, no local taxes could be levied to prolong the term or to provide better facilities. In 1854 the State Teachers' Association was organized, in 1859 the number of township trustees was reduced from three to one, in 1861 county examiners were given larger power in regulating the issuance of licenses to teach; in 1865 county teachers' institutes were begun, in the same year the State Superintendent gave up the power to grant local licenses, and the State

Board began to issue state certificates; in 1865 the state normal school was established, and opened in 1870; in 1872 the first township high school was started; in 1873 the office of county superintendent was created out of the office of county examiner, provision was made for the organization of separate city school systems with power to employ a city superintendent, and the State Board of Education began to commission high schools, in 1889 kindergarten and night schools were authorized, and the State Board of Education was created a State Textbook Commission to select a uniform series of textbooks for the schools of the state; in 1894 a state course of study was issued; in 1897 the first compulsory education law was passed, in 1899 the county superintendent's term of office was extended to four years and educational qualifications were established for the office, the use of uniform examination questions furnished by the State Board of Education was made mandatory, and definite recognition of high schools was made in the state law, in 1901 the time of attendance required by the compulsory attendance law was changed from twelve weeks to the entire school session, and in 1907 a minimum wage law was enacted and the State Board of Education was created a State Training School Board, with power to designate institutions as training schools, and with a view to requiring all teachers in the state to secure some kind of professional training. In 1911 an optional medical inspection law was passed, county superintendents were given a fixed salary instead of a *per diem*, and a state agricultural and industrial commission was created. Along with all these changes has come a great change in the attitude of the people of the state toward public education, which has done much to make educational progress possible.

**Present School System** — At the head of the school system is a State Board of Education and a State Superintendent of Public Instruction. The State Board is composed of the Governor, the Superintendent of Public Instruction, the presidents of the state university, Purdue University, and the state normal school, the city superintendents of the three largest cities, and three citizens of prominence engaged in educational work and appointed by the Governor, one of whom must be a county superintendent. The Superintendent of Public Instruction is president of the board and acts, in part, as its executive officer. This board has gradually, by careful and intelligent work, secured large authority for itself and has done very valuable work in fostering new and desirable educational undertakings. The board is charged with the duty of considering practical school questions, of examining teachers for state certificates; of preparing examination questions to be used by all county superintendents in the examinations for county certificates; and of examining and commission-

ing high schools. The board also acts *ex officio* as a State Board of Textbook Commissioners, to adopt uniform textbooks for the schools of the state, fix their sale price, and make contracts with publishers, and as a State Training School Board, to accredit institutions to train teachers for the various kinds of schools of the state, to prescribe courses of study, etc.

To the State Superintendent of Public Instruction is given the general supervision of the schools of the state and the care of the school funds, he must visit each county once in two years and examine the auditor's books and ascertain the condition of the school funds, prepare blanks and forms and prescribe methods of bookkeeping, apportion the school funds semi-annually to the counties; decide appeals from the county superintendents, and make a biennial report to the legislature and an annual report to the Governor. He also serves *ex officio* as a member of the Board of Trustees of the State Normal School.

In each county there is a county superintendent of schools, elected for four-year terms, by the township trustees. He must hold at least a three years' teachers' license to be eligible. He conducts eight public examinations each year for county teachers' licenses, using questions furnished him by the State Board of Education, decides appeals from the decisions of township trustees, provides for the examination of all graduates from eighth grade and from the town and township high schools of the county; conducts an annual teachers' institute, holds a preliminary institute of the teachers of each township before the opening of schools, and visits each township institute once each year, visits schools, carries out the instructions of the State Board and the State Superintendent, inspects the county books to see that the school funds are properly preserved, and makes an annual report to the State Superintendent and to the State Bureau of Statistics. A county board of education, consisting of the county superintendent, township trustees, and the chairmen of the town and city boards of education of the county, meets semi-annually with the county superintendent to consider the general wants and needs of the schools, and all matters relating to the purchase of school supplies.

Each county is divided into townships, cities, and towns. For each township one township trustee is elected by popular election. He has charge of the roads, bridges, poor relief, and schools of the township. He has general charge of the educational affairs of the township; power to locate and establish a sufficient number of schools; may establish a township high school if he has twenty-five grammar school graduates in the township, or may unite with other township trustees for the purpose; must maintain a six months term and shall authorize a sufficient tax for the pur-

pose, within the limits set by law, may abandon schools and transport pupils with the consent of a majority of the residents of the school district, must take an annual school census, may transfer children and their funds to other townships, employs teachers and makes contracts with them in writing, according to the minimum wage law, and must make a detailed annual report to the county superintendent and the board of county commissioners.

Cities and incorporated towns are governed by separate and distinct school officials, though otherwise operating under the general school law, unless of over 50,000 inhabitants, in which case they may have special laws relating to the form of government. The city council, or board of town trustees, appoints three school trustees, one each year for three-year terms, to manage the schools. They have the same duties and powers as township trustees, and, in addition, may establish night schools in a city of over 3000 inhabitants, kindergartens in one over 6000, and a system of industrial training in one over 50,000. Cities of 100,000 or over are governed by a board of five school commissioners, nominated by petition and elected by the people, and to them are given certain large powers.

For each subdistrict in the township, the school director is elected by the parents each year, or appointed by the trustee if the parents fail to elect. The meeting of parents may also add additional branches of study to the course of instruction of the school, designate the time of year at which they desire the school to be taught, direct that repairs be made, and petition the township trustees to move, sell, or repair the schoolhouse, or to dismiss the teacher. The school director presides at all district meetings, serves as a means of communication between parents and township trustees; repairs the schoolhouse and provides fuel and supplies, and suspends or expels pupils.

The State Board of Education, acting as a State Textbook Commission, adopts a uniform series of textbooks for the elementary schools of the state for ten-year periods, copybooks, histories, and geographies excepted, these being adopted for five-year periods. A depository is designated in each county, and from this books are sent out to dealers and trustees throughout the county for sale. All schools in each township, cities and incorporated towns excepted, must be taught an equal length of time. The Bible is not to be excluded from the public schools of the state. Colored children may be taught with other children, or in separate schools, as communities may prefer.

**School Support** — The state originally received 650,317 acres of land from the sixteenth section grant, but most of this was sold when the state was very poor, and brought but little. The total grant has produced a little less than

two and a half millions of dollars. The state also received \$860,254.44 from the Surplus Revenue of 1837, one half of which was added to the permanent school fund. From swamp lands, saline lands, bank taxes, fines, forfeitures, and escheats, additional amounts have been added, so that the total permanent fund at present amounts to about eleven millions. The interest on the Congressional Township Fund is distributed to the townships to which the fund belongs, but the interest on the remaining school fund, together with 94.8 per cent of the state school tax of 13.6 cents, is distributed to the different counties of the state, and from the counties to the townships, towns, and cities, on the basis of the number of children reported between the ages of six to twenty-one. The remaining 5.2 per cent of the state tax is held as a reserve fund, to aid poor and deserving districts to enable them to bring their school term up to the minimum required by law. All state money must be used for teachers' salaries only. No county school tax is levied, but the surplus dog fund and license fees go to the school fund of the county. Trustees in townships, towns, and cities up to 100,000 inhabitants, may levy additional local taxes up to fifty cents on the \$100 and a poll tax of fifty cents for extending the school term (tuition fund), and a similar tax but with \$1 poll for buildings, supplies, and other expenses, including salaries. Cities of over 100,000 inhabitants may levy up to fifty-seven cents for all purposes. About two thirds of the total revenue comes from local sources.

**Educational Conditions** — The state, generally speaking, has relatively good educational conditions. There is but a small percentage of foreign born in the state (5.8 per cent), and these are largely settled in a few districts, and in the wealthier part of the state. There are but few negroes (2.3 per cent), and these are mostly in cities, which renders the problem of the education of the colored race easy to handle. Agriculture and manufacturing are the chief resources. Of the total population about 65 per cent live in country districts. The southern third of the state is much poorer than the central and northern portions, and has much greater difficulty in maintaining its schools.

The compulsory education law, which requires that all children, seven to fourteen years of age, must attend school during the time the schools are in session, is well enforced in the cities, and fairly well enforced elsewhere. The county board of education in each county is constituted a board of truancy for the county, instructed to appoint one truant officer, and charged with the enforcement of the law. Cities of 5000 constitute separate truancy districts, and all cities may appoint truant officers to enforce the law. If children are too poor to attend school, the township trustee or the city board of education must provide books and clothing. Homes for incorrigibles

and confirmed truants may be established and a special tax levied for their maintenance.

The average value of the schoolhouses of the state was about \$3300 at last report. This has advanced rapidly within recent years, owing to the abandonment of many poor and small buildings and the substitution of one well-built central consolidated school in their stead. The movement for the consolidation of schools and the transportation of pupils to a centrally located school has made very rapid headway in Indiana, some of the best consolidated schools in the country being found in that state.

Practically all schools outside of cities follow a uniform state course of study, which is issued by the State Superintendent, along with a series of directions and bi-monthly questions on the work to be covered. The required monthly township institute also tends to unify the work of the schools. The schools are well graded, and high schools are numerous. Manual training is taught in nearly all of the cities and in many of the town and rural consolidated schools. Instruction in domestic science is also given in many places. There are many public libraries in the state, a Public Library Commission has charge of the public libraries provided by the state, and liberal township and city taxes for library purposes are allowed. Each community may do as it desires with reference to providing separate schools for the colored race, but equal educational facilities must be provided. While sectarian or denominational instruction is not allowed, the law provides that "the Bible shall not be excluded from the public schools." Private and parochial schools are required to report statistics to the county and state school officials. These schools exist chiefly in the cities, and enroll but about 3.5 per cent of the total enrollment of the state.

**Teachers and Training** — The yearly salaries paid have increased 50 per cent in ten years, being now, on an average for all teachers, about \$500. This is due in part to the minimum wage law, which now requires trustees to sign written contracts with teachers, with a \$100 fine if the contract is made at a lower rate than the minimum wage allowed by law. No statistics are available from which the percentage of teachers in the state who have had normal training can be determined. The minimum wage law of 1907 provides that all new teachers must have had a high school education or its equivalent, and have had in addition twelve weeks in a professional training school for teachers in the case of all beginners, twenty-four weeks in the case of those paid on the basis of three cents, and must be graduates of a professional school to receive salary on the basis of three and one half cents. (The basal minimum is multiplied by the grade made in the examination for the respective licenses to give the daily wage.) The State Board of

Education is designated as a State Training School Board, to define standards and equivalents, designate institutions in which the professional work may be done, and to outline professional courses of instruction. In addition to these designated institutions, the state maintains a large state normal school at Terre Haute.

For the improvement of those in service, besides the monthly township and the annual county institutes, there is the Indiana Teachers' Reading Circle, organized in 1883, which is one of the most successful organizations of its kind in the United States. Though conducted by the State Teachers' Association, its work has been accepted by the State Board of Education, and forms a part of the examination questions for teachers' licenses. About 85 per cent of the teachers of the state are members of the organization. The Young People's Reading Circle, a branch for children, was organized in 1887.

**Secondary and Higher Education.**—The high school has had a large development in Indiana, there being 730 high schools in 1910 with 2054 teachers employed. Of these 519 were township high schools and 355 were fully accredited four-year high schools. This development is due in large part to the wise policy of the

State Board of Education, which fostered and aided the movement years before the high school was incorporated into the state school system. A commissioned high school must have a certain equipment and a four-year course of study, at least two teachers, and at least an eight months term, and the graduates of such schools are accepted into the different state and private institutions of higher learning without examinations. Some of the noncommissioned high schools lack only in length of term, while others are two and three-year schools in process of evolution. Seven cities maintain high schools for the colored race, and four cities maintain manual training high schools. The money for the support of high schools comes from the same sources as that for common schools.

At the head of the school system of the state is the State University of Indiana (*qv*) at Bloomington, opened in 1824. Purdue University (*qv*) at La Fayette, opened in 1874, which owes its origin to the Land Grants of 1862, is a second higher institution, supported by the state. There is also a number of old denominational colleges in the state which share with the state institutions the work of higher education, and a number of private normal schools which offer academic and normal work.

INSTITUTION	LOCATION	OPENED	CONTROL	FOR
Wabash College	Crawfordsville	1832	Non-sect	Men
Hanover College	Hanover	1833	Presby	Both sexes
De Pauw Unvers	Greencastle	1837	M E	Both sexes
Concordia College	Fort Wayne	1839	Luth	Men
Univ of Notre Dame	Notre Dame	1842	R C	Men
Taylor Unvers	Upland	1846	M E	Both sexes
Earlham College	Earlham	1847	Friends	Both sexes
Franklin College	Franklin	1833	Non-sect	Men
Butler College	Indianapolis	1855	Chr	Both sexes
St. Mary's Col and Academy	Notre Dame	1855	R C	Women
Moore's Hill Col	Moore's Hill	1856	M E	Both sexes
St. Meinrad Col	St. Meinrad	1857	R C	Men
Union Christian Col	Merom	1859	Chr	Both sexes
Rose Polytechnic Inst	Terre Haute	1883		Men
Oakland City Col	Oakland City	1891	Bapt	Both sexes
St. Joseph's Col	Collegeville	1891	R C	Men

Besides the two state institutions, the state maintains the Indiana State School for the Deaf at Indianapolis, founded in 1843, the seventh of its kind in the United States, the Indiana State School for the Blind at Indianapolis, founded in 1846; the Indiana School for Feeble-minded Youth at Fort Wayne, founded in 1887; the Indiana Soldiers' and Sailors' Orphans Home at Knightstown, founded in 1867; the Indiana Reform School for Boys at Plainfield, founded in 1867, the Indiana Industrial School for Girls at Indianapolis, founded in 1869; and the Indiana Reformatory, established in 1906, an institution for neglected and wayward children, and an outgrowth of the compulsory education law.

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E. P. C.

**INDIANA STATE UNIVERSITY, BLOOMINGTON, IND.**—The first constitution of the state, adopted in 1816, made provisions for a state university as a part of the public educational system. In 1820 a state seminary, later called Indiana College, was founded. By act of the General Assembly, 1838, Indiana College was raised to the rank of a university, and in 1852 was officially recognized as the state university. In 1856 as the result of a lawsuit the university was deprived of a part of its lands, and the loss was made up by a new grant from the federal government, which secured the future development. After a brief setback during the Civil War, progress continued. The Federal Land Grant of 1862 created some difficulty, since the university was at the time not definitely prepared to meet the requirements of the act. A new institution was founded through a gift of Mr. Purdue, to which the federal grant was assigned. In 1867 the first state appropriation was made to the university and in that year women were admitted to the classes. The Indiana University School of Medicine was established in 1903 and gave a two years' preparatory course. In 1908 the Indiana Medical College, located at Indianapolis, was united with it under the title of the former. Under the administration of President David Starr Jordan, who entered office in 1885, the university advanced to the rank of the leading institutions. In 1889 the school of law, which had been discontinued, was revived with a three-year course. In 1895 and 1903 the revenue from the state was increased, the university receiving four elevenths of a tax of two and three fourths cents on every one hundred dollars of taxable property. In 1908 the School of Education was established. The government of the university is in the hands of a board of trustees elected partly by the State Board of Education and partly by the body of alumni since 1891. The departments of the university are the college of liberal arts, school of education, graduate school, school of law, and school of medicine. The admission requirements are sixteen units. Candidates are admitted by certificate from commissioned high schools (see HIGH SCHOOLS, ACCREDITING OF) or by examination. The college gives the following courses leading to the A.B. degree—classical, commercial, chemical, engineering, arts-law, arts-medicine, journalism, pedagogy. A summer session is also maintained. The enrollment in 1909-1910 was 2564, distributed as follows: college, 1828; graduate school, 137; school of law, 143; school of medicine, 248; school of education, 236. The faculty at Bloomington consists of seventy professors and more than a hundred junior officers of instruction.

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**INDIANS, AMERICAN, NATIVE TRAINING.**—(The general discussion of the education of primitive peoples is given under that title. The present article is limited to the discussion of the concrete practices of selected American tribes by one who was educated under the conditions he here describes.) It is generally assumed that the American Indian had no definite standards of his own, by which to measure life and initiate the young into the tasks and philosophy of the race. This is not true. His ideals were surprisingly high, and he found it impossible to accept the material gains of a "superior race" without spiritual loss. For them he has sacrificed against his will the simplicity and the generosity of his manhood.

Nature gave to our mothers strength of body, and that sure intuition which led them to absorb and to transmit to the unborn all that is most vital and profound in the breathing universe. Silence and solitude in the surroundings of the young wife—the expectant mother, a hush that was only broken by the sighing of the pine wood or the thrilling orchestra of the distant waterfall—these were the foundation of our spiritual training. Again in solitude and silence we learned to rise to that which is beyond ourselves—the mysterious and holy! In due time the child is born, and becomes at once the center of the family. To this rude cradle the whole clan pays its respects, as the latest comer from the Mysterious, the Great Giver of all life. The mother will never allow any other duty or pleasure to interfere with her duty to her child. From the moment that its wondering eyes opened upon her in the wilderness, she has accepted a sacred trust. She straps the cradle to her back while busy with her household duties, or suspends it from the bough of a tree, where she can still see and talk to the little one, ever pointing him to nature, and beyond to nature's God. He is taught from infancy that he is brother to the animal people,—the innocent, dumb creation,—and that the trees and the rocks are the embodiments of a mysterious Power, and therefore worthy of reverence. Above all things he must seek spiritual guidance fasting and in solitude; he must honor and respect his elders, and learn to hold his peace. Words are weak, but silence is perfect equipoise, the evidence of a perfect self-control, and it is silence the Indian cultivates. He is admonished to be truthful and chaste, to love his country more than life, and never to violate the trust of a friend. There was much of the stoic in our philosophy, and of the ascetic in our ideals. The boy is early forbidden to say or think:

"This is mine!" He is taught that the love of possessions is a weakness to be despised, and that one should desire to have only in order to give. This law forever wiped out from the Indian mind all commercialism and every possibility of material progress under tribal conditions. Trained to divide his last mouthful, he could not easily compete with his brother in a brutal and selfish struggle for existence.

In order to be a perfect man, one must have a perfect, symmetrical, and efficient body. This demands absolute self-control in eating and in all the pleasures of sense. The Indian exercised constant self-denial, and accustomed himself to continual and severe exercise from the age of six to sixty. His courage was early developed so that he should fear neither pain nor death. Living the natural life, he had no false modesty; he was naked and not ashamed; his courtesy was from the heart.

When the boy is seven or eight years old, his father begins in earnest his training for manhood. He is occasionally called upon to fast for a day, and the father usually fasts with him for the sake of example and sympathy. They both blacken their faces for a sign, and the boy's comrades make the ordeal more difficult by secretly tempting him to break his fast. His nerves are tested and strengthened by awakening from sleep with a sudden war-whoop, or by sending him for water after dark in a strange country. Perhaps the father compels him to dodge around a tree trunk, while he sends arrows whizzing about his ears! His faculty for observation and reasoning is developed not alone by constant roving, but by close questioning as well. Each night he must be prepared to stand an examination on the things seen and learned in the woods that day. The language of footprints includes the distinction between the moccasin of different tribes, the age of the trail, and the probable intention of the traveler. In the case of an animal, one should tell the sex, the number of hours since he passed, and something in regard to the circumstances, as whether he was hunting or hunted. It was a common thing among us to be able to distinguish the footprints of members of one's own family, as well as to know that of any member of the clan from an outsider's. The position of the sun and stars and the ordinary weather signs and appearances must be mastered for a guide to time, direction, and locality. It is almost unheard of for an Indian to lose his way. He is carefully trained from an early age to be independent in the woods, so that he can take care of himself in an emergency. If he is belated and overtaken by darkness, he must know how to settle himself for the night without anxiety. He must be able to take fish and birds without a weapon, know where to look for edible roots, berries, and mushrooms, and how to start fire with pieces of punk or flint and knife. He is taught to make arrows for himself under the

direction of his grandfather, who is usually his very good comrade, and later the bow, with which he assiduously practices the off-hand shot. He must also learn to throw stones accurately. The art of finding and outwitting the game is a more complicated one, in which he is systematically trained by his father, grandfather, and male kinsfolk. In physical training much stress was laid upon endurance, and the disproportionate muscular development of the white athletes was not desired. Swift ness and agility were essentials. The young warrior of our people might have posed as a model for the Apollo, and his sun-browned skin was as smooth and fine as satin. The jet-black hair received painstaking care, and among the Plains Indians sometimes attained extraordinary length.

He never knew when or under what conditions he might be tried, hence he must be a "minute-man" both in war and hunting. He was a public servant—one who would be forever disgraced if he failed to respond when called upon for difficult or dangerous service, in summer or winter, by day or night. He must be always ready, able to run without food or water, if necessary, and to sleep on frozen or wet ground, for such was his Spartan training. At the same time he had much personal liberty as a boy, and was rarely punished or severely scolded. We Indians, even in childhood, had a peculiarly sensitive dignity and intense self-respect, which was cultivated by our elders by every means within their power. The well-born child was distinguished and marked out for an honorable future by a series of festivals given by the parents to celebrate and announce every stage of childish progress, such as the first step, the first shot with bow and arrow, or the ear-piercing, which was a sort of christening ceremony. This gave him, while still very young, a sense of standing and responsibility as a recognized member of the clan.

His mental discipline consisted largely in memorizing the legends of his people and the brave deeds of their heroes, whether traditional or authentic, all of which he was expected to have at his tongue's end. In this tribal lore the wise and old men were the accredited teachers. The young man generally said very little, willing to remain an apprentice until he should be admitted to the war feast or the council, which he well knew must depend entirely upon his own courage and success. He had played with his sisters and girl cousins until he was twelve years old, but if he were seen with the girls after that age, the other boys would threaten to put a dress on him! It was now time to devote himself wholly to manly occupations, and he might even go upon the warpath as early as fourteen or fifteen. The first *hambeday* (religious fast or vision), came at about the same time, and was a period of solitary communion with the *Great Mystery*.

With the ancestral philosophy as a foundation, the Indian's out-of-door life made him a strong reasoner and an independent thinker. He was as ambitious to be a successful hunter as a warrior, since the good hunter is also a feast-maker and the social center of the tribe. Many of our most noted characters were of this type, men of peace, whose generosity and good will gained for them not only the favor of their own band, but intertribal distinction.

On the other hand, his sister was put through a course of training equally rigid in its way, according to our ideas of the womanly character and vocation. We Indians held firmly to the belief that purity and modesty are the foundations of womanly strength and of the sacredness of home. All her energies were subdued to this end. Free and sportive when with her girl companions, in the presence of man she became instantly mute, averting her face from him with child-like, yet maidenly, timidity and reserve. The use of the eyes was strictly inculcated by the careful mother, and the "straight eye," that guarded, yet straightforward look, was deemed an index to the purity of the maiden. There was, in the old days, no social gallantry or meeting of the young men and maidens, save in one or two formal dances. Even in these they did not take partners, the boys dancing on one side of the ring, and the girls opposite. It was a sort of Quaker gathering. The young girl must not joke or talk freely even with her own brothers, or with any man except her two grandfathers. When one came to ask her hand, she was not expected to reply at once, but to keep him on probation until satisfied that he was sincere and worthy an answer. She had sometimes a little teepee of her own within the parental lodge, and went nowhere without the protection of her grandmother, who was considered to be her natural guardian and supported the part with much dignity. Every year, from the age of twelve or fourteen, she joined in the virgins' feast, where all take their oath upon the "sacred stone" to their purity and innocence, vowing to remain chaste until their marriage. The whole tribe attended this feast as spectators, and if any girl was discovered or suspected to be untrue to her vow, she might be publicly disgraced.

From early childhood the "little woman," as she is called, worked side by side with mother and grandmother, helping or imitating her in beaver-like industry. Tanning and dressing skins, drying meat, making and pitching the skin teepees, fetching wood and water, cooking — these were her hardest tasks, to which she added the making and mending of the family clothing and moccasins, the gathering and drying of fruit, wild rice, and roots for winter use. All these the little girl "made believe" in her earliest play, and learned to achieve gradually, as strength and skill permitted. She usually became an adept in needlework, whose

pride it was to see that her brothers' and male kinsfolk were becomingly attired; nor were the poor and old people of the clan forgotten. While hunting, fishing, and war weapons were made by the men and boys, the women made everything else, including more or less fine pottery in many tribes, the weaving of rush mats and blankets of wool, basket-making of vegetable fiber, and canoe-making. All of these are decorated in symbolical designs, conventionalized from natural objects, such as hills, a serpent, lightning, leaves, and flowers, while the marvelous combinations of color are likewise adapted from nature with much of native artistry. The Indian girl, as well as her brother, was taught to repeat sacred stories and legends of old, especially those which have a feminine character. Even her lullabies spoke of the doe, the mink, and the ermine (to which woman is often compared in the language of compliment), or of the fairy sisters who lure the lone hunter to follow their musical laughter into the depths of the forest. Her dress was that of a miniature woman, a long, straight robe reaching nearly to the ankles, with wide flowing sleeves; and her home-made dolls were attired after the same unvarying fashion. Her long, black locks were dressed with perfumed oil, smoothly plaited and sometimes adorned with beads or shells to match her necklace, but the woman might not wear eagle feathers, unless rarely in a sacred dance. She must learn by practicing when alone how to laugh musically and gracefully, must sit sidewise in modest feminine fashion — never cross-legged like a man, and etiquette even prescribed a distinctive speech, many words being used only by women or having a feminine termination. The Indian girl could run, swim, and ride almost as well as her brother, and as she had much labor to perform, the woman was often quite as muscular as the man, and of heavier build. She was apt at woodcraft, and a close observer of bird and animal life, particularly of their home-making. She knew the plants and flowers better than he, since it fell to her to gather and preserve them for food or medicine.

Such was the practice and such the precepts by which we were prepared to bear an honorable part in the life of our people.

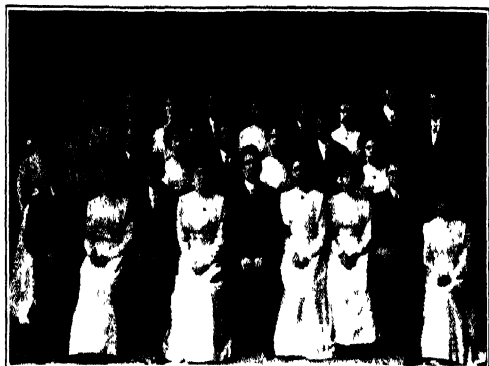
**Present System of Education.** — It is said that one of the early councils with the natives of Virginia was concluded by an offer on the part of the colonists to educate several of the children of the forest with their own sons. The Indians retired to deliberate upon the matter, after which they replied as follows: "We thank you for your generous offer. We have decided that the education of your schools will not benefit our children in the life that is ours, but we desire to convince you of our friendship for the white man. If you will entrust us with three or four of your most promising young men, we will charge ourselves with their edu-



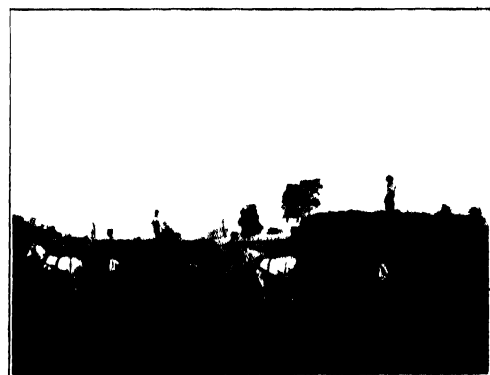




Sheldon Jackson Industrial School at Sitka, Alaska



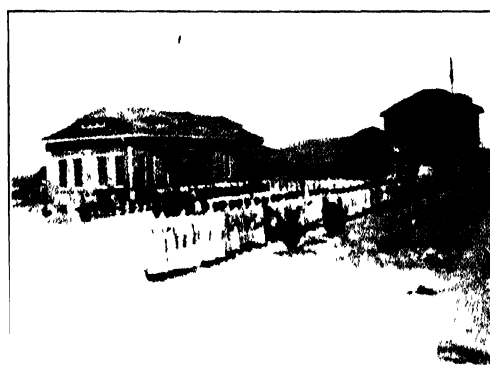
Graduating Class (1909), Carlisle Indian School.



Farming at the Carlisle Indian School.



Gardening at the Carlisle Indian School



A Training School for Girls, Tucson, Arizona



A School Band

cation, and we will *make men of them*." The story illustrates, as well as may be, the complacent attitude of the conquering Anglo-Saxon, who has been satisfied from the beginning that his kind of education was not only best for himself but for his red brother as well, and that he was doing him the greatest favor within his power by forcing upon him the customs, philosophy, and religion of an alien race. On the other hand, it shows us the unlettered sage, firm in his original belief that his own ways were best for himself. He was not anxious to impose them upon others, but made his counter-proposal as the most courteous, and at the same time the most logical method of conveying his answer. The first American had not the least desire to copy or emulate his unbidden guest, whose vices and weaknesses provoked in him at least as much contempt as his brilliant achievements aroused wonder and admiration. This position he maintained with dignity in every instance until convinced that he was beaten, that he was no longer to be allowed to live his own life, and must learn the language, manners, and religion of his conquerors or be trampled under their feet. When this point was reached by an individual or a tribe, and not until then, he has voluntarily placed his children in school and set himself with determination to "walk the white man's road."

The evidences of his success in this difficult undertaking are so many and so varied, covering, as they do, a period of over three hundred years, that it is curious how long the popular fallacy has persisted that "the Indian cannot be civilized." The only excuse for such a view is to be found in the simple fact that the Indian did not in the main, or until he was pushed to the wall, desire to be "civilized," and in the further fact that until a very recent period no systematic or comprehensive efforts were made in that direction. Sporadic and individual efforts there have always been since the date of the very earliest settlements in America, which efforts have, from the beginning, met with enough success to prove — if proof were needed — that the natives of America are as capable of taking on an alien culture as were the wild Celts of adopting the manners and language of the conquering Saxons. Man is, after all, a progressive animal.

The earliest education of the natives of this country by its invaders may be said to have been the undesigned and inevitable alteration wrought by contact. Even without any conscious wish or intention on either side, a primitive people could not live in close touch with one more advanced, and not suffer a profound change. The Indian passed at once into the iron age. In every case, the first fruits of civilization were knives, firearms, and whisky. These tended toward destructive internecine wars, as they inflamed and brutalized his simplicity; and the next wave brought with it other dangerous and corrupting elements which

he was as little formed to resist. Venereal disease and small-pox, scrofula and tuberculosis undermined his native vigor and decimated the tribes, or in some instances exterminated them altogether. The white man literally possessed nothing which the Indian wanted or needed, while practically all the possessions of the lords of the soil were coveted by the invader. He could not exist without them, and in order to secure them he created artificial desires which he could satisfy, but at frightful cost to his victim. Trade was at the first a mere farce, since the red man had no conception of material values, no taint of commercialism. He was generous and hospitable, willing to give of his abundance without return, and to accept pretty trifles with gratitude. Told that a string of blue beads were made from a piece of the sky, the credulous chief was ready to exchange for them all that he had! But after two or three generations of schooling in the tricks of trade, he became almost as sly and avaricious as his teacher, and in the same way he has come to be in many instances a "grafter" in politics and a hypocrite in religion. This process in its several stages, differing in detail but alike in its general features, has been in evidence in widely separated portions of the continent during the past three hundred years.

Those enthusiastic propagandists and able organizers, the Roman Catholic clergy, have been leaders in the designed and deliberate instruction of the natives, not only in religion, but in art and industry. Their courage and good intentions are worthy of all praise, however one be inclined to demur as to the benefit of imposing their system in its entirety upon a naturally reverent and superstitious people. They have commonly succeeded in grafting their ceremonies upon the "pagan" ritual, and by a free use of holy water and the sign of the cross have made more nominal converts than all other religious bodies put together. It should also be admitted that they have much that is tangible to show for their labors. As early as 1567 the agricultural education of the Indians in Florida was attempted by the Jesuits, and nearly two centuries later early Franciscan missions in California and other parts of the southwest achieved results mainly practical and social. Domestic animals and the agricultural arts were permanently acquired. The discipline of the fathers was rigid, and amounted to a benevolent servitude. In 1834 the missions were secularized by the Mexican government against the protests of the order, and their extensive property divided among the Indians, who soon lost or were deprived of it. Early French missions included those among the Abenaki in Maine, the Hurons in Ontario, Michigan, and Ohio, the Iroquois in New York, the Ottawa in Wisconsin and Michigan, the Illinois in the Middle West, and the tribes of Louisiana. Bishop Laval founded

a school at Quebec for French and Indian youth. Other pioneer missionary work, extending into the nineteenth century, was conducted in the Missouri River region by Father Ravoux, Father De Smet, and other less noted explorer-priests, among Flatheads, Chippewas, and Sioux.

One of the avowed objects of colonizing Virginia, as stated in the early charters, was that of "bringing the infidels and savages to human civility!" The council of Jamestown in 1619 voted to educate Indian children in "religion, a civil course of life, and in some useful trade." A few were taken to England to be educated. In 1663 the colonists demanded children as hostages for the good behavior of the Potomucks, which hostages were to be "civilly treated and brought up in English literature." At about this time King James issued a letter authorizing collections to be taken in the cathedrals for "the education of the children of these Barbarians," and about fifteen thousand pounds was received. In 1621 the Company had allotted one thousand acres of land and received subscriptions to endow an Indian school, wherein the "most towardly Indian children" should be fitted for college. But an end was put to these early projects by a sudden uprising of the incensed natives to rid the land of the troublesome invaders; and although the larger part of the colonists owed their lives to the warnings of Christian Indians, no further efforts were made until the founding of William and Mary College in 1693. The charter of this institution declares one of its main objects to be "the propagation of the Christian faith amongst Western Indians." There was, apparently, some difficulty in obtaining pupils, one explanation of which is given by Governor Spotswood, who writes to England "They (the Indians) urged the breach of a former compact, when, instead of their children receiving the promised education, they were transported, as they say, to other countries and sold as slaves."

In Massachusetts the famous "Apostle to the Indians," John Eliot, who translated the Bible into the vernacular, labored with them in things secular as well as spiritual. He founded the Christian Indian town of Natick, laid out, built, and planted by Indian labor, and it was not his fault that the "Praying Indians" of Natick, who are said to have been thrifty and industrious as well as diligent church-goers, suffered cruelly from race prejudice during King Philip's War. Daniel Gookin was appointed Superintendent of Indians in the Massachusetts colony in 1656, and held the office until his death thirty years later. His duties included the conduct of schools among them, as well as the preservation of good order and discipline. These schools, however, were much hampered by lack of means and of suitable teachers, two diffi-

culties which have largely persisted to this day. It was a part of the New England plan, as in Virginia, to give to selected youth a college education, to fit them for the Christian ministry, and to instruct their wilder brethren. The charter of Harvard College contains a provision for the education of Indians, and not a few availed themselves of it. But the sudden change to a sedentary and indoor life caused many to fall sick and die. One youth who was about to be graduated, "a good student and pious man," says Gookin, was shipwrecked and drowned off Nantucket, and another who had taken his degree died soon after "of a consumption." A third student at twenty years of age is said to have been "an extraordinary Latin poet and a good Greek one."

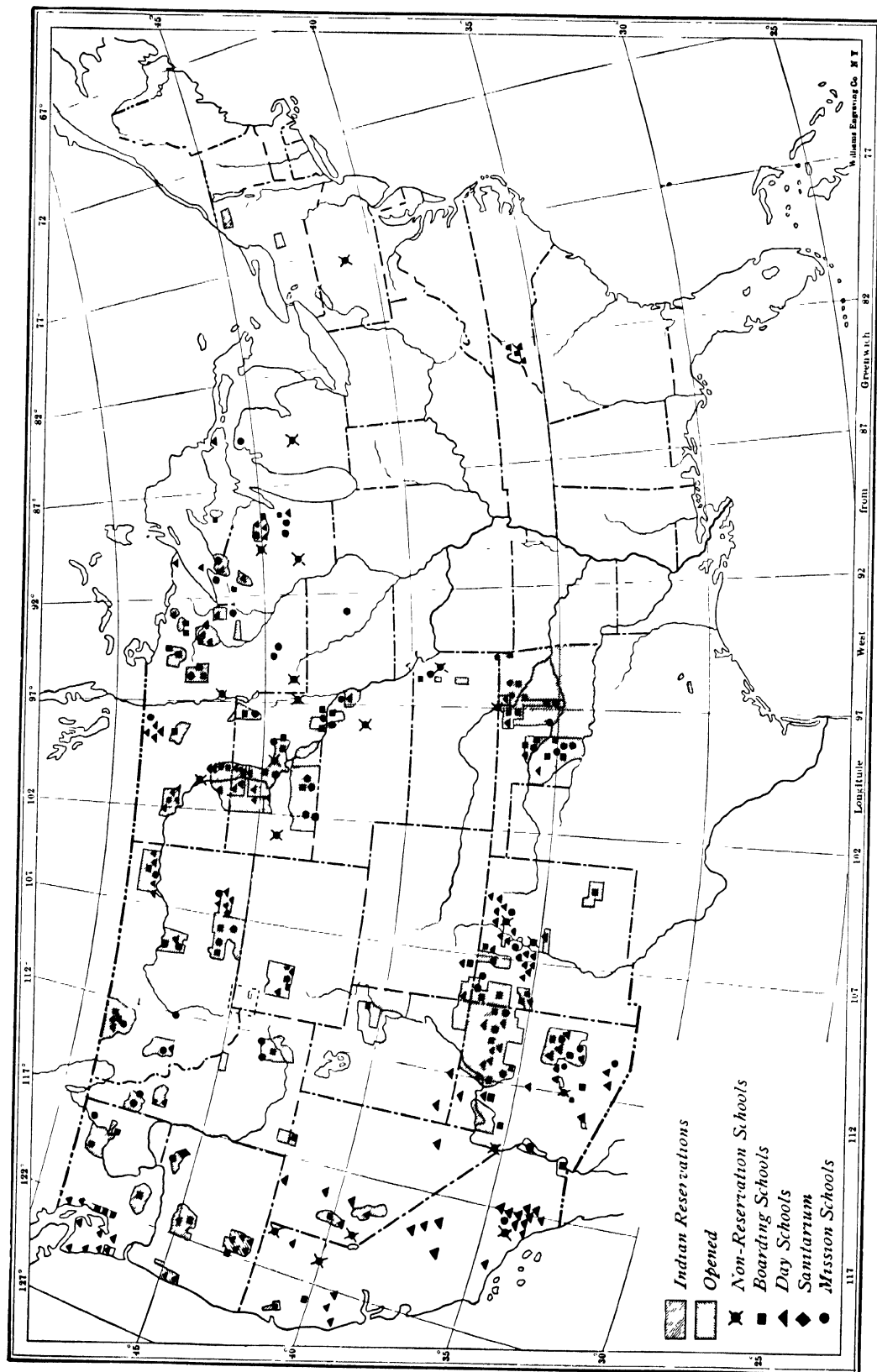
At about the middle of the eighteenth century, an industrial boarding-school was established at Stockbridge, Mass., and the missionary at that place wrote of them: "There are many Indian youth that read English well." Several of these completed their studies afterward at Dartmouth College, which was founded in 1755 as "Moor's Indian Charity School." The school originated with the Reverend Eleazar Wheelock of Lebanon, Conn., who took into his own family a Mohegan by the name of Samson Occum. The youth proved an apt pupil, and became a Christian preacher of much force and distinction. He was sent to England to raise funds for the school, after it had been incorporated as a college and removed to New Hampshire, and was highly successful in this, being a most interesting speaker. He also wrote a number of striking hymns, one of which is sung in the churches to this day. At Dartmouth, Indian and white youths were educated together, many of the latter being trained for missionary work among Indians. The gifted and friendly chief of the Six Nations, Joseph Brant, who was brother-in-law to Sir William Johnson, was one of its early scholars, and afterward sent two of his sons there.

The Moravian missions in Pennsylvania were very successful, and the story of the sad exile of the converts from their prosperous villages and the brutal massacre of ninety innocent and unresisting Christian Indians in 1781 is one of the blackest chapters in history.

There were Russian and English schools for the natives established in Alaska in the latter part of the eighteenth century. In the Canadian colonies much pioneer work was done by Roman Catholic missions, but it was not until 1867 that the provincial government took up the work systematically. In 1904 there were in Canada 24 industrial, 46 boarding, and 228 day schools in operation. The natives of the Dominion are for the most part law-abiding, prosperous, and contented, having proved neither a menace nor a burden to the commonwealth.

The first appropriation by the United States government for Indian education was the sum of





INDIAN EDUCATIONAL INSTITUTIONS.

five hundred dollars voted to Dartmouth College in 1775. Cornplanter, speaking for the Senecas, appealed to General Washington in 1776 for a teacher, "to teach our children to read and write and our women to spin and weave," and agreed to send nine Seneca boys "to be under your care, and learn to become wise and good men." The first general appropriation of \$10,000 was made in 1819, and until 1870 all government aid for this purpose passed through the hands of missionaries of various denominations. Afterward, for nearly thirty years, government schools and church schools aided by government funds existed side by side, until in 1900 these "contract schools" were abolished, the religious societies assumed the care and support of their own schools, and the annual Congressional appropriation is applied under the law entirely to schools conducted by the government. The original \$10,000 had gradually increased by 1870 to over \$100,000, but it should be remembered that this appropriation, which has now grown to several millions annually, is in large part the Indians' own money, being interest on trust funds or made in fulfillment of treaty stipulations, "for value received." It is not disbursed as charity, but as partial payment on an enormous debt. By this time, also, there were constant appeals and demands from the Indians for the establishment of new schools, and the further development of those already in existence.

In 1878 seventeen prisoners of war from St. Augustine, Fla., were admitted to Hampton Institute, Va. (*qv*), at their own earnest desire and the generosity of its large-hearted founder, General Armstrong (*qv*), who soon sent to Dakota Territory for fifty wild Sioux, and added an Indian Department. This experiment was followed the next year by the establishment of a school of similar character, for Indians only, in the abandoned military barracks near Carlisle, Pa., by General R. H. Pratt, who built up at that place the largest, most famous, and in many ways the most successful Indian school in the country. About one thousand pupils at Carlisle and one hundred at Hampton are given a grammar-school education, with a little normal or business training, one half of their time being devoted to agriculture, domestic work, or one of the mechanical trades, taught both for its educational and practical value. Through the "Outing System," originated by General Pratt and since extended to some western schools and reservations, boys and girls are placed in selected farmers' families to work for their board and attend the public school, or during the summer to work for wages, thus learning effectively by association and example.

The eastern or "non-reservation schools," now twenty-six in number and scattered widely over the country, have probably accomplished as much in the way of educating public sentiment and furnishing inspiration and example as in more direct results. Carlisle's brilliant

record in athletics, its football team having met and defeated the teams of some of our leading universities, has done much to attract popular attention to the "educated Indian." The excellent bands of some of the larger schools are likewise a widely popular feature. The great majority of their students, even though not graduates, become self-supporting and self-respecting citizens, cultivating their allotments, making decent homes, or filling responsible positions in the Indian Service, while an ever-increasing minority compete successfully in the various trades and professions in white communities. Of those who fail it should be said that much more is expected of them than is at all reasonable, in view of their meager training, often covering only three to five years, their frequent lack of physical vigor, and the general stagnation of their home surroundings.

Reservation boarding and day schools were first established by the government in 1873. The courses in these are elementary, and in all of the boarding schools the industrial feature has been made prominent, but has only gradually been introduced into the day schools. The evils of appointments made under the political "spoils system" have greatly handicapped the service, these evils having been reduced, but not entirely eliminated, by placing most positions under civil service rules. It is chiefly because of a higher personnel and greater continuity in the service that a comparison between mission and government schools has been generally, though not always, to the disadvantage of the latter. Some of the smaller schools, especially day schools, hampered by poor equipment, inefficient teachers, and a discouraging environment, were by many thought to be almost useless. During the last few years, however, there has been some change in local conditions and a decided change in the official attitude in this regard, and a recent Commissioner of Indian Affairs has recommended the gradual abolition of the non-reservation schools and the development of the simpler and less expensive day-school system, as better adapted to the present needs of the people. The last report of Indian schools gives 343 schools, including mission, with a total enrollment of nearly forty thousand pupils, and involving an annual expenditure of five million dollars. These figures do not include the New York Indians, who are under state control. Eleven thousand Indian children are admitted into the district schools.

A Superintendent of Indian Schools was appointed in 1882, and a force of traveling supervisors some years later. The first supervisor in the field, in 1890, was a woman, and the most practical and successful Superintendent, holding the office for some ten years, was also a woman, Miss Estelle Reel of Wyoming. Each year there are graduates who pass on into higher institutions, such as art, normal, or nurse's training schools, acad-

emies and colleges, so that we have now a considerable number of native teachers and preachers, and some lawyers, dentists, and physicians. A few have succeeded as authors, artists, and lecturers, and we have representatives of our blood in both houses of the national legislature. The results of a generation or two of systematic work are immeasurable, and the best evidence of the Indian's capacity and progressiveness is the list of those who have won recognition and a livelihood in the most exacting and most arduous pursuits of modern life. C. A. E.

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**INDICULUS UNIVERSALIS** — A nomenclator or dictionary of the names of things, compiled by the Jesuit, Francis Pomey, similar in its inclusiveness to the *Janua Linguarum* of Comenius, excepting that usually there is not the same amount of descriptive matter that there is in Comenius, i. e. Pomey's book remains strictly a nomenclator. Pomey (1619-1673) became a Jesuit in 1636, and was a teacher in various schools and chiefly at Lyons. He wrote many books, particularly a large French and Latin dictionary, and a small one (*Flos Latinitatis*), a *Pantheum mythicum* (1659), a rhetoric, and *Colloquia scholastica* (1668). The *Indiculus Universalis* (in French and Latin) was published at Lyons in 1667. It went through many editions, and has been issued in several languages, e. g. Italian, Spanish, German, Dutch, and English (See Backer, *Bibliothèque de la Compagnie de Jésus* (1895), Vol. VI, p. 989). An English edition by A. Lovell, M. A., appeared in 1679. F. W.

**INDIFFERENCE.** — See ATTENTION; INTEREST; SCHOOL MANAGEMENT

**INDIFFERENCE POINT** — There are certain experiences which are neutral with reference to their feeling tone, giving neither pleasure nor displeasure. These are said to be at the indifference zone or point. A simple illustration of this fact can be given by observing the transition which takes place in feeling tone when one passes from warm temperature sensations to cold. Between warmth and cold there is a central point at which no pleasure or its opposite is experienced. C. H. J.

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**INDIRECT METHOD.** — See DIRECT METHOD.

**INDIRECT VISION** — The field of vision is large, and includes not only those objects which are in the center of clear vision, but also objects which lie around these objects which are most clearly seen. The importance of the field of indirect vision for the individual is that he receives from this indirect field warning of objects that are moving toward the center of the field. However, because of the obscure character of the objects in the indirect field, the individual is not burdened by attention to these indirect objects. He can concentrate attention and experience upon the small number of objects at the center of clearest vision. The structure of the retina is different in the outlying regions. It is more sensitive in these outer regions to differences of light and shadow, and consequently reports all differences in movement of objects; while at the center of vision it is more sensitive to color differences. C. H. J.

See EYE

**INDIVIDUAL.** — See SELF; PERSONALITY

**INDIVIDUAL DIFFERENCES** — Every individual has characteristics which differentiate him from every other member of his race. The biologists have long recognized the importance of individual differences. They commonly use the term "variation" to indicate these departures of individuals from the racial type. When the variations are marked, the term "mutation" is sometimes used to designate the distinguishing characteristic. The two biological terms "variation" and "mutation" are sometimes employed in describing human characteristics. The term "individual differences" is used more commonly to call attention to the fact that along lines which the biologist would neglect there are characteristic differences that are of importance to the educator and to the student of sociology and psychology. Thus the appearance of a very tall or a very short individual would be of importance to the student of physiology and biology, but it would be of relatively small importance to the student of psychology. The appearance of a black-haired family in a light-haired stock would be another important event for the consideration of the biologist, but these physical characteristics are of no great importance to the educator. On the other hand, when an individual appears who is notably deficient or notably strong in his ability to work out number combinations, or to develop skill in one of the arts, we have a type of variation which is of great significance to the educator. These differences may be described as mental variations or mutations. Indeed, it may be said that in mental life we have a sphere of most plastic adaptation and readjustment. The nervous system has been



described as the organ of variation, and consciousness has been described as the sphere of readjustment. When animal forms reach the stage of complexity in which structural readjustment is difficult or well-nigh impossible, the readjustment in function which appears through the use of powers in a great variety of ways takes the place in a measure of the earlier variations in structure which are of prime importance in biology and physiology.

An important question for the student of education is the extent to which individual variations may be affected through educational agencies. The students of heredity have made it clear in recent investigations that there are marked individual differences in ability at the beginning of individual life. The question now arises whether the individual differences which arise from hereditary endowments may be emphasized or overcome through educational practice. There are two schools of thinkers, one of which emphasizes the fundamental hereditary endowments and lays very little stress upon the modifications which can be produced through education. The popular mind, on the other hand, is impressed with the possibilities of modifying the hereditary endowments through educational activities.

The answer to this question has yet to be worked out with the aid of such methods as are described under the topic **TESTS** (*q.v.*) See also **ABILITY**; **EVOLUTION**; **HEREDITY**. C H J

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**INDIVIDUAL PSYCHOLOGY** — That branch of psychology which deals with the characteristics that distinguish one individual from another. Much attention has been given to differences in individual imagery. (See **EYE AND EAR MINDEDNESS AND MEMORY**) There are undoubtedly differences in individual inheritance. (See **HEREDITY**) The importance of these individual differences is great in educational practice, as indicated in the adoption of the elective system (*q.v.*) as distinguished from the required course. The whole problem of grading (*q.v.*) is related to this matter of individual differences.

See **ABILITY, GENERAL AND SPECIAL**; **ADOLESCENCE**; **CHILD STUDY**; **PSYCHOLOGY**; also **GRADING AND PROMOTION**

**INDIVIDUAL READING.** — In the teaching of reading in the elementary schools, the traditional practice in assigning lessons is to require the same work of all members of the class. More recent practice separates the class into several groups to each of which a different assignment is made. This is done to give the child an increased interest in preparing

his work at home and reading it aloud to his fellow pupils at school. Under this method the child knows that most of the class will be hearing unfamiliar material, the meaning of which he must make clear to them. Such a method likewise increases the attention of the class, doing away with the listlessness which characterizes children who are compelled to listen to a selection which they themselves have prepared and with which they are thoroughly familiar. H. S.

See **READING, TEACHING OF.**

**INDIVIDUAL TEACHING.** — Any device by which the school program or other organization of classroom instruction allows of increased attention to the special needs of individuals is termed a method of individual teaching. Where the individual adaptation is attained through the teaching of small groups, it is more properly called "group" instruction. Hence the term "individual" teaching more strictly applies to that instruction which attempts to meet the needs of a single child at a time. Such particular care by the teacher may extend from that momentary attention to a pupil which is incidental in class instruction to the use of a supplementary teacher whose chief function is to teach children who require prolonged personal attention. H. S.

See **GROUP INSTRUCTION, SCHOOL MANAGEMENT**

**INDIVIDUALITY** — The idea and fact of individuality are among the most familiar and best known things in experience. They are also among the most difficult to describe and define. Individuality is such a fundamental matter that it can hardly be defined without presupposing itself or giving a purely verbal equivalent, such as the unique, the distinctive to the point of the irreplaceable. An indication of its meaning is given by its logical usage, where it always implies contrast with a kind, sort, or class. This implied contrast also gives an indication of the place where the conception of individuality is important for educational philosophy. School administration and instruction require a certain uniformity of rule and method, these in turn presuppose sameness of character in those dealt with. In so far as individuals are regarded as members, specimens of a class, distinguished from one another by purely external and physical traits. Since, as a matter of fact, there are intrinsic mental and moral differences, the purely uniform, or class, standpoint leaves out of consideration conditions that cannot safely be ignored. The idea of individuality serves as a reminder of these outstanding conditions. It calls attention to those traits which are unique, non-repeatable, which are differential, and which accordingly require special treatment, particular readaptation of general or class methods and standards.

History shows a continual, even if irregular, movement toward individuation, the recognition of the increasing importance of individually distinctive traits. In savage societies, the individual is also lost in the group — in the clan or tribe. Not till a comparatively recent point of historic development do we find individuals possessing rights on their own account in contradistinction from their status as members of a family, guild, class, caste, etc. Their rise from submergence in a class is a part of the growth of democracy as a social principle. From the scientific side, the appearance of the doctrine of evolution has emphasized the importance of individual differences and variations, as against the older notion of the fixed species within which the individual was placed and which exhausted his important or essential nature.

One of the most fundamental of all philosophic cleavages centers in the question of the method of valuing the facts of individuality. Professor James has divided philosophies into those which tend to assume the priority of the whole and to derive the individuals from the whole as its constituent parts or specimen instances, and those which assume the priority of the parts, the individuals, and make the whole secondary, dependent upon the arrangements reached among the individuals. The former philosophies approximate monism in substance and rationalism in method, the latter are pluralistic and empirical. The prominence of the concept of the organic in nineteenth-century idealism is owing to the fact that it seemed to yield a conception for reconciling the otherwise opposed ideas of individual and universal, whole and part. It may be questioned, however, whether the notion of the organic is a solution or only a peculiarly vivid presentation of the terms of the problem. The proper method of dealing with the question is probably suggested by the connection that exists between the common, generic, or class-universal and the facts of stability, order, conservation on one hand, and between individuality and variability, freedom, progress on the other. In a static and finished world, individuality would have no meaning; while a world lacking in universal characters, in characters that make things capable of reduction to classes, would not present any signs of law, permanence, and conservation. For the further educational significance of the term, see EDUCATION; and PHILOSOPHY OF EDUCATION.

J D.

**INDO-CHINA** — See FRENCH COLONIES, EDUCATION IN.

**INDUCTION AND DEDUCTION.** — There are two complementary movements of thinking involved in directing inquiry to a well-grounded conclusion. When a perplexity occurs or a problem presents itself, the first step is to

clarify the obscure situation. This consists in such analysis of the situation as indicates a principle, law, or relation. Induction always terminates in an idea or proposition which is general because a statement of a relation, a universal. Deduction is the application of the generic factor to the interpretation, explanation, and organization of specific data. The two movements are complementary because induction terminates in the universal with which deduction sets out, while the validity and scope of the universal is determined by its application, under test conditions, to new facts — this application being deduction.

In Aristotelian logic, syllogism and demonstration correspond to what is now called deduction. The term which was translated into Latin as *deductio* designated simply the method of *reductio ad absurdum*, or the indirect proof of a proposition by showing that its contradictory proposition involved a logical absurdity or self-contradiction. Induction was a method of collecting instances or particular cases, and was perfect when all cases agreed, and formed, therefore, a class as it was imperfect when a number of cases (not all) agreed, so that the most that could be said was that some S is P, or that usually S is P. Perfect induction was known as induction by simple enumeration. After the rise of modern methods of induction, many logicians denied that the method of enumeration was a true case of reasoning, on the ground that it merely summed up in a single statement what was already known, instead of discovering any new truth.

In the sixteenth and seventeenth centuries attacks upon syllogistic logic because of its barrenness and verbal character were widespread. Interest centered in a logic that could be employed to wrest nature's secrets from her, while the syllogism was fitted, as Bacon said, only for argumentation. Agreed in their opposition to the old organon of thought, the new logicians at once divided among themselves. Some, Descartes and his followers, sought the new method in a new type of deduction, others, the British empiricists, in a new form of induction. According to the former school, we should begin by making a *tabula rasa* of all traditional beliefs, and seek for some concepts that are so inherently clear and certain that their meaning cannot be disputed nor their truth doubted. From these most general truths, by combination, further truths were to be established, proceeding by graded steps, so that at no time should any new factor be introduced which was not clearly defined and certain. In this way, reason was to proceed until reaching particular phenomena or concrete events, in space and time. These deduced phenomena would be approximated by actual sensible phenomena, and would constitute the rationality or explanation of the latter. Descartes even went so far as to offer a system of (to him) self-evident first principles, from which, given an original chaotic state of

nature, the whole existing order of the world might be rationally deduced. Stated in the above fashion, the method appears as formal and as fruitless as ever the syllogistic logic had been, but, as matter of content, the whole scheme was conceived in mathematical terms. In effect it was a plea for the application of mathematics to nature. Toward the development of a mathematical science of nature, Descartes himself took the first step by his invention of analytic geometry. And for succeeding men of science—however it may have been with philosophers—deduction has meant mathematical procedure, which, entering upon a brilliant career, became a chief tool of scientific exploration and formulation.

Francis Bacon is popularly reckoned the father of modern induction—an attribution for which Macaulay is probably largely responsible. As a matter of fact, while he made much of induction, the method he proffered under that name is a confused mixture of the older method of cataloguing and the newer method of analysis. Sir Isaac Newton was both the practitioner and the formulator of induction proper, Locke's influence on the philosophic side blending with Newton's. According to Newton, the beginning must always be made with observations, these observations by analogy suggest some force or principle, known on other grounds to exist in nature, though not previously known to be concerned in the phenomena in question. This principle is then to be treated deductively, or mathematically, and thereby phenomena predicted which have not been previously observed, but which must be found if the theory is true. Further observation must then be resorted to to see whether the indicated phenomena do exist. If the actual phenomena agreed precisely with the deduced phenomena, the theory should be accepted until contrary evidence is discovered. So consistent was Newton in his demand for precise corroboration that when the observed astronomical data did not exactly agree with the results he calculated on the basis of his theory, he held the theory of gravitation in suspense until new data enabled him to revise his calculations. For a time the Newtonian and the Cartesian theories of the constitution of the solar system were rivals, but as the immense superiorities of Newton's explanation became more and more evident, the inductive-observational method was as firmly established in the natural sciences of facts, as the deductive in the mathematical.

No important developments in the theory of induction took place after Newton's time until toward the middle of the nineteenth century, when suggestions by Whewell and Herschel were taken up by John Stuart Mill, whose *Principles of Logic* is almost as classic a statement of an empirical inductive logic, as Aristotle's had been of a syllogistic logic. According to Mill, we reason or infer, originally, from particular to particular, from one case to another. This

is due to an inherent propensity to generalize, or to assume that what happens in one case will also happen in other cases. The sole scientific warrant for this belief is the uniformity of nature, which is itself an induction from a vast, literally countless, number of particular observations, where not a single contrary or negating instance is found. This widest of all inductions is, then, the logical ground upon which all other inductions rest.

In the development of his system Mill alternates between two different definitions and treatments of induction, one conventional and rather sterile, the other based on the actual procedure of experimental science. According to the former, induction is the process of inferring that what has been observed to happen in a certain number of observed cases will always happen in cases resembling them. Evidently such a statement is vague. It raises the questions: How great must the number of observed cases be? What is it that really happens in the original cases—no easy matter to determine because of the complexity of natural events. Just what degree of resemblance must exist to warrant belief in the same thing happening in other cases? And how shall we make sure that the required kind of similarity exists? In dealing with such questions, Mill passed over to the idea that the crux of induction is found in the various methods that analyze the observed cases and bring to light within them some unvarying coexistence or sequence of elements. Induction is thus the method of finding in the phenomena some relation which is not directly observable.

Mill never clearly apprehended, however, the transformation which he himself effected in the notion of induction. According to his first and official views, induction simply extends to all cases what is found in some cases. According to the later, his *working*, though not professed, view, it consists in finding out what *really* happens or exists in "some cases." The emphasis has shifted from the mere quantitative collection and mechanical comparison of instances to the qualitative and experimental analysis of the one typical case, or to the few carefully selected cases. Empirical collection of a great number of cases remains indeed of great importance, but as an assistance and safeguard in the selection and analysis of a typical case and in testing the resulting hypothesis, not as furnishing the original premises of an inductive inference.

Educational methods have reflected and have suffered from the divorce of the deductive and inductive phases of reflective inquiry characteristic of the history of logic. The chief error upon the side of the inductive movement is in supposing that the mind begins with a lot of separate, independent objects, such as this, that, and the other river, and then proceeds by mechanical comparison to select the things they statically have in common, and to reject the

qualities not found in them all. As a matter of fact, induction consists in grasping what is *significant*, what is intellectually important, in any one river. Comparison and contrast with other rivers is of value, not in pointing out external likenesses and differences, but in helping to weigh the relative importance of qualities, and to seize upon and to emphasize any property that gives a clew to understanding other features. The trait of generalization found in induction does not primarily have to do with what is common to a number of cases, but with the *law or relation* which is significant in *any* case.

Educationally this means, that it is important to deal with a *single* river basin as a typical case, so as to get an idea of what is important in it, rather than to deal superficially with a large number of river systems. Moreover, the *importance* of any feature means its power to explain other features. Hence what should be emphasized in inductive study is the *causal*, the productive or dynamic factors. These can best be brought out by a thorough study of a river system treated as a type, while comparing a large number of cases without careful analysis of any one case brings into relief only static properties, effects, not causes.

It will be noted that when the inductive method of instruction takes as its object the discovery of causal or explanatory features, it is organically connected with deduction, since the motive of discovering these basic features is to get a principle which may be applied to interpreting and organizing the other facts characteristic of rivers. This application is deductive. On the other hand, the mere selection of properties common to a number of objects throws no light upon *why* they are common, nor does it help explain the traits which, being dissimilar, are eliminated. Hence induction is arbitrarily separated from deduction.

Other errors in the method of instruction due to this mechanical division of induction and deduction are the following. (1) Teaching any subject so that isolated facts are amassed, without using them so that there is gained a view of some inclusive situation in which the different clews are connected and hence significant. (2) Or, when the weakness of this method is perceived, the teacher is content to leave the pupils with only a vague notion of the whole to which the details belong. This vagueness can be expelled (and the special facts made really significant) only as the mind realizes *how* the particulars go together to make up the inclusive whole.

It goes without saying that when induction is isolated from deduction, the latter must also be isolated and hence fail to exercise its proper function. Educational errors of method flowing from this isolation are the following. (1) Beginning with definitions, rules, principles, laws. It may sometimes be pedagogically advisable to *present* a definition or law at the out-

set, especially with older students, but in all cases it should be recognized that this is a psychological device for directing attention to a *problem*, not a statement of a true logical principle. Logically, the general principle or law has no meaning until in the course of dealing with some individual complex situation need has arisen for explaining various particulars by binding them together into a more coherent system. (2) Even when the explanatory principle has been properly reached, there may be failure in the proper use of deduction through not securing its *application* to *new* cases. It is at this point, not at the outset, that the reference to a number of cases becomes most important. When, by a study of a type case, the pupil has become possessed of its principle, or generic nature, this principle must be expanded, clinched, and tested by application to a variety of other cases not previously studied. So far as possible this application should involve not only new observations, but also a factor of experimentation (*q v*). Mathematics, primarily a deductive study, suffers particularly in education from lack of application of its general principles to concrete empirical situation. The application of a mathematical conception simply to other mathematical cases, however adequate in abstract theory, is, pedagogically, simply an elaboration of the principle, not a deductive testing of its meaning.

The prior discussion may be summed up by saying that educational method has lagged behind the development of scientific method. It has tended to remain at the plane of the earlier scientific practices in which induction as dealing with particulars, and deduction as dealing with universals, were separated from each other. Educational method should adapt itself to the change in scientific method, in accord with which reflective inquiry is concerned with complex objects and situations, in which induction serves to discover, by analysis, a relation or principle, while deduction employs that principle synthetically to reconnect particulars into a more comprehensive situation or object.

J. D.

See ABSTRACTION; ANALYSIS AND SYNTHESIS, CONCEPTION; GENERALIZATION; HYPOTHESIS, KNOWLEDGE; METHOD.

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INDUCTIVE GEOMETRY. — See INVENTIONAL GEOMETRY.

## INDUSTRIAL ART

**INDUSTRIAL ART.** — See **MANUAL TRAINING**; **DESIGN**, **ART IN EDUCATION**; **ART IN THE SCHOOLS**, **ART SCHOOLS**.

**INDUSTRIAL ART SCHOOLS.** — A type of schools uniting many of the features of art schools and of industrial or technical schools (For detailed discussion of principles underlying the work of these schools, see articles on **ART SCHOOLS**, **ART IN SCHOOLS**; **DESIGN**, **DRAWING**; **INDUSTRIAL EDUCATION**) Instruction in drawing and design forms the basis of the work. Specialized instruction is given along one or more of the following lines: ceramics, designing for special industries, jewelry work, costume designing, decoration, bookbinding, illustration, metal work, etc. These schools form an important part of the educational system in many European countries, notably in Austria, Germany, Switzerland, Great Britain, and France. In Great Britain such schools have been fostered by the national government, which, aroused by the International Exposition held in London in 1851, realized that the country must have well trained designers and craftsmen if its commerce was to be maintained in competition with the artists of foreign workshops. In London, besides the large central industrial art schools, there are numerous local centers under the direction of the County Council and many schools conducted under private auspices.

In the United States, industrial art schools were not developed until after the Philadelphia Centennial Exposition of 1876, when several were established within a few years. The School of Industrial Art of the Pennsylvania Museum was an immediate outgrowth of the Exposition, and to-day is the most important school in the United States devoted entirely to the industrial arts. It is divided into two separate branches — the School of Applied Art, where the enrollment in 1911-1912 was 834, and the Textile School, with 250 students. The Rhode Island School of Design, at Providence, makes a specialty of jewelry and silversmithing, as these are some of the chief industries of the locality. For the same reason the School of Industrial Arts at Trenton concentrates on china and pottery, the principal local industry.

The H. Sophie Newcomb Memorial College of Tulane University, New Orleans, was established in 1887, and has been the pioneer in the South. A pottery was erected in 1901, and Newcomb ware has a recognized artistic and commercial standing. In Cincinnati the Ohio Mechanics' Institute, although established as early as 1828, did not have a day department until 1899. New buildings have recently been erected, and the industrial museum is being developed along art lines, the aim being to make industrial art the special feature of the Institute.

The public schools throughout the United

## INDUSTRIAL EDUCATION

States are developing courses in industrial arts both in the elementary and secondary schools in the belief that this will provide a means for intelligent selection of a vocation and aid in creating an appreciative public. The demand for competent teachers of the industrial arts, particularly for secondary schools, is in excess of the supply. The most important of the normal schools having industrial art courses are Teachers College, Columbia University, New York, Pratt Institute, Brooklyn, N.Y., and the Normal School of Manual Arts at Santa Barbara, Cal.

The following are the most important industrial art schools in the United States: New York State College of Ceramics, Alfred, N.Y.; Maryland School of Art and Design, Baltimore, Md.; Ohio Mechanics Institute, Cincinnati, Ohio; James Milliken University (pottery and metal work), Decatur, Ill.; Evening Drawing School (five years' course for jewelers and silversmiths), Newark, N.J.; Newcomb Memorial College, Tulane University, New Orleans, La. (pottery, embroidery), School of Industrial Arts, Teachers College, Columbia University, New York, N.Y.; New York School of Fine and Applied Art (costume illustration, jewelry, commercial design), New York, N.Y.; Pratt Institute (jewelry, metal work, etc.), Brooklyn, N.Y.; Bradley Polytechnic Institute (metal, wood work, and horology), Peoria, Ill.; School of Industrial Art of the Pennsylvania Museum, Philadelphia, Pa.; Rhode Island School of Design (jewelry and metal work), Providence, R.I.; School of Industrial Arts (pottery), Trenton, N.J.; School of Ceramics of the University of Illinois, Urbana, Ill.

F. N. L.

See **ART**; **ART SCHOOLS**; **ART IN SCHOOLS**, **DESIGN IN DRAWING**; **INDUSTRIAL EDUCATION**.

**INDUSTRIAL DAY SCHOOLS** — See **INDUSTRIAL EDUCATION**.

**INDUSTRIAL EDUCATION** — **General Outline.** — The term "industrial education" may be used in a very comprehensive sense or in a more restricted meaning. In a large way the term includes all education relating to the industries, and in this sense would include instruction in industrial arts in the elementary school, trade and technical instruction designed for the industrial worker, and the professional education of the engineering schools. In common usage, however, the term has come to be used in a more limited fashion as denoting the field of vocational education aimed to meet the needs of the manual worker in the trades and industries, and in this sense is used in the following article. In this conception industrial education has to do with the secondary field beyond the point at which boys and girls leave the elementary school and below that of the college. (See **MANUAL TRAINING** for the

former, and TECHNICAL EDUCATION for the latter.)

The need for industrial education, as far as it is a matter of schools, has arisen since the industrial revolution of the eighteenth century, which introduced the factory system as the universal type of modern industrial organization. During the four or five centuries when the handicraft system of small masters and establishments was the prevailing basis of production, the matter of industrial training was met in a simple, and on the whole, a competent manner within the conduct and organization of trade procedure. (See APPRENTICESHIP EDUCATION; GILD, MEDIEVAL, AND EDUCATION.)

It is true that the gild records of England and the Continental countries disclose many items indicating frequent attempts on the part of masters to take advantage of apprentices through failure to provide competent instruction in their craft, as well as to furnish proper food and findings; and the repeated occurrence of regulations as to fines and other penalties aimed at such abuses, shows very clearly that such conditions were not uncommon. It is also unquestionably true that, particularly in those countries where the period of apprenticeship was of considerable length, as in England and in many trades in France, a large amount of time was consumed in menial tasks of little industrial value to the young worker. On the whole, however, the handicraft system under gild supervision, as trades were then practiced, undoubtedly made for a fairly effective system of industrial training, and this particularly because of three elements inherent in the situation, all of which have disappeared under present conditions. (1) It was distinctly to the master's immediate advantage, with his small staff of workers, which permitted of very little division of labor, to give his apprentice a thorough training in order that he might reap a full labor return during the period of the indenture. (2) The master, being not only employer and merchant, but chief craftsman, working side by side with his assistants, was free to give instruction at such times and in such directions as he saw fit. (3) The fact that the apprentice in the regular order of things expected in a few years to become himself a master must have stimulated his ambition to obtain as broad a knowledge of his craft as possible.

The influence of the factory system upon this situation was not only that division of labor, constantly extended, no longer allowed the learner, if employed to the greatest economic advantage, to obtain a broad experience in all branches of a craft, but, even more important, that the entire relation between employer and learner was changed. The master craftsman, no longer taking direct part in the processes of production, became the capitalist employer, whose first concern is the development of highest immediate productive efficiency. The

learner, on the other hand, entering into such an organization, faces for the most part a wage earning career in which his place will be determined not alone by his abilities and ambitions, but by the particular opportunities afforded him for breadth of experience and for comprehension of these experiences. In such a situation it has ceased to be the immediate interest of the employer to bestow more attention upon the learner than will suffice to make him most rapidly into a productive unit at some process in the range of the establishment. Still less is there economic incentive for the wage earning worker in a commercial establishment to give time and effort to extend the training of the learner. Productive efficiency is the sole aim of the modern organization of industry. For this purpose it is a highly adapted instrument, but education lies outside of this purpose. These latter considerations operate so powerfully upon the case that even in trades representing very little division of labor, the value of apprenticeship training has often fallen to a very low point.

To sum up the situation presented by modern industrial conditions in this connection, it should be noted, first, that grades of skill and the extent to which division of labor is carried vary greatly in different industries. Second, that the typical manufacturing industries employ a large number of workers of low-grade skill, requiring little initial instruction or experience to adapt themselves to their tasks, which often involve only a narrow range of machine operations, and a smaller number of highly skilled workers demanding breadth of experience and trained intelligence for their equipment. Third, that the economic interest of the employer is mainly concerned with the supply of the latter class, and that any measures undertaken by him to train such a class are necessarily based on the prospect of future return and not of immediate profit. Fourth, that such training on the part of the employer involves labor in addition to the purely productive work of an industrial organization, and for that reason an additional element of expense. This element of expense and the extreme mobility of labor under modern conditions, which leave no guarantee to the employer that the learner will remain in his employ after receiving a training, constitute the chief obstacles to the development of adequate measures of industrial training within commercial establishments. To these obstacles is added the fact that, besides skill of hand, modern industry requires in its expert workers increasing knowledge of mathematics, science, drawing, and technical matters in order to insure proper comprehension of new methods and new forces, and for instruction in these branches the organization and personnel of an industrial establishment is not well adapted.

These conditions, in which modern industry

hands the task of competently training high-grade workers within its own organization difficult, expensive, and not assuredly profitable, have brought forward the demand for an outside agency, viz. the school, to assist in the task. The problem thus presented of supplying the deficiencies of training under commercial conditions, and of supplementing this training by additional instruction, is evidently one that must find its solution in particular and varied measures adapted to the needs prescribed by different localities and different industries. From the nature of the case there can be no general solution, but only a multitude of particular solutions.

The precise ends, then, placed before industrial education looked at from this purely economic aspect, are to supply either breadth of practical experience along particular lines, or knowledge leading to the comprehension of technical practice, or both, to youth having opportunities or ambitions to fit themselves as high-grade workers.

To this problem the leading countries of Western Europe have addressed themselves with increasing seriousness for something over half a century, and in the United States conviction as to its importance has been rapidly developing during the last few years. The particular ways in which European countries have approached the problem have been markedly differentiated by racial temperament, institutional development, and industrial conditions. Germany, with her policy of fostering the old trade guilds and their supervision of apprenticeship, has found her particular problem met to a large extent by specialized industrial continuation schools, at first conducted in the evening and now to an increasing extent in the day. These schools have devoted themselves almost wholly to supplementary technical instruction; but in the continuation schools of Munich, Dr Kerschensteiner has introduced trade work both to broaden the commercial routine and to lend zest and point to the other instruction.

One of the chief reasons why the continuation schools fulfill such an important function in German life is the fact that apprenticeship is not only general, but is entered into at the age of fourteen, at the time when youths leave the compulsory *Volksschule*. Another feature that distinguishes the German continuation schools, though shared to some extent with those of Austria and Switzerland, and which marks their seriousness of purpose, is that attendance upon them is generally compulsory until seventeen or eighteen years of age. In the cases where the continuation school classes have been brought into the day, employers are compelled by law to allow their apprentices time for attendance. Compulsory attendance upon the primary school is in this way immediately followed by the compulsory attendance at continuation schools of

all boys, and sometimes girls, who do not attend higher schools.

Germany realizes full well that differentiation and specialization lie at the heart of effective industrial education, and must not only set the keynote of instruction as between various trades, but must be recognized in training the many grades of workers needed for her industrial army. Not only the rank and file, but the foreman, the superintendent, the master, and the technical office clerk must be provided for; and to this end have been developed for those whose ambitions and resources extend beyond the instruction of the continuation schools large numbers of day industrial or technical schools that touch all the important industries of the country. One of the salient characteristics of all these institutions, save an almost negligible few, is that they do not admit beginners to a course of practical work as a substitute for apprenticeship, but require for admission one to four years of experience under commercial conditions and then present courses of scientific and technical instruction bearing on particular industries. Another feature of many of these day schools, which illustrates a contrast between the German point of view and that of some other countries, particularly of the United States, where only large schools or classes are usually considered worth while, is the small size of the student body, a condition the Germans seem contented to maintain, provided the institution secures sound, definite, practical results of importance for its locality or the Empire.

In the efforts to adjust all of these schools as closely as possible to the actual industrial situation, many of the states have removed their control from the Ministry of Education and Public Worship and placed them under the Ministry of Commerce and Industry. The financial assistance afforded to industrial education by the state governments also represents another well defined policy and is a large element in the support of the various schools, being often one half to two thirds of the cost of maintenance. To the towns, however, is generally left the initial burden of buildings and equipment, a task in which they are often assisted by the local chambers of commerce and the guilds. And finally it should be noted that the measures for individual education have the hearty sympathy of the German labor unions, and that these bodies particularly approve the impartial supervision conducted by the State. The whole fabric of German industrial education in this way represents a remarkable example of cooperation between schools, employers, and workers, or, looked at in a larger way, between the state, municipalities, corporations, and the public, and testifies in a striking manner to the solidarity and unity of German life, and the profound belief in the school as an instrument of social efficiency.

Austria, following to a large extent in the



footsteps of Germany, has also placed strong emphasis upon the continuation school and has made attendance thereon compulsory during the period of apprenticeship. The Austrian government, however, because of less satisfactory conditions of apprenticeship than in Germany, arising partly from the many races and nationalities in the country, has given more attention to the development of schools that supply a practical training as a substitute for apprenticeship. These craft schools, or *Fachschulen*, are widely distributed throughout the Empire, and comprehend both purely technical courses and art instruction as applied to the industries, the latter forming a very marked feature of Austrian education. Admission to these schools is nominally limited to those fourteen years old who have finished eight years of the elementary schools, but in outlying districts pupils under this age are allowed to enter. The duration of the courses in these schools is two, three, or four years, as the conditions of the particular industry demand, and the certificate given at the end of these periods is often accepted in place of apprenticeship experience. Among these schools are many dealing with the home or cottage industries — a phase of industrial education to which Austria has given particular attention. Another distinctive feature of governmental activity is the effort to promote and sustain the lesser industries or crafts, which are conducted in establishments of small size. To this end the Department for the Promotion of Crafts, under the Ministry of Public Works, has, particularly since 1908, through industrial museums and other institutions in different parts of the country, fostered exhibitions for handworkers, illustrating technical processes, and lectures upon advanced methods of production. Courses are also provided for those who hope to become masters, not only in technical methods of production, but in the economic principles essential for the successful conduct of a small business. The department goes even further, and assists in the formation of associations of handworkers, to which it supplies modern machinery and tools to be used in common by its members, and for which it requires payment only on long-term loans at a low rate of interest.

Switzerland, with her scant natural resources and consequent economic dependence upon skilled artisanship, has directed her main efforts to the fortifying and advancement of her apprenticeship system. To this end the canton of Zurich passed a law in 1905, the provisions of which have been followed by other cantons, which requires all apprentices to attend a continuation school for four hours weekly, and provides that this period may be taken from the working time. This provision is resulting to a large extent in bringing the instruction time in such schools into the day instead of evening. To further insure high

and progressive standards of apprenticeship training, Zürich and other cantons have made it obligatory upon every apprentice to take an examination at the end of his course, which shall test his technical ability and knowledge of the trade. These examinations are supervised by the State, which also bears the necessary expense, and are conducted largely by trade organizations. At the successful passing of the examinations, a certificate of apprenticeship is issued. Switzerland also gives liberally toward the maintenance of trade and technical schools for advanced training of the more ambitious workers.

The development of industrial education in France presents marked contrasts in some respects to the measures above noted. Apprenticeship in France has been in a more or less unsatisfactory condition ever since the abolition of the guilds or corporations by the National Convention in 1791. Various attempts have been made to effect improvements both by municipalities and by associations, but these have not been particularly successful, and the most distinctive efforts of the French government in the field of industrial education have been directed toward the creation of schools that shall articulate directly with the elementary schools and supply a practical training to take the place of apprenticeship. These schools (*Ecoles pratiques de commerce et d'industrie*) admit pupils at thirteen years of age at the close of the primary school period, and give a three years' course, involving a generous amount of practical training in school workshops. The same feature of building directly upon a previous school training rather than upon required practical experience, characterizes the national schools for foremen, and those for superintendents and managers. In the emphasis placed upon this approach to trade training, the system fostered by the French government stands alone among European countries. Although there are a very large number of drawing and industrial evening classes throughout France, the continuation school has not received the attention or emphasis given to it in the Germanic countries. Attendance upon such schools is voluntary, and their sessions are almost always held in the evening.

**United States** — In the United States the conditions which force attention to the problem of industrial education have only recently appeared. This country has lived over the long industrial history of western Europe in the brief span of little more than a century. Beginning with many of the activities of the hunting and fishing stage, as illustrated in the life of the pioneer and settler, eastern America passed through in rapid succession the agricultural or farming stage, the handicraft period, with its independent town economy, and reached in the closing years of the nineteenth century a highly developed national system marked by immense manufacturing growth.



Throughout this rapid evolution almost to the present time, the great demand for intelligent labor consequent upon the exploitation of the enormous natural resources of the country, has afforded countless opportunities for advancement to the individual workman gifted with superior wit and adaptability. Practical ingenuity and power of quick comprehension and adjustment have often under these conditions been of more importance in winning to positions of leadership and mastership than highly trained skill and technical knowledge. When to this situation has been added an enormous current of immigration that has served to supply not only skilled workmen, but a great army of unskilled and semi-skilled workers increasingly needed for manufacturing operations, it is apparent why for a generation of advanced industrial organization both the American employer and the native-born American workman have remained comparatively indifferent to the need of industrial education.

This period, however, has come nearly to an end, and the stress of international competition and lowered margins of profit make it more and more evident that American industrial development can only be maintained by recourse to old-world methods, and the adoption of comprehensive and effective measures that will insure a competent supply of highly expert workers. What has already been accomplished in the United States is largely the result of private enterprise and philanthropy. Until within a very few years, the public school system has given little or no attention to industrial education and has devoted its energies entirely to general and non-vocational instruction.

*Evening Schools* — The first serious efforts to react upon the industrial situation were represented in the establishment of a number of important evening schools (*qv*), affording instruction in drawing, science, and mathematics. Cooper Union and the Mechanics Institute of New York, Franklin Union, and the Spring Garden Institute of Philadelphia, the Ohio Mechanics Institute of Cincinnati, and the Virginia Mechanics Institute of Richmond were all founded or opened their classes about the middle of the nineteenth century. Such schools, and many others, among which should be mentioned the evening classes of the Young Men's Christian Association (*qv*), have accomplished an important work in supplying supplementary technical instruction to the ambitious young workman in the larger cities. Even in this direction, however, which represents the simplest and least expensive approach to industrial education, the public schools have been slow to follow. Their concern has been almost entirely with general studies, and it is only of late years that differentiated and specialized courses, related to industrial practice, have been introduced in the public schools of a few of the more important cities.

The early work of the evening industrial and technical schools consisted of various lines of drawing, to which were gradually added courses in science, mathematics, and technical subjects. Beginning about 1890, certain of these institutions established practical shop courses in a few of the high-grade mechanical trades, intended to broaden the experience obtained by the student during the day. In a few cases such classes have been incorporated in public evening schools, where they have sometimes performed a valuable practical service in advancing those employed at like occupations during the day, and sometimes have served merely to give a little tool dexterity to the amateur or the clerk.

*Technical Schools* — The next important reaction of organized education upon the industrial situation was that which took place for the most part in the period of mining and railroad expansion following the Civil War, and which resulted in the establishment of many engineering schools or institutes of technology. The establishment of such schools was at first through private foundation, but the passage of the Morrill Act in 1862, by which large land grants were made to the states for the support of instruction in the agricultural and mechanical arts, resulted shortly in the inclusion of engineering departments in most of the western colleges and universities. The development of this type of institution has been widespread in the United States, and has produced an institution equal, and in some respects superior, to anything of its kind to be found abroad. The function of such schools is to produce the engineering and technical expert, the men needed to design industrial constructions, to devise technical processes, and to superintend industrial production. They, consequently, lie outside the scope of this article and are fully treated under Technical Education (*qv*).

*Manual Training* — The first serious agitation for the inclusion of industrial training in the public schools was not for real vocational training, but for the inclusion of manual work in the general course of study as an element of culture and general efficiency. The Manual Training School connected with Washington University, St. Louis, opened classes in 1880, and was rapidly followed by the establishment of manual training high schools in other cities, some on private foundations, but in many cases organized as part of the public school system. From the high school manual training gradually made its way downward into the elementary school, until it is now represented in many cities throughout all the grades. The office of such instruction, however, both in theory and results, is not vocational training, which is always a matter of specialized instruction and self-determined groups, but as a broadening and energizing element in general education. (See MANUAL TRAINING)

*Trade Schools.*—The first important attempt to deal with the problem of industrial training in day schools took the form of a trade school for the building trades. In 1881 the New York Trade School (*qv*) was founded by Richard T. Auchmuty. The founder was an architect by profession, and felt very keenly the small part played by American trained mechanics in the various building trades. Convinced that the apprenticeship system in the building trades was no longer effective, and that modern conditions gave no hope of its revival, he turned to the plan of a trade school as the only solution of the problem. To meet the economic difficulties involved in attendance, the courses in the school are only four months in duration, and only young men between the ages of seventeen and twenty-four are admitted. The aim of the school is to give a knowledge of processes and skill of hand sufficient for immediate practical usefulness, leaving speed and perfected skill to be developed in after experience.

The development of schools which aim to take the place of apprenticeship in whole or in part after this point was very gradual. In the first twenty years after the New York Trade School was founded, only two important institutions were added, viz the Williamson Free School of Mechanical Trades near Philadelphia, and the Baron de Hirsch Trade School of New York. Since the year 1910 some ten or twelve institutions that may strictly be called trade schools have developed in different parts of the country under either public or private support, as well as a number of commercially conducted schools in the building and other trades. In 1907 the trade school entered upon the stage of public administration. In that year the already established Milwaukee School of Trades was taken over by the city under the terms of the industrial education law passed by the Wisconsin legislature. Since that date public trade schools have been opened in Philadelphia, Pa., Portland, Ore., Worcester, Mass., and Indianapolis, Ind.

Certain of these schools — the New York Trade School and the Baron de Hirsch School — represent the short-course type; the others offer courses of two or three years in which practical trade training is supplemented by instruction in drawing and technical practice, and in some cases by science and mathematics. Tuition in such schools is either free or on a nominal basis, a condition made possible either by large endowments or public support. Such schools are still somewhat in the experimental stage. They labor under very severe economic difficulties, first among which is the problem of support presented to the student worker during the period of instruction. Training for the skilled trades in the United States is in common practice restricted to the period above sixteen years of age, and as the great bulk of the youth who will form the mechanics and industrial workers of the country must of

necessity enter upon remunerative work at sixteen or shortly after, the sacrifices necessary to permit attendance at a trade school can be expected only from a comparative few. The second aspect of the economic problem in relation to such schools is found in the large expense of administration, instruction, materials, and physical maintenance in proportion to the number of students that can be instructed. Furthermore, it is only in a few high-grade trades, the full command of which involves extensive subject matter and breadth of experience, that trade school training can claim sufficient advantages over training under commercial conditions to repay its expense. It is, consequently, only in cities representing exceptional concentration of such industries that trade schools can expect support, and it is not yet entirely clear whether the results obtained will prove proportionate to their expense.

In the earlier agitation for industrial training in the United States, the trade school occupied the forefront of discussion and was usually considered as the one institution needed to solve the entire problem, but as the great economic difficulties of attendance for youth and young men who are to become ordinary workmen have come to be better apprehended, it is seen that such institutions can, as far as numbers are concerned, fulfill only a very subordinate office, and that this in the case of the long-course schools will probably be to train a comparatively small number of highly equipped workers in a few of the skilled trades.

*Preparatory Trade Schools.*—Conditions similar to those noted above in the case of England have recently brought forward in the Eastern states the type of school called a preparatory trade school or intermediate industrial school. The situation of the fourteen-year-old boy in the United States is more acute even than in England, inasmuch as the disinclination on the part of employers in the skilled trades and high-grade industries to employ youth below sixteen years of age is much more general. Since the report of the Massachusetts Commission on Industrial and Technical Education in 1906, which pointed out the large numbers of boys and girls in that state who leave school at fourteen before graduation from the elementary school, the demoralizing influences that surround them, and the lack of economic progress made by such children, interest in a type of industrial school that shall aim particularly at the ages from fourteen to sixteen has been steadily growing.

The first school of this type to be established was at Rochester, N. Y., in 1908. Since then a considerable number of schools providing practical work in one or more of the large trade groups, together with related instruction in drawing, elementary science, history, English, shop calculations, accounting, and business forms, have been organized in Massa-

chusetts and the state of New York. Such schools aim to give the advantage of some amount of industrial intelligence and knowledge of shop methods and materials to the boy or girl of sixteen in entering upon industrial employment rather than to impart a trade training.

This type of school points to the fact that forces other than the purely economic enter into the movement for industrial education, and that responsibilities are involved in the conduct of such education beyond those of developing industrial efficiency. The causes that have brought the preparatory trade school into being in the United States are not alone the economic advantage to the industries in preparing better material for entrance therein, an advantage that employers would be quick to perceive yet slow to bring about, but rather the recognition on the part of the public of a social obligation to better the opportunities for great numbers of young persons to enter upon more substantial careers. These schools also serve to illustrate the fact that any institution which enters upon the task of industrial education cannot escape the responsibility of advancing at the same time the training of its students in social and civic efficiency. It is very evident that no school under any form of representative government can command public support or claim a large place as an educational factor in dealing with the education of youth that does not attempt to instruct the individual in his relations to the State as well as in promoting his economic efficiency.

*Part-time and Cooperative Plan* — The two schools just described aim to prepare for entrance into the industries by training beginners, a task only economically justifiable when such training cannot be obtained under commercial conditions. Of late years new types of school — the part-time day school and the cooperative school — that aim to give instruction to the individual at the same time that he is gaining practical experience in the industry, have assumed importance. Such schools do not attempt the entire task of training the learner at any period, but divide the work with organized industry, leaving to industry the practical training, and providing in the school those elements that industry cannot readily supply. These schools, together with evening industrial schools and correspondence schools, bring formal instruction into essentially cooperative relations with industry, avoiding the large financial burden of practical trade training, with its many difficult problems, and undertaking only those lines of instruction with which the school is prepared to deal readily and effectively.

The important practical results of the German, and, in particular, the Munich continuation schools, that have brought instruction into the period of the regular working day, have produced a growing conviction as to the impor-

tance of such schools in the development of industrial education in America. The more individualistic spirit under which industry is conducted in the United States, and the great variety of conditions represented, make progress toward such an arrangement necessarily a very gradual matter, and it will undoubtedly be a considerable time before any general agreement among manufacturers will be reached to allow learners in their establishments to attend industrial schools during the working hours. Nevertheless, the increasing discussion and study of this plan, and the recognition of its important advantages, indicate that its considerable extension may be expected in the near future. Such a plan is more rapidly applied in cities, where the concentration of a few high-grade industries gives a large number of apprentices and learners in particular lines. If such schools are to increase beyond the field of these few skilled trades, it is evident that the problems of instruction become complex and difficult. In the case of low-grade factory industries, where little opportunity for technical instruction is to be found in industrial content, school instruction must necessarily assume other directions and find its opportunity in increasing the social horizon or homekeeping usefulness of the pupil, or in aiding to develop capacity for change of occupation. It is evident that the beginnings of such schools as are represented at Cincinnati and Worcester, Mass., must be necessarily upon a voluntary attendance basis, and many years must obviously elapse before public opinion in the United States reaches the point of authorizing compulsory attendance for a term of years, as is the case in southern Germany.

The cooperative plan by which the students spend half their time at work in industrial establishments and half in school, and which was first developed in the Engineering Department of the University of Cincinnati, has lately been applied to students of high school grade. This plan differs from the part-time plan in some important respects. In the first place the student body consists of enrolled high school students and not of apprentices already employed in commercial establishments. This fact insures a higher grade of academic preparation than is generally the case with apprentices, and the larger amount of time spent in school allows the general education to be carried much further. Encouraging beginnings have been made with this type of school at Fitchburg, Mass., and Cincinnati, Ohio, but it is too early to define its future place. Whether, on the one hand, any considerable number of those aiming at and fitted for regular mechanics work in the trades will be drawn to such schools, or whether, on the other hand, they will develop capacity for training leaders of the foreman and expert type, remains to be seen.

In this same group of supplementary or cooperating schools might be included the cor-

respondence schools (*qv*), which enroll a great number of young men engaged in industrial employment in the United States, and afford instruction by mail in a large number of technical subjects

*Apprenticeship and Corporation Schools* — The apprenticeship or corporation school, which has been developed in several industrial corporations of large size in the United States, is in a sense a part-time school in which both practical training and instruction are given within the commercial establishment. (See APPRENTICESHIP SCHOOLS.) Such a plan, which allows a maximum coordination between all lines of instruction, will probably be increasingly adopted in the case of railroads and other large corporations dealing with high-grade workers, but for the great majority of industrial establishments, such a system is hardly practicable, and division of labor between the employer on the one hand and the public school on the other is the method making for greatest efficiency and economy.

*Secondary Technical Schools* — The middle technical schools of Germany have no exact counterpart in the United States, but the several schools for the textile industry correspond closely to this type. Most prominent among these institutions are the Textile School of the Pennsylvania Museum at Philadelphia, established 1884 and noted for the high grade of its instruction, three state-aided schools in Massachusetts at Lowell, New Bedford, and Fall River, and the Textile Department of the Georgia School of Technology at Atlanta. None of these schools requires previous practical training in the textile industry for admission, but in each school there are a number of mature students with such experience, and the character of the work approximates closely to that of the German schools.

Of late years other technical schools or classes of secondary rank have appeared, such as the day courses in machine design and applied electricity of Pratt Institute, Brooklyn, the Technological High School of the Ohio Mechanics Institute at Cincinnati, and certain courses in the Drexel Institute, Philadelphia, and in the Lewis Institute of Chicago.

*Technical High Schools* — The question whether technical high schools with the same requirements of admission as regular public secondary schools can be incorporated into the American public school system has received considerable discussion of late years. The manual training schools, as above noted, do not contribute trained workers to the industries, and strong arguments have been made toward the conversion of these schools into technical high schools, having the distinct purpose of preparing pupils for industrial leadership, that is, for positions in industrial life requiring skill and technical knowledge, and of greater importance and responsibility than those of skilled mechanics. The serious question facing

such a proposition is whether such results can be secured from a type of school that does not require practical experience before entrance, as in the case of the German technical schools, or provide parallel experience, as in the case of the cooperative schools.

*Legislation* — Laws have been passed in a number of states providing for state supervision of industrial education and in several cases for the establishment and assistance of industrial and trade schools. Massachusetts was the first to act in this direction. In 1906 a State Commission on Industrial Education was created, with power to superintend the establishment and maintenance of industrial schools for boys and girls. The act further provided for the reimbursement to cities and towns of a part of the amount expended for the support of such schools. After two years of trial, the plan of an independent commission was found to be unsatisfactory, and the administration of the law was vested in the reorganized State Board of Education, with provision for a special commissioner to deal with the field of industrial education. Since the reorganization the state board has accomplished very important work in standardizing the various types of schools that come under its control in regard to scope, courses of study, and methods of instruction, as well as in furthering the establishment of a considerable number of schools.

New York State enacted a law in 1909 authorizing the establishment of general industrial schools, trade schools, and schools of agriculture, mechanical arts, and homemaking, and providing for the award to such schools of a certain measure of state support. The disbursement of state moneys to the schools is by the terms of the act placed in the hands of the State Commissioner of Education and made dependent upon his approval of the courses of study maintained. The establishment and conduct of these schools is referred to the local boards of education, but the appointment of advisory boards representing the local trades, industries, and occupations is made compulsory. The duties of such advisory boards are to counsel with and advise the boards of education in regard to the establishment and conduct of the schools.

In 1907 a law was passed in the state of Wisconsin empowering cities or school districts to establish, conduct, and maintain schools for the purpose of giving practical instruction in the useful trades, and placing such schools under the supervision and control of the local school boards. Permission was given to the school boards to appoint advisory committees to assist in the administration of the trade schools, and provision was made for the levy of a special local tax for the establishment and maintenance of such schools. The law was amended in 1909, and the minimum age of entrance to a trade school reduced from six-

teen years to fourteen years for both young men and young women. In 1911 the state passed a number of acts relating to industrial education, which among other measures provides (1) for a modification of the apprenticeship laws of the state by which apprentices shall receive instruction of not less than five hours a week (2) That whenever any evening school, continuation classes, industrial school, or commercial school shall be established for minors between the ages of fourteen and sixteen working under permit provided by law, every such child shall attend such school not less than five hours per week for six months in each year, and every employer shall allow all minor employees over fourteen and under sixteen years of age a corresponding reduction in hours of work (3) That employers shall allow a reduction in hours of work at the time when the classes are held whenever the working time and that of the class coincide (4) That a state board of education be appointed to control the distribution of state moneys under the act

Other states have recognized industrial education through legislative measures to the extent of providing official machinery for the development and supervision of such work, and in still other states investigating commissions have been appointed with the object of ultimate legislation in this direction

#### C R R

**Germany** — The history of industrial education in Germany is intimately bound up with the development of continuation schools and with the system of apprenticeship. Established at first to give instruction in reading, writing, arithmetic, and religion for one or two hours on Sundays, the early continuation school, like its present successor, aimed to secure efficient citizens. The first Sunday continuation school appears to have been founded by the Bishop of Samland in 1569, this system was warmly supported and encouraged by the pietist Spener. Continuation Sunday schools were established by law in Wurttemberg in 1695 to supplement the limited work of the elementary schools, in 1739 they were extended to boys who had left school, in 1810 these schools were authorized not only to repeat the elementary school work, but to give further education. Baden instituted the Sunday school system in 1756, and in 1803 attached continuation schools to the existing elementary schools. In Bavaria the schools were introduced in 1771, and in 1803 attendance was made compulsory for apprentices up to the age of eighteen. Repetition courses were provided for in Prussia by the *Generallandschulreglement* (1763). At the beginning of the nineteenth century the spread of continuation schools was encouraged by town councils and industrial associations, but the interest was soon relaxed as the system of elementary schools became more widely established. The real success of the continuation schools goes back to the Industrial Law passed

by the North German Federation in 1869, by which local bodies were allowed to make attendance at continuation schools compulsory on all workmen under eighteen, while employers were compelled to allow such attendance. This law formed the basis of the later Imperial Industrial Law of 1891 (*Reichsgewerbeordnung*) extended by the law of 1900 —

**SECTION 120** — Employers of labor are required to grant to those of their employees under eighteen years of age who attend a Continuation School arranged by the Government or by the local authority the necessary time for school attendance as prescribed by the authority in question. Classes are only allowed on Sundays if they do not interfere with attendance at Divine Service.

**SECTION 142** — By the by-law of a District or Town Council attendance at Continuation Schools can be made compulsory for male persons under eighteen years. The regulations necessary to enforce compulsory regular attendance at such schools may be fixed by the local authority, and the duties of pupils, parents, guardians, and employers may be so defined as to ensure the regular attendance, the discipline, and the orderly behavior of the pupils. Those pupils are relieved from the attendance at such compulsory schools who attend a *gild* or *Fach* school, provided that such a school is recognized by the superior administrative authority as equivalent in status to the said Continuation School.

**SECTION 150** — A fine of twenty marks (\$5), or, if this is not paid, imprisonment up to three days for every offense, is imposed upon any one contravening any of the above regulations.

The greatest impetus to the development of a system of further education came immediately after the Franco-German war, which was consciously inspired by the desire to enter into the commercial and industrial competition of the world. Continuation schools were made either (1) compulsory by local by-laws, as in Prussia (1874), Baden (1874), Saxe-Altenburg (1889), Saxe-Coburg-Gotha (1874), Anhalt (1874), Brunswick (1878), Oldenburg (1874), Mecklenburg-Strelitz (1873), Schwarzburg-Rudolstadt (1875), Lippe (1874), Reuss J L (1874), compulsory by state law 1900), Alsace-Lorraine (1873), or (2) compulsory by state law, as in Bavaria (1803), Saxony (1873), Wurttemberg (1895), Hesse (1874), Saxe-Weimar (1874), Saxe-Meiningen (1874), Mecklenburg-Schwerin (1905), Schwarzburg-Sondershausen (1874), Waldeck (1895), Bremen (1908), or (3) was left voluntary as in Reuss a L., Schaumburg-Lippe, Hamburg, and Lubeck. In the movement for the spread of compulsory systems the *Deutscher Verband für das Fortbildungsschulwesen* (f 1892) has taken a very prominent part.

Within the last twenty years the development of continuation schools intended for general education rather than specific industrial or vocational training coalesced with another movement for the provisions of industrial education. While the guilds continued in full vigor, the apprenticeship system, with all that it implied in the way of training and moral oversight, could take the place of a state-organized system of vocational education. But the rise of German solidarity and the introduction of national free trade broke the power of the guilds, and some-

thing had to take the place of the apprenticeship system. At the same time the growing complexities of industry which made more and more demands on science, made desirable a training of a type which the individual employer could not give. In 1765 the *Gesellschaft für Beförderung der Künste und nützlichen Gewerbe* (Society for the Promotion of the Arts and Useful Trades) was established in Hamburg, and recommended classes for architectural drawing. Classes were organized, and new subjects were added constantly. In 1865 the society's school was taken over by the city and was maintained as the *Allgemeine Gewerbeschule*. The success of this school led to similar establishments in Berlin (*Handwerkerschule*), and at Hanover, Brunswick, Kiel, Lubeck, Magdeburg, Cologne, Breslau. A *Feiertagsschule für Gesellen und Lehrlinge* (Vacation School for Journeymen and Apprentices) was established at Munich in 1793, giving instructions in the three R's, chemistry, physics, geometry, practical mechanics, law, history, geography, and nature study. The school met with considerable success, and in 1825 an elementary section was added. At Weimar and Eisenach and other towns of Saxe-Weimar free industrial schools (*Freie Gewerbeschule*) arose toward the end of the eighteenth century which laid special emphasis on drawing and geometry. In Saxony town councils and industrial corporations established schools about 1820 for instruction in arithmetic, German, and drawing, and by the law of 1835 continuation schools were empowered to teach such subjects as were not taught in the lower schools, but interest flagged when after 1859 the guilds were deprived of the power to compel attendance on the part of their apprentices. The most continuous development of industrial schools with voluntary attendance has taken place in Württemberg. Beginning in 1818 there were eighteen such schools in 1826, in the preceding year they were placed under the charge of the Royal School Board; instruction, given on Sundays, covered drawing, industrial arithmetic, geography, geometry, mechanics, trigonometry, bookkeeping, and estimating. In 1853 the schools were placed under the Royal Commission for Industrial Continuation Schools, with representatives of the Departments of Education and of the Interior. Evening Industrial Schools were soon added by the Commissioner. They were maintained by local bodies with support from the state. After Württemberg joined the Empire and the *Reichsgewerbeordnung* became applicable to it, many communities made attendance at the industrial improvement school compulsory for apprentices.

*Present Position* — Attendance at continuation schools is now compulsory in twenty-two out of twenty-six German states. Of these, nine still allow the local bodies to make their own by-laws on the subject. Prussia is still among this number, except for the Western section and Posen, where the compulsory system

has been introduced largely for political and administrative reasons. As a general rule compulsion applies only to boys. The rapid and extensive development of elementary education has eliminated the necessity of general continuation schools where the work of the lower school is repeated. Many of these schools, of course, still exist, but they are intended for the class of unskilled laborers. In most states attention is given almost entirely to commercial and industrial education. (The former is discussed under COMMERCIAL EDUCATION.) The reasons for this are theoretical and practical. It has been recognized that the success of instruction depends on concentrating on the vocation of the pupils; this gives unity to the pupils' work and on the other side meets the practical demand for more efficient workmen to assist in the rapid industrial advance of Germany. Hence the aims of these lower industrial schools may be defined as efficiency and citizenship, and in so far as the instruction is not narrowed down to the pupils' vocation, but takes in all its ramifications, such education may serve humanistic and cultural ends. Hence the reformed continuation school requires a different kind of equipment. Workshops and laboratories are now regarded by theorists as important adjuncts of the schools, and have been adopted largely in South Germany. Practice varies, however, and in some systems only theoretical instruction is given in the schools, while the practical work is regarded as sufficient. The value of the new type of industrial continuation schools is shown by the number of students who come voluntarily after the period of compulsory attendance to take work in the classes for journeymen and master workmen.

Where attendance at a continuation school is compulsory on girls, instruction is given to train them as mothers and housewives as well as to render them more efficient at their vocation.

The period of compulsory attendance runs parallel, as a rule, with the period of apprenticeship, that is, from fourteen to eighteen years of age. Within this period a boy must attend school for two or three years. The increasing importance of the industrial continuation schools in the national system is attested by the growing practice of holding the classes during the day. It is recognized that with the increasing importance of the studies, pupils cannot be expected to be fresh at the end of a long day. Thus in Württemberg, Hesse, and Weimar no instruction is permitted after 7 P.M.; in Prussia it is not allowed after 8 or 8.30. The tendency on the whole is now to have special school buildings, made necessary by the need of increased equipment, and to give instruction throughout the day. The number of hours which a pupil is obliged to attend varies considerably; where the instruction is merely repetition of primary work, two hours a week

are sufficient, where an attempt is made to make the education of real social value from four to eight hours a week are given. Instruction extends over the whole of the usual school year, that is, for about forty weeks. Different arrangements are made with different trades and industries, so that attendance does not become an unnecessary burden; thus in some places bakers and confectioners are released from school during the rush of the Christmas holidays, builders and painters, on the other hand, attend mainly during the slack winter season. On the whole, employers are now willing to allow their young employees the necessary time for school attendance, and are beginning to recognize the value of the instruction given, though it is indirectly at their expense for the time being. The greatest opposition is met with in commercial offices, where it is sometimes a matter of difficulty to release the young clerks at certain times of the day. But the school authorities are ready to accommodate the hours of school attendance to the wishes of employers.

The provision of industrial continuation schools has been more rapid than the supply of properly qualified teachers. For the general continuation schools the elementary school teachers were a good source of supply, and even with the addition of new academic subjects, the elementary teachers gave satisfactory service, preparing themselves privately for their special work. The training of teachers of drawing was also of a high standard, though here too the new industrial needs required a different emphasis. The chief difficulty arose, however, upon the introduction of workshops and machine shops into the school and the arrangement of day classes. Two methods of supplying teachers have been adopted. elementary school teachers are given short courses and make themselves acquainted with the practical working of a factory, and master workmen are taken from the factories and given short courses in methods of teaching. In only a few instances have special courses been established for training industrial teachers; the most notable institutions are the training school at Carlsruhe at the Building Trades School, and the courses at the Imperial Technical School at Strassburg. Generally, however, short six weeks' courses are given: in Berlin courses are held in upholstery, baking, hairdressing, book trades, modeling, metalwork, masonry and carpentry, house painting, pottery and anatomy, hygiene and first aid. Visits are made to factories, and instruction is given in tools, machines, and materials. At Dusseldorf a short course of lectures on method is given to teachers selected from the trades. The *Deutscher Verein für Fortbildungsschulen* conducts short courses at Leipzig and Frankfurt a. M. for continuation school teachers. Courses are also conducted by the Prussian Ministry for Commerce and Industry and by the Ministry of

Agriculture for teachers in their respective fields. Another means of training has been the encouragement of journeys of investigation (*Studienreisen*). But it seems highly probable that a more definite system of training will be introduced as the number of industrial schools, fully equipped on the mechanical side, increases, and the candidates will be drawn equally from school and workshops. Further must be mentioned conferences and discussions, as for example a three-day course in technical drawing held at Chemnitz, and conferences on spinning held in the same town.

The administration of industrial continuation schools has in most states been taken out of the hands of the central boards of education. In Prussia the supreme control is under the Ministry of Commerce and Labor, in Saxony the Ministry of the Interior, and in Württemberg the Higher Industrial School Council. The publicly maintained schools are locally under the municipal authorities, which in all cases receive state grants. Generally there are associated with each school advisory councils representing the community, chambers of commerce, guilds, and other industrial societies. Frequently the guilds, and industrial societies contribute to the support of schools, in a number of cases these bodies furnish the necessary tools and mechanical equipment.

The continuation schools may be divided into three broad divisions,—general, industrial, and commercial. The general continuation schools give instruction in the elementary school subjects, and add drawing, civics, and hygiene. The commercial courses are provided for girls as well as boys (See, however, COMMERCIAL EDUCATION). The purely industrial courses are found in the larger towns, where the numbers of employees in different occupations justify such an arrangement organized in groups. Where twenty-five to forty students following one occupation are found, a special course is provided for them. Where the numbers are too small, and for unskilled labor, the pupils are sent to the general continuation schools. Girls may be compelled, and those in commercial occupations are compelled, to attend continuation schools, but usually the period of attendance is not so long as for boys. Courses for girls are, however, not so generally provided. The general courses cover not only the elementary school subjects, but also female handicrafts, household arts, cookery, etc.

One general distinction must be made between North and South Germany. The southern states, on the whole, have been more progressive in the provision of industrial continuation schools and adapting courses to various local industries and occupations, and have been careful to combine theoretical and practical work. In the north the schools as a rule confine themselves to general theoretical courses and leave either employers or associations to



take care of the practical sides. So a comparison can be made between the subjects taught in Prussia and in Bavaria. *Prussia*: German, arithmetic, drawing, business routine, and composition, technology, government, labor laws and conditions, insurance, economics, industrial arithmetic, and practical drawing, according to the various trades, are found generally, and in the larger towns also geometry, trigonometry, algebra, physics, chemistry, electrotechnics, English, history, shorthand, typewriting, bookkeeping, exchange, materials, law, gymnastics, and singing. *Bavaria*: the fundamentals are religion, German, business correspondence, arithmetic, drawing, geometry, nature study, chemistry, materials and bookkeeping, and then the specialized vocational courses. The following courses as arranged in a few representative towns will indicate the organization more clearly.

*Strassburg*. (1) Building groups (stone masons, cement workers, stovemakers, joiners, cabinetmakers, coopers, locksmiths, boiler-makers, tin and copper smiths, upholsterers, etc.) (2) Commercial groups (3) Trade groups (grocers, shoemakers, druggists, errand boys, bakers, butchers, tailors, waiters, cooks, barbers, confectioners, printers). (4) Unskilled labor

*Leipzig*. (1) Unskilled labor (2) Technical groups (3) Combined technical groups where the numbers are not large enough for separate classes (4) Private schools

*Berlin*. (1) Building trades, clerks, metal workers, art crafts, provision dealers, potters, tailors, woodworkers, leather workers, confectioners (2) Private schools (printers, butchers, chimney sweeps, saddlers, painters, barbers, etc.) (3) Unskilled labor

*Dusseldorf*. (1) Unskilled labor (2) Engineers, electricians, mechanics, and watchmakers, plumbers and fitters, building trades, painters, art crafts, printers, turners, gardeners, confectioners, bakers, shoemakers and tailors, upholsterers, decorators, barbers and hairdressers, butchers, errand boys

The Munich system, which, as organized by the School Superintendent, Dr G. Kerschensteiner, has attracted attention throughout the world, deserves more detailed treatment. Here attendance at a continuation school is compulsory for boys up to eighteen, or during their period of apprenticeship; for girls the period of obligatory day attendance is three years. Boys attend from eight to ten hours a week, girls only six hours, although they may attend a voluntary course up to twelve hours a week. An eighth class has been organized in the elementary schools, obligatory for boys, voluntary for girls. This class is intended to bridge the gap between the elementary school and employment, and is preparatory to the industrial courses of the continuation school, the chief emphasis being on manual work. The continuation schools for boys consist of twelve

general and fifty-two trade schools for apprentices. The general courses are attended by errand boys, unskilled laborers, and the groups which are too small for a special school. For girls there are forty compulsory schools giving household training, and twenty-one voluntary schools providing household training, commercial, and industrial courses. A trade or industrial school is established where there are twenty-five apprentices of one industry. Higher divisions are also provided for journeymen and master workmen who attend voluntarily. The schools, with the exception of six, are located in their own buildings; the six exceptions use primary schools. Attached to each school are associations of employers who pay for materials, discuss courses of study, recommend technical teachers, supervise and examine the practical work. The board of each school consists of the headmaster, a member of the city council, and three employers. Pupils attend one day or two half days, forfeiting wages for that period. The teachers are drawn from journeymen, artisans, master workmen, and professional teachers. The expenses of maintaining the school for boys are shared by the state and the city, schools for girls are maintained by the city alone. The curriculum covers drawing and arithmetic, practical and applied to the special industries, tools; machines, physics, chemistry, German literature, religion (up to sixteen); civics, historical development of the specific trades and their interrelations; the individual in relation to town and state; hygiene, gymnastics, and games.

The schools are organized as follows: (1) Commercial classes (2) General continuation classes. (3) Technical or trade classes (turners, druggists, wood carvers, stokers, chimney sweeps, coachmen, saddlers, glovemakers, vatters, coopers, locksmiths, smiths and carriage builders, carpenters and joiners, upholsterers, decorators, stovemakers, watchmakers, engineers, mechanics, plumbers, fitters, bookbinders, printers, photographers, lithographers, barbers, confectioners, house painters, enamelers and gilders, innkeepers, butchers, shoemakers, masons, jewelers and goldsmiths, stucco and stone workers, dentists' assistants, glass and porcelain workers)

The best organized state system is that of Wurttemberg, which in 1907 passed a comprehensive law for the establishment of industrial and continuation schools. Local communities are compelled whenever for three successive years the number of employees reaches forty to establish industrial continuation schools in the first place and commercial schools in the second. All workmen under eighteen must attend such a school for three years, although local by-laws may extend this period to four. Girls' schools may be established locally. Tuition may be charged, and employers may be compelled to pay it. Instruction should be given during the day up to 7 p.m. for 280 hours



a year. Teachers are trained at Carlsruhe for industrial schools, and at Leipzig and other universities for commercial. They are drawn from elementary school teachers and from employees in workshops and factories. All are required to have had practical work in shops for at least two months. The schools do not give practical work, as is the case in Munich. Schools have also been established for women's occupations, and give courses in needlework, embroidery, machine stitching, dressmaking, knitting, correspondence, bookkeeping, and commercial arithmetic. Traveling instructors have for a long time been employed to give short courses in handloom weaving, technical courses (three to twenty-one days), and courses for teachers, masterworkmen, and merchants.

*Day Trade and Industrial Education* — In addition to the system of industrial continuation schools, there exists in Germany a large number of day schools with courses varying from a duration of six months to four years. They are voluntary, and tuition is charged. Schools have been provided by the states, by cities and local authorities, and by private organizations or societies interested in commerce and industry. Generally there is a state subsidy. Here it is proposed to deal with those schools which require only a knowledge of the elementary branches for admission. They aim to furnish not only efficient workmen and servants, but to train master workmen, supervisors, and foremen. In most instances the schools insist that candidates shall have had practical experience in a workshop or factory for one or two years. In some schools attendance takes the place of apprenticeship, in others it is supplementary, and in others again the courses are intended for journeymen. The schools are known as middle or lower technical schools (*mittlere und niedere Fachschulen*), to distinguish them from the higher technical schools and the technical universities, both of which have higher entrance requirements. (See TECHNICAL EDUCATION.)

In Prussia a number of industrial schools (*Gewerbeschulen*) arose in 1828, and met with success; the entrance requirements were raised, and in 1878 they were transformed into *Oberrealschulen*. New schools were established to take their place, e.g. Municipal Artisan School in Berlin, 1880, Iron Workers' School at Remscheid, 1880, Machine Construction School at Cologne, 1881; Spinning Schools at Aachen, Berlin, Cottbus, 1883, Industrial Arts School in Dusseldorf, 1883. In 1884 this type of schools was placed under the Ministry of Labor and Commerce. The development was rapid after 1890, and many municipal schools were taken over by the State. (See *Rep. U. S. Com. Ed.* 1910, pp. 324-329, for list of vocational schools in Prussia.) The following types of schools have been developed: building trade schools for the preparation and training of workmen and foremen in all that pertains to

building, masonry, carpentry, sanitation, drainage, surface improvement, etc. Many officers for city, state, army, and railway administration of buildings and roads are trained. Students are admitted at the age of sixteen, and must have had practical experience. The course lasts four years, and is given as a rule in the winter months.

Schools for machine construction and foundry work give a two years' course for lower technical officers based on common school training and four years practical experience. Many of the lower schools are attached to a higher technical school, and in some cases students are allowed to pass from the one to the other.

A two years' course of study and practice is provided in the Schools for Metal Industries at Iserlohn, Remscheid, Siegen, and Schmalkalden. The entrance requirements are the common school branches. In these courses are trained pattern makers, engravers, locksmiths, turners, printers, etc.

At Hohr and Bunzlau schools are maintained for the ceramic industries. One year of practical work in addition to the common school branches is required for entrance. Courses are given in German and arithmetic drawing and painting, chemistry, physics, mineralogy, geology, ceramic technology, and practical work in the shops.

The textile schools were reorganized in 1896, and afford training for master workmen and young manufacturers in spinning and the allied trades. Traveling teachers are also employed for the country districts where the handloom has still been retained.

There are besides special schools, like the navigation schools, schools of mines, schools for blacksmiths. For girls and young women there are courses in women's handicrafts, machine stitching, white work, laundry, dressmaking, art embroidery, lace making, commercial subjects, and household arts.

The other German states have provided similar schools through the same organizations as in Prussia. Variations occur as demanded by the different industries. In addition to the types of schools referred to above, there are, for example, in Bavaria schools in the wood industries — carving, cabinet making, toys, etc. Such schools are maintained at Berchtesgaden, Oberammergau, Partenkirchen, and Furth. Saxony spends more on industrial schools of all grades than any other German state. At Chemnitz the Technical Institute has several thousand students in the different departments of machine construction, industrial drawing, building construction, textile branches. Each of these branches is also cared for by separate institutions in other towns: textile schools at Reichenbach, Zittau, Plauen, Groschorau, etc.; machine construction at Mittweida, Zwickau, and Hainichen. To the Royal Industrial School at Plauen a museum is attached, with

models, designs, patterns, natural objects, etc. The handworkers' schools aim to give general industrial courses to apprentices and master workers, such schools are found at Dresden, Leipzig, and Bautzen. In Saxony are located a number of national schools maintained primarily by private societies throughout Germany with state or city support. Among these may be mentioned the Tinworkers' School at Aue, the Locksmiths' School at Rosswein, Watchmakers' School at Glashutte, Turners' and Carvers' School at Leipzig, Tanners' School at Freiberg, and the Millers' School at Dippoldiswalde.

The same provision of industrial schools is found in Wurttemberg. At Reutlingen there is the Technicum for the weaving industry, giving instruction in spinning and weaving for manufacturers, superintendents, and master workmen engaged in the textile industries. Other schools in the same field are located at Heidenheim, Laichingen, Sindelfingen, and Sontheim. A state school for skilled mechanics at Schwenningen offers courses in watch and clock making and electrotechnical work. Supported by the state and city, there is at Stuttgart a school for the book printing trades under the auspices of the Union of Proprietors of the Book Printing Establishments.

*Industrial Art Schools.* — Within the scope of industrial education must also be included the industrial art schools, which are nearly all under direct state control. While the artistic side of the industries is by no means neglected, the emphasis in the industrial school falls primarily on the industry involved. The industrial art schools give instruction in the arts as applied to industries, and as a rule are general in scope, and while a few provide courses with reference to special industries, they require a preparatory general course. The schools admit pupils at the age of sixteen, and generally require two years of practical workshop experience. The course extends over two years. While fees are charged, numerous scholarships are offered. Some schools have, in addition to the general course, preparatory courses of two years, pupils being admitted at the age of fourteen. The instruction in the industrial art schools covers the following subjects: all branches of drawing, architectural drawing, modeling, decorative arts, wood carving, painting, enameling, chasing, pattern designing, engraving, art embroidery. Some schools, especially in Bavaria, give courses in glass and porcelain painting. In Prussia there are industrial schools at Berlin (*Königliche Kunstschule* and *Königliche Kunstgewerbemuseum*), at Breslau (*Königliche Kunst- und Kunstgewerbeschule*), at Düsseldorf (municipal *Kunstgewerbeschule*), at Frankfurt a. M. (*Kunstgewerbeschule* of the *Kunstgewerbe-Verein*), Hanau a. M. (*Königliche Zeichen-Akademie*) for training art-jewelers, gold and silver smiths, etc.). The two chief industrial art schools are the *Königliche Kunstgewerbeschulen* at

Munich and Nuremberg. In Saxony there are several special industrial art schools in addition to the *Königliche Kunstgewerbeschule* at Dresden, which also has a preparatory school. At Plauen courses are given in the application of the arts to textiles. The *Königliche Akademie der graphischen Künste und Buchgewerbe* at Leipzig pays special attention to the application of the arts to all branches of the book industry (lithography, woodcuts, engravings, photography, and manifolding). The state *Kunstgewerbeschule* at Stuttgart has preparatory courses in addition to the special courses which are divided into five courses, the arts applied to furniture, models, and woodcarving, decorative arts, chasing, and the teaching of drawing. Similar provisions are found throughout the country.

*England.* — As in Germany, industrial education in England has developed along several different lines. The system of apprenticeship disappeared earlier in England than on the European continent, and, although the industrial and commercial development was more rapid, little was done to promote training until the latter part of the nineteenth century. Classes for adults and young workers were established in the eighteenth and early nineteenth century in connection with the Sunday school movement (*qv*), the Society for the Promotion of Christian Knowledge (*qv*), the Adult Schools (*qv*), and the Mechanics' Institutes (*qv*). But only the two latter movements can be strictly said to have attempted to improve the efficiency of the working classes at their occupations. It was not until 1851 that national action was taken to promote the education of adults. In that year the government made grants to evening schools and classes. Two years after the Exhibition of 1851 the Department of Science and Art was established for the encouragement of instruction in drawing and science. From 1860 grants were given by the department on the result of written examinations; grants were also made for buildings, books, and equipment. In 1872 organized science schools, which offered instruction in science in courses of three years, were established, and might be held by day or night. The Department made grants in respect of the science work at these schools. Many day science schools in 1902 became secondary day schools. Grants have also been made by the Department for instruction in drawing and design. The Technical Instruction Act of 1889 was also administered by the Science and Art Department, and provided for "instruction in the principles of science and art applicable to industries and in the application of special branches of science and art to specific industries or employments." This act remained in force until 1902, and under it local authorities used the powers intrusted to them to provide instruction in almost every subject except the classics. In 1899 the Science and Art Department became

a branch of the Board of Education. Many private associations also supported and encouraged the introduction of scientific instruction mainly into the evening classes. The chief of these was the City and Guilds of London Institute, an association founded in 1878 "for the purposes of all such branches of science and the fine arts as benefit or are of use to or may benefit or be of use to productive and technical industries, especially to commerce and industry generally . . ." The department of technology of the Institute registers and inspects classes in technology and manual training and holds examinations annually in the subjects taught in these classes in the British Empire. Much of the early work in science and the technical branches, encouraged by the different movements referred to above, by various associations, and by the Department of Science and Art, has now been taken over by the local universities and technical schools, and since 1902 by secondary schools. (See ENGLAND, EDUCATION IN; TECHNICAL EDUCATION)

In the present article only those forms of industrial education which are based directly on an elementary school course will be treated. Such instruction is given in higher elementary schools, evening schools (*q v*), and in day trade and technical schools. This classification is, however, incomplete if it neglects the provisions made by employers for giving special trade instruction to their apprentices. (See APPRENTICESHIP AND EDUCATION.) Nor is any account given here of the preparatory courses in the manual arts in elementary schools. (See MANUAL TRAINING.)

*Higher Elementary Schools* — These schools were first recognized by a Minute of the Board of Education (Apr. 6, 1900) as schools organized to give a four years' course to pupils between the ages of ten and fifteen, with a curriculum including practical and theoretical science. Instruction was to be suited to the special circumstances of the districts which they served. By Article 38 (IV) of the Board of Education's Code for 1905, it was to be a condition of the recognition of such schools that "the curriculum must have for its object the development of the education given in the ordinary public elementary schools and the provision of special instruction bearing on the future occupations of the scholars, whether boys or girls." The reason for the establishment of such schools was thus stated by the Board: "The scholar who must at the age of fifteen begin an industrial employment or enter the lower ranks of business needs a course of instruction different from that of the secondary schools, and yet one which is higher in standard and somewhat more special in aim than that given in the ordinary public elementary schools." The number of such schools in the year 1909-1910 in the whole of England and Wales was not more than fifty-one, containing, on the last day of the school year, 10,771 schol-

ars, of whom only 1375 were fifteen years of age or over. The hope that children would be induced to stay and complete a three years' course ending at fifteen years of age has been far from realized. In a number of cases no satisfactory attempt appears to have been made to give the curriculum a bias appropriate to the circumstances and the probable future occupations of the scholars. The Board's conclusion is that "it can hardly be said that the majority of higher elementary schools are in any special degree fulfilling what the Board conceived to be the true function of a school of this type." But, as the Board of Education admit, the comparative failure of higher elementary schools in England does not really indicate the failure of the principles underlying the scheme for their establishment.

As often happens, the central government has made its regulations too advanced, and the higher grants earned by a school definitely classified as a higher elementary school are eaten up by the greater costliness of fulfilling the structural and other conditions required to secure recognition. It is probable that large numbers of schools classified as ordinary elementary schools, *e g* such schools as have been recently organized in London under the name of central schools, are performing quite successfully the functions of a higher elementary school. According to the Report of the Education Committee of the London County Council made in March, 1910, the central schools should "be schools which will give their pupils a definite bias toward some kind of industrial or commercial work, while ensuring that their intelligence should be fully developed, and they should occupy a distinct position from the secondary school. They should avowedly frame their curricula with a view to the pupils leaving at an age between fifteen and sixteen. Their courses should be so framed as to provide for the pupil the best possible equipment for entering upon the industrial or commercial world as soon as he leaves school, while at the same time qualifying him to enter upon a special course of training for some particular industry at a polytechnic or similar institution, if he desires to continue his education further." The central schools were introduced in London in April, 1911. A similar type of school was established in Manchester in the same year.

*Evening Schools* — The development of industrial training in higher elementary schools and in the higher classes of elementary schools may fairly be considered as an attempt to link on directly the elementary with the technical schools. But an intermediate link is felt by some to be, if not absolutely necessary, at any rate desirable. For the fairly large proportion of children who leave the elementary schools at fourteen without reaching the higher classes, and who are quite unfit to take their places in the technical school even of a comparatively low grade, it has long been sought to form a link

by means of evening continuation schools; and certainly the evening continuation schools of Great Britain have done magnificent work, not only for the imperfectly educated, but also for those who have left the higher classes of elementary schools, where no attempt whatever has been made to bear industrial considerations in mind. The impasse caused by the Cocker-ton Judgment (*q v*), which forbade the use of rates for higher education in evening schools, was removed by the act of 1902, which permitted local authorities to support higher education. By the regulations of 1903 evening continuation schools may provide instruction in manual training (wood and metal work), any generalized or special branch of science, including mathematics, home occupations and industries. The curriculum is flexible, and may be adapted to local requirements. Evening technical classes with four or five year courses have also been established in connection with technical schools. They cover instruction in mathematics, drawing, physics, mechanics, machine construction, and some specialized work, *e g* mechanical or electrical engineering.

*Day Trade Schools* — A recent attempt has been made to provide the link by means of certain day schools in various localities popularly described as "trade schools" or "preapprenticeship schools." As a matter of fact there are two grades of such schools (*a*) the preapprenticeship school, (*b*) the trade school proper or apprenticeship school — the avowed object of which is to provide a substitute for the obsolescent apprenticeship system. Of the latter a useful account has been given by Mr. Blair, the education officer of the London County Council, in a paper read before the Imperial Education Conference held in London in 1911. He describes these schools as a development of the day school for boys or girls of thirteen or fourteen years of age, designed generally to provide a more specialized industrial curriculum than is held to be admissible in an elementary school. Their object is to prepare boys and girls to become intelligent workpeople with a chance of rising later, and it is naturally expected that many on leaving the trade school will pursue their education through the avenue of the technical school properly so-called, in many cases, of course, by attendance at evening classes.

As a typical illustration of one of the ten trade schools for boys in London may be taken the School of Building at Brixton, opened in 1908. The course is for three years, and admission is restricted to boys between thirteen and fifteen years of age, who have passed the sixth standard of an elementary school, or its equivalent. "The curriculum, which is common to all students during the first year, and which is looked upon as a probationary period, includes building construction, workshop practice, study of materials, workshop arithmetic and mathematics, experimental science, geometrical and plan drawing and lettering, free-

hand drawing of building details, English literature, history with special reference to industrial changes and the development of public and domestic architecture, geography with special reference to building materials, English composition, and business correspondence. Briefly this is: —

- 8 hours per week workshop practice (general),
- 6 hours per week technical and drawing office instruction,
- 4 hours per week elementary science,
- 10 hours per week English, mathematics, and art applied to building,
- 2 hours per week physical instruction

At the end of the first year the principal advises the parents of the boys attending the school as to the most suitable vocation or craft to select for their sons, this recommendation is based upon any special aptitude shown during the first year, reports from the masters, the character of the boy, and the position of the parents. In the second and third years the courses are divided into two main sections, an artisan course and a higher course for architects, builders, and surveyors, and the development of the timetable in the direction of greater specialization is shown by the fact that in the second year, in place of an eight hours a week course in workshop practice of a general kind, ten hours are devoted in the second year to specialized instruction, and fifteen in the third year. It is clear that the last year's course is hardly distinguishable at all from that of a technical institution properly so called.

Of the six trade schools or apprenticeship schools for girls in London it may be said that they provide instruction in eleven skilled trades for women. "The school hours are from nine to five, Saturdays being free. About two thirds of the school time is devoted to trade work, the remainder being given to art and general education. The trade teaching is in the hands of teachers who have obtained their knowledge of the trade in first-class business houses. As far as is possible in a classroom, workroom conditions are set up. The equipment and arrangement of the room is similar to that of a trade workroom. Workroom methods and trade standards of work are adopted, the chief difference being that, whereas in a workroom many workers may combine to produce one article, in a classroom each girl is responsible for and required to carry through all the processes of the article she makes. Very little formal work is done, as far as possible all completed work is real work made for a particular purpose. The ingenuity of the teachers is called upon to provide sufficient variety of work to provide practice and experience of the various branches of the trade which each girl must learn. A record is kept of the trade work of each girl and of the time spent in producing it."

Of the preapprenticeship type of school for boys, the Trade Preparatory School at Liverpool may be taken as an illustration. The

conditions of admission are much the same as those described above for the London Trade School. "The full course of instruction is arranged to extend over two years, and occupies six hours per day on five days per week for forty-two weeks in the year. The curriculum comprises workshop practice in wood and metal, practical mathematics (including the applications of arithmetic, mensuration, algebra, etc., to workshop problems), practical drawing of simple engineering and building details, with constructive and solid geometry and hand sketching; elementary science (including laboratory work) in mechanics, physics, and chemistry, English (including composition, geography, etc.); physical exercises. The time at present allocated to each of the subjects is as follows —

	HOURS
Workshop practice . . . . .	8
Practical mathematics . . . . .	5
Drawing . . . . .	7
Experimental science . . . . .	5
English . . . . .	4
Physical exercises . . . . .	1
Total . . . . .	30

There is very little specialization of the work even in the second year, and there is no third year, for the boy who is willing to pursue his education further is expected to pass on to a technical school proper."

In the same class of school may be reckoned the schools of domestic science for girls which have sprung up in various towns all over England and Wales, of which the York Terrace School of Domestic Science in Liverpool may be taken as an example (See HOUSEHOLD ARTS). It should be added that there is a tendency to graft on to the general courses in these schools instruction in such branches of woman's work as millinery, upholstery, etc.

The ten trade or apprenticeship schools for boys in London contain 736, and the six London trade schools for girls 620 pupils. There are, as yet, no reliable statistics for the rest of the country, inasmuch as it is very difficult to disentangle the figures for the two types of school, namely, the apprenticeship type and the preapprenticeship type; but it is probable that there are at least fifty schools. These figures, both for London and the country at large, are so small as to show that even as an experiment the day school link between the elementary school and the technical school has hardly passed out of the embryonic even into the infant stage. The costliness of the schools is against them. In London of the 736 boys only 378 pay fees; of the 620 girls only 229 pay fees; and where education is not wholly free, the real measure of public appreciation is not the number of free, but of fee-paying scholars. The net cost to the rates is probably a good deal higher in the schools of the apprenticeship type than of the simpler preapprenticeship type. Thus the net cost to local rates of each girl in

one of the London trade schools for 1909-1910 was £14, 18s. The net cost of a girl in the Liverpool York Terrace school was £4, 8s 10d. The net cost per head of the Liverpool Boys' Preparatory Trade School was £9, 19s.

The trade schools echo the general complaint in England, to be heard in technical institutions of all kinds, namely, that they have not yet won the full confidence and sympathy of employers. But there is reason to believe that the position in this regard is improving partly because employers are becoming more intelligent under the spur of international competition, and partly because the schools are endeavoring more strenuously to turn out young people with the qualifications that square-headed employers are actually found to appreciate, not those that the domed foreheads of the school authorities think they ought to appreciate. It is noteworthy that, in this regard, the success of the girls' trade schools in London has been greater than that of the boys.

This day school experiment, however small, is a valuable one, but it is probable that, until a compulsory system of continuation schools is established the bulk of the real industrial education of the country will continue to be supplied by the higher classes of elementary schools, which are endeavoring to connect themselves up directly with technical institutions, and by the link between the elementary school and the technical institution furnished by the evening continuation school.

In conclusion it may be said that. First, the present situation in England is one of experiment and development. Out of the welter of discussion certain principles are emerging, and in the application of these principles there is infinite variety. But this ferment is all to the good, for it indicates the keen interest of active-minded people, above all of teachers of every grade, in new problems, and something making for the good of the people is more likely to result from the general attitude of inquiry than from any apathetic submission to this authority or that. Second, there is a growing recognition of the truth that it is impossible to have effective industrial education unless the very basis of it is real work, and work which a child or young person recognizes as useful work, such work indeed as makes him realize that he is not only an individual, but also a member of society and a citizen. J G L

**France** — The term "technical education" (*enseignement technique*) has been adopted in France for that education which prepares for industrial and commercial careers. The term "professional education" is sometimes used; this term, however, is too broad, and leads to confusion, since all the institutions which prepare for law, medicine, teaching, etc., are professional schools. In the organization of technical education France is far from having attained to the level of Germany, if it is true that the number of pupils in Germany who attend

industrial courses can be estimated at 400,000 and that of students in commercial schools at 48,000. Great efforts are still necessary to develop a type of education on which the economic future of the country depends. It is especially in the lower grades of technical education that there is room for progress if France is not to be left behind by Germany, and if the so-called crisis in the system of apprenticeship is to be remedied. In the higher and middle or secondary grades of technical education, there is little cause to envy foreign powers. The enrollment in these institutions is 3500 pupils. To these may be added in the intermediate grade the four national professional schools at Armentières, Nantes, Vierzon, and Voiron, with 1327 pupils, the schools of watchmaking at Ouses and Besançon, with 208 pupils; and the fifteen professional schools for boys and girls at Paris with 3116 pupils.

All these institutions, maintained or supported by the State, are controlled by the Minister of Labor and Commerce. The National Conservatory of Arts and Trades was established in Paris at the close of the eighteenth century, and has been reorganized several times. It serves two purposes. It is an industrial museum displaying models and machinery, and is an educational institution. It provides free public courses, which are generally given in the evening and are intended for those who are engaged during the day. Twenty-three different courses are given in the conservatory, which may fitly be called the Sorbonne of industry. The following is a list of the courses: geometry applied to trades, mechanics, machine work, physics applied to arts, industrial electricity, weaving and spinning, civil engineering; art applied to trades; metallurgy and metal work, general chemistry in its relation to industry, agricultural and analytical chemistry, industrial chemistry; chemistry applied to coloring matters, dyeing, and bleaching; chemistry applied to limestone and cement, pottery, and glasswork; agriculture, industrial hygiene; political economy and industrial legislation; industrial economics and statistics; insurance and provident societies, commercial law; social economics; trades unions; industrial and commercial geography.

The Central School of Arts and Manufactures, established in Paris in 1828, became a national institution in 1857, for the training of engineers in all branches of industry. Foreigners are admitted on the same terms as natives. The course lasts three years. There are twenty professors. On leaving, the students receive either a certificate of attainments or a diploma of engineer in arts and manufactures. The holders of this title are much sought after for industrial positions, but have no claim to any official appointment. For government service engineers are trained at the Polytechnic School (*École polytechnique*), and the School of Bridges and Roads (*École des Ponts et Chaussées*).

*National Schools of Arts and Trades (Écoles nationales des Arts et Métiers).* — There are five of these schools (*Châlons-sur-Marne*, *Aix*, *Angers*, *Lille*, and *Cluny*). A sixth school is to be opened in Paris in 1912. Boys between fifteen and seventeen are admitted on an examination which includes written composition and oral tests in orthography, arithmetic, elementary geometry, lineal and ornamental drawing, and algebra. The schools are boarding institutions, and admit about 300 pupils. About three fourths of the pupils hold government scholarships covering tuition and board. A three years' course is given, theoretical and practical, for the industrial training of foremen, managers, capable and trained artisans.

*National Professional Schools (Écoles nationales professionnelles).* — The four professional schools at Armentières, Vierzon, Voiron (established in 1881 and 1882, but opened later), and Nantes (1900) are intended for the training of artisans and foremen in industry, they also prepare for the competitive examination for admission to the National Schools of Arts and Trades. They were formerly under the Minister of Public Instruction, but by law of April 19, 1900, they were placed under the Minister of Labor and Commerce. Instruction is practical and theoretical, and is of the same character as in the watchmaking schools at Ouses and Besançon. They all have courses in iron and wood work, and also specialize in the industries of their district, thus, Armentières has spinning and weaving, Voiron, weaving and silk culture, Vierzon, pottery.

*Lower Schools of Commerce and Industry (Écoles pratiques de Commerce et d'Industrie).* — General preparatory training for industrial, commercial, and agricultural pursuits is given in the Higher Primary Schools (*Écoles Primaires Supérieures*). These offer courses of two or three years, which are based directly on the work of the elementary schools, but are not vocational in any sense. (See further detailed account under FRANCE, EDUCATION IN.) Special industrial schools based on manual work were established by the government in 1880. These *Écoles manuelles d'apprentissage* (Manual apprenticeship schools) were under the control of both the Minister of Public Instruction and the Minister of Commerce and Industry. Their aim was to impart manual dexterity and some knowledge of the science underlying the industries. The dual control (*condominium*) of this type of school proved unsatisfactory, and a reorganization took place in 1892. The manual apprenticeship schools became lower schools of commerce and industry, and were placed under the Minister of Commerce and Industry. They were intended for the training of commercial employees and artisans, and their justification was thus stated: "With few exceptions apprenticeship in a shop no longer exists to-day. It has become indispensable to put at the disposal of business

men assistants who are well prepared and to supply to employers selected artisans." These schools receive pupils up to the age of fifteen. They may be established by municipalities, communes, or departments and receive state aid. In 1910 there were 66 such schools (53 for boys and 13 for girls); 36 of the boys' schools gave instruction in both commerce and industry, 16 in industry, and one in commerce alone. The girls' schools gave the combined courses. There were enrolled 10,350 boys and 2858 girls. In the industrial schools there is a course common to all, — iron and woodwork, while the other courses vary considerably according to the needs of the district, e.g. industrial chemistry and dyeing; wool weaving and cloth manufacture; manufacture of furniture; electricity; gunsmithing; watchmaking, cutlery; printing and typography; etc. In the commercial schools the courses are also distinguished by the local needs. Thus, the choice between two modern languages is determined by the geographical location of the school, the course in merchandise varies according to the local trade; and similarly in the vine-growing districts, the chemistry of wines is taught. In nearly all the schools there is a commercial bureau in which the pupils are made acquainted with samples of prints employed in commerce. The girls receive training to equip them for the home or for employment as artificial flower makers, modistes, corset makers, dressmakers, etc. At the conclusion of the course of three years the graduates receive the *Certificat des Études pratiques commerciales et industrielles*.

In a number of these schools there have been established normal departments which prepare teachers of industry and commerce. It is proposed to establish at Paris a normal school for industrial education.

The efforts of the State are supplemented by municipalities, chambers of commerce, communes, and individuals. In Paris the town maintains seven boys' schools for special industries, for the book industry, *l'École Estienne*; for iron and wood work, *l'École Diderot* and *l'École Dorian*; for furniture, *l'École Boule*; for fine arts applied to industry, *l'École Bernard-Palisse*; for practical drawing, *l'École Germain-Poin*; for the sciences applied to industry, *l'École de Physique et de Chimie*. These schools give general and industrial (theoretical and practical) courses extending over three or four years. In addition there are also eight industrial schools for girls, which prepare for the recognized trades for women, such as tailoring, millinery, flower making, fine lingerie, etc.

A number of schools may be mentioned throughout the country. Attached to the University are the Chemical Institute of Lyons, the *École de Brasserie* (School of Brewing) of Nancy; the Electrotechnic Institute of Grenoble, etc. Due to private initiative or

municipal authorities are the *École La Martinière* at Lyons, celebrated for its special methods of instruction; the Industrial Institute of the North, the Spinning and Weaving School at Lille; the Technical Institute at Roubaix; the Industrial School at Tourcoing, the *École Rouvière* at Toulon, etc. The State assists about 400 technical courses with subventions.

The Schools of Hydrography should also be mentioned, of these there are sixteen, attended by candidates for the merchant marine, and the School of Forestry at Nancy and the *École de Bergerie* at Rambouillet.

As in other countries, chambers of commerce, associations of workmen and employers, and private individuals play an important part in the promotion of commercial and industrial education. Such societies for industrial training include, for example, the Society for Elementary Instruction and the Polytechnic Association (1830) and the Philotechnic Association (1848) at Paris; the Popular Education Society at Havre; the Society of the Rhone for Industrial Instruction at Lyons. Many schools of this type are distinguished from the preceding in that the pupils are received at a more mature age and are already following their occupations, while the courses of instruction tend to be more specialized. Among these schools may be mentioned "the technical schools for masons established by the Paris societies of masons and stone cutters, courses for tailors maintained by the incorporated body of tailors, schools for jewelry manufacture maintained by the jewelers' syndicate." G. C.

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**INDUSTRIAL SCHOOLS, 'ENGLISH.** —

A term used in England with special reference to the schools provided for wayward, truant, and criminal children, or children of criminals and drunken parents. They include both day and boarding schools. See for detailed account the article on REFORMATORY EDUCATION.

**INEBRIETY.** — See ALCOHOL, THE USE AND PSYCHOLOGICAL EFFECT OF, INTOXICATION; TEMPERANCE, EDUCATION IN.

**INEQUALITIES.** — If  $a$ ,  $b$ , and  $c$  are positive quantities, such that  $a + b = c$ , we say that  $c$  is greater than  $a$ , or that  $a$  is less than  $c$ . These relations are symbolically expressed thus:  $c > a$ ,  $a < c$ , and these expressions are called inequalities. Inequalities are subject to some of the laws of equations, but not to all of them. For example, if  $a < c$ , then  $a + x < c + x$ ; but  $ax$  is not less than  $cx$ , if  $x$  is negative. The subject of inequalities was formerly treated quite extensively in elementary algebra, and it has an interesting theory. Of late, however, it has been recognized that it is of little value until the subject of limits is reached, and therefore it has but slight treatment in our current textbooks on the algebra of the secondary school. The symbols  $>$  and  $<$  are due to Harriot, an English algebraist who wrote in 1631. At the same period Oughtred, another well known English algebraist, used  $\supset$  and  $\sqsubset$  for the same purpose, and these latter symbols were used by several English writers of the seventeenth century.

D. E. S.

**INFANCY, THEORY OF, IN EDUCATION**

— Infancy denotes, biologically, the phase of immaturity in the development of a function or organ of an organism. It is a more or less relative term, since some one function may be quite undeveloped while others are fully operative. The conception of infancy in contemporary educational theory is also colored by its legal, or better, social sense. Infancy means the period of minority, the period when an individual is legally represented by an adult and is under special protection and supervision. By a natural extension of this meaning, infancy, in education, signifies the entire period in which individuals are protected from the assumption of the full duties of adult life, especially those of economic self-support. So considered, infancy consists of those years in which children are shielded against the impact of economic conditions, in order that their time and energies may be devoted to adequate growth; in other words, the years in which the chief interest is education. Quite obviously, the biological and economic phases of infancy go together. The immaturity of capacity is the cause of economic dependence, while the period of economic dependence preserves

the plasticity of organs that is favorable to continuous educational growth. Thus the conditions favorable to education have been identified with "the prolongation of infancy."

John Fiske is the author of the doctrine of the importance of prolonged infancy. He seized upon the fact that early perfection and high specialization of function are unfavorable to further development, and that they render practically impossible the acquisition of new powers. In some sense, the early perfection of animal instincts and powers is the barrier that precludes learning, and hence development. On the other hand, the incompetency for specialized acts of the human young means a plasticity (*q.v.*) which permits and demands learning — adaptation of capacities to new conditions as these show themselves. Consequently, infancy (of some organ) remains as long as genuine growth, transformation, is possible to a human being. Its opposite is not so much competency of action as arrest of growth, exhaustion of potentiality, of possible assumption of new directions of thought and action.

It follows that infancy is to be conceived positively, rather than negatively, it marks the presence of a powerful and significant resource rather than the mere absence of capacities. Our tendency to conceive infancy in terms of lack, deprivation, impotency, is due to our taking certain specialized adult forms of capacity as our standard, the lack and impotency are purely relative and comparative. If we emphasize the limit of growth which characterizes adult specialized powers (the fact that they evidence the formation of habits that resist readaptation), adult powers are a sign of defect as compared with the mobile, alert ease of adaptation to the new that characterizes infancy. Viewed absolutely, infancy is a power, not an impotency. It is power of growth. Viewed statically, crosswise as it were, immaturity is mere deficiency of development, and till the rise of the biological sciences and of the theory of evolution, it was almost universal to conceive childhood in this negative fashion. Children were simply partial, incomplete adults, the object of education was to hurry them through this period of lack into the full competency of adulthood. Put otherwise, education was a preparation for a future which alone was fully real and significant. But the theory of education substitutes a lengthwise view for this crosswise interpretation, it reveals immaturity as the essence of life itself, the power of continuing development, of renewal, of readaptation to the changing. It represents, so to speak, the evolutionary impetus itself, as against the fixations of capacity for adaptation indicated by matured organs.

The importance of the idea of infancy for educational purposes requires that we note the reflex influence of prolonged infancy upon the social conditions of adult life. It is hardly too much to say, as Mr. Fiske (*q.v.*) also

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first pointed out, that the helplessness of infancy has probably been the chief force in socializing the human race in its progress out of an animal condition. Mutual defense and economic efficiency have been powerful forces in bringing about associations of human beings. Relations of sex have brought about even more intimate and intense associations. But combinations brought about by these forces are relatively transitory and instinctive as compared with those due to the need of the continued care of the young. Although the young of savage peoples are more precocious than those of civilized races, the years in which their dependence demands continued close association are relatively long in contrast with the weeks, days, or hours during which economic and sexual needs hold people together. It is generally admitted, for example, that the change of the marriage relation from a temporary to an enduring form has been chiefly effected by the presence of children, with their long-continued need for support. And this latter motive can hardly have failed to react into industry, changing it from a predatory immediate satisfaction of physical wants as they became urgent into systematized, cooperative, and sustained modes of action. And this is only to say, with respect both to family and industry, that the presence of the dependent young has been a powerful factor in transforming instincts into conscious affections and thoughts. The continued care of children tends to change passionate attraction into tender emotions, into sympathy, into affectionate interest. It also involves foresight, planning ahead, taking into consideration matters broader and longer than the immediate satisfaction of organic appetite. An interesting light upon the education of adults through the necessities due to the presence of children is shed by the rôle which the need of instruction has played in the organization of science. Desire to get knowledge into a form in which it would be available and effective in the training of the less advanced has been an infinitely more powerful motive in bringing together and systematizing knowledge and beliefs than all purely logical motives put together. The need of education has been the chief cause of a survey of experience wider than that required by the narrow immediate personal exigencies of appetite and circumstance. This fact is illustrative of the fundamental intellectual and moral influence due to the presence of infants — that is, of the relatively helpless. In the narrower psychological sense of the term, applying to the period from birth to the end of the third year, the subject is discussed in the preceding article on INFANT EDUCATION.

J. D.

See EDUCATION; GROWTH; also CHILD LABOR; CHILD PSYCHOLOGY; CHILD STUDY; CHILDHOOD, LEGISLATION FOR THE CONSERVATION OF.

## INFANT EDUCATION

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**INFANT EDUCATION — Historical Sketch** — The education of the child for the first three or four years of its life has among some people received much attention, among others very little. So also has it been in the discussion of education when education has become a matter of philosophical or social consideration.

Among primitive people there exist many customs relating both to the conduct of mother or father, and to the conduct as well as the care of the child. While most of these relate to the care of the body, many of them relate even thus early to the social education. Some of the Zuni or Pueblo Indians even have an initiatory ceremony within three years of infancy. (See PRIMITIVE PEOPLES, EDUCATION AMONG.)

Among ancient peoples whose civilization was of a high order, the Greeks, perhaps, were most acutely conscious of the importance of utilizing the plastic period of infancy for implanting moral and æsthetic ideas and for developing a sound physique. In his *Life of Lycurgus* Plutarch tells us that the Lacedæmonians attached the greatest importance to the rearing of healthy and vigorous children. To this end the girls — future mothers of citizens — received much the same rigid physical and moral training as the boys. The Greek practices concerning infant education are discussed in the article on Greek Education, the ideals and theory are further presented in the articles on Aristotle, Plato, and Plutarch, each of whom wrote in detail upon the subject. Aristotle and Plato also devote much attention to the duties and obligations of the guardians or political officials regarding the education of infants as well as of youths.

With the Romans one finds a type of home training of infants which has become famous. The position of the wife and mother in the Roman household was one of far greater honor and dignity than that of the Greek wife. The newborn infant, far from being consigned "to the mean dwelling of a hireling nurse," was carefully reared by its own mother who divided her time between household concerns and the nurture of her children. If her cares were too onerous, some female relation of irreproachable character was placed in partial charge of the children. The Romans had a just appreciation of the value of imitation in the training of young children. In his treatise called *Brutus*, Cicero maintains that greater atten-

tion should be paid to the language which children daily hear and imitate. The fullest statement of the educational theorist is given by Quintilian. By his time (c 118 A.D.) the emphasis upon intellectual pursuits and the training of the accomplished orator had become pronounced. Hence we need not be surprised to find this prince of educators and stylists not only urging that parents and nurses be cultivated persons, but taking his stand with one Chrysippus, who affirmed that no part of a child's life should be free from tuition. Even though the first three years be allowed to nurses, yet "the minds of children may be imbued with excellent instruction even by them." Quintilian concedes that probably very little can be accomplished in these early years; nevertheless "even studies have their infancy." Yet the little child should by no means be driven to intellectual tasks, but rather be led to find amusement in them.

During the Middle Ages the earliest stage of education, like all other stages, was influenced by a combination of the custom of primitive peoples of the classical civilization and by Christianity. The discussions on early Christian education, CHRISTIAN CHURCH, EARLY EDUCATION UNDER, CATECHETICAL INSTRUCTION, CHURCH SCHOOLS, MIDDLE AGES AND EDUCATION, and related topics give the details for this period. The school ordinances of the German states during the sixteenth and seventeenth centuries reveal, however, the persistence of much of the ignorance and superstition of the primitive period into that late age.

During the Renaissance and the centuries following, ideas and customs with regard to infant education very slowly and gradually underwent modification. In the seventeenth century the swaddling of infants was no longer practiced in England and Germany, although the custom persists in parts of Italy and France down to the present time, despite the vigorous protest of teachers. The nurse becomes a prominent figure in English child life in the reigns of the Tudors and the Stuarts. But the habit of sending children from home to be brought up by foster nurses never gains the foothold in England that it obtains across the channel. The faithful nurse of the Tudor period has been delightfully portrayed in Shakespeare's *Romeo and Juliet*. She it was who cared for the bodily wants of her small charges, and repeated those legendary tales, ballads, and rhymes so dear to the hearts of children. (See NURSERY RHYMES.)

For methods and materials which now began to come in vogue, especially in this early intellectual training, see the article on ABCDARIANS, NURSERY RHYMES, etc. The evil of forcing young children beyond their mental strength existed in the seventeenth century as now, although it was probably not a common practice. Sir John Evelyn, in his *Diary*, proudly writes of his infant son: "At two and

a half old he could perfectly read any of the English, Latine, French or Gothic letters, pronouncing the three first languages exactly." Apparently this infant wonder, who died when he was but just five years old, could decline Latin and French nouns, conjugate most of the regular and irregular verbs, and "had a strong passion for Greeke." Luther and Erasmus (qq.v.) give some consideration to the training appropriate to the very early years. But the most notable writers who consider infant education in the seventeenth century are Comenius and Locke. In his well known work, the *Great Didactic*, Comenius draws a sketch of what he calls the "Mother-School," or "School of the mother's knee." Here he quaintly describes the process by which a very little child may gradually acquire many valuable facts about its world. As the tree very early puts forth the shoots that will later become its branches, so in this first school we must implant in the future man the seeds of all knowledge. Locke (q.v.) is probably the first writer or theorist on education who makes the child the center of the entire process. And for this reason he stresses the physical, moral, and intellectual aspects of education. Of the three the physical is fundamental or basic, but the moral is the most important aspect. The formation of habits of good conduct, which can be begun in the period of infancy, is the chief aim of education. The intellectual aspect is secondary, and comes later.

With the middle of the eighteenth century, the result of Locke's teaching becomes apparent. In the *Emile* of Rousseau (1762) the educational importance of the period of infancy receives its first full recognition. (See ROUSSEAU, JEAN JACQUES, for details.) From the writings of this reformer comes the conception of education as the development of the powers of the individual which makes the physical and psychical growth of the first few years of utmost importance. Extreme as he was in asserting that the nature of the newborn infant is wholly good "as it comes from the hands of the Author of Nature," deteriorating only in the hands of man, he performed an incalculable service in directing the attention of parents and teachers to the "primitive dispositions" of little children, and to the part these should play in determining early home education. This was an age of individualism, and Rousseau would have even the little child emancipated from an unintelligent and cramping tradition, and given his full rights as an individual. In spite of all the inconsistencies and exaggerations so frequently commented on by Rousseau's critics, no one can deny that his influence upon the course of infant nurture and education was enormous.

Pestalozzi and Froebel carried to practical embodiment the more or less theoretic suggestions of Rousseau. From his *Letters on Early Education* it would appear that Pestalozzi was as actively interested in infant

education as his famous successor Froebel. He writes with the utmost earnestness that he despairs of accomplishing all that he hopes and plans for the uplifting of mankind unless the earliest stages of education be provided for. The mother, with her unflinching fount of maternal love, is the agent in whose hands lies the future of human improvement. But how is the untaught mother to direct these powers? Pestalozzi would reply "By developing heart and brain and hands to the true standard of all activity — the spiritual nature of man" (See PESTALOZZI). It was Froebel, however, who stands as the great organizer of the ideas and much of the practices relating to infant education. With Froebel the gospel of the sacredness and almost limitless possibilities of childhood reached its culmination. The original nature of every little child he earnestly believed to be whole and sound, since this nature was but an individual expression of the Divine Unity, of the spiritual life of God pulsating through His highest creation. Therefore every unspoiled child unconsciously and yet surely seeks that which is best. It follows that all early education should be *passive following*, not "prescriptive, categorical, interfering." The details of Froebel's ideas and practices are given under FROEBEL, FRIEDRICH, and KINDERGARTEN. In this connection account should be taken of the more superficial and mechanical scheme worked out in England under the name of Infant Schools (*qv*) chiefly by Wilderspin (*qv*). Yet Rousseau, Pestalozzi, and Froebel were hardly more than frontiersmen in the new domain of child study, staking out the land and indicating the work to be done by their more scientific successors. The modern psychologist and educator, using the suggestions thrown out by these great pioneers, have patiently endeavored to understand, by observation and experiment, the unfolding mind of the infant. Speculation and hit-or-miss empiricism have given place to the painstaking methods of science in the study of the little child, a study upon which the earliest as well as the most advanced education must be grounded if it is to bear wholesome fruit. W G

**Theory** — The term "education" has for so many years been identified with the formal instruction of the schoolroom that the joining of the terms "infant" and "education" seems almost a paradox. However, the present viewpoint is more and more emphasizing the fact that education is adjustment, is change, is preparation for service, the trend being always to ward ideal ends or purposes. With this emphasis on change and adjustment, no period in the child's life offers such evidences of education as do the years before he enters school, those years before his education is supposed to have commenced. If it be possible to point to any one period of four years as the one in which the greatest number of adjustments is made by the

child, when he learns most, this time must surely be the period of infancy. During this interval the child passes from a being with little or no mental life to one surpassing the highest animals in intelligence, showing at least the rudiments of all the human faculties; from a helpless being that makes a few reflex and instinctive movements to one that has control of many voluntary movements which enable him to care for himself, and to manipulate objects and often people to do his pleasure; from a being whose pains are expressed by a single cry to one that experiences many human emotions and desires, capable of expressing himself in symbolic human language, from a being that merely vegetates to one that shows such potential powers that we recognize human capacities.

The importance of this period, which has been emphasized by Preyer, Fiske, Miss Shinn, and others, has been largely lost sight of during the past fifteen years, a fact due to the widespread influence of President Hall and his followers. The adolescent period has been designated as the critical one in the life of the child, hence interest in educational circles has been centering on the development of the individual during the early teens. However, the Montessori (*qv*) movement in Italy, and, more recently, the psychological investigations of Jung and Freud, are again focusing attention on the early infancy of the child. The results of these two investigators in psycho-analysis, although still in the tentative stages, indicate that the desires, emotions, and the mental and physical habits formed in infancy, often before the age of four years, have a very great influence in determining not only the physical status of the child, but also the future emotional and volitional life of the adult. The general trend of development and character given during these early years, even though forgotten, is, they claim, of lasting importance in shaping the final product.

Even those who regard this period as important, however, have offered few suggestions and principles for education; these few are very general and flexible in character. This lack is due to the fact that during this early life the child is in the care of his parents and physician, therefore he has not been subjected to the same close investigation as has been accorded the child of school age. The day nursery is the one institution with its chief interest in children of this age, although to the Montessori schools, wherever found, and to the *écoles maternelles* of France children are admitted at two years, and to the infant schools of England at three. Day nurseries were founded for the care of young children whose mothers were at work; the emphasis in these institutions, especially in this country, has been on the development of good health, the prevention of disease, and on educating the children through play.

The educational principles involved in infant education center around two great topics, whether applied by the mother to the training of the child in the home, or by the teachers in any of the schools mentioned, or by the nurse in the day nursery; these are physical welfare, and the process of habit formation. Of primary importance is the physical welfare, especially during the first year, for upon health must depend not only the habits of this period, but also the intellectual development of later years. During this first year the child nearly trebles his size, a rate of growth far exceeding that of any other period, though it continues rapid for a year or two. In connection with this fact, if one realizes that the proportion of the weight of each of the vital organs to the rest of the body, and the proportion of body surface to weight greatly exceeds what it will be later, and likewise that the automatic machinery governing physiological operations is not yet running smoothly, that about 11 per cent of all children die during the first year and but 2½ per cent during the next two years, is a fact not so surprising. Recent statistics show that "a substantial reduction in the proportion of mortality has taken place even in the large cities, but it is also apparent that the decrease is more marked for children under five than for infants, — a fact which proves that the health problems of the latter have not yet received sufficient attention." Thus, then, is the most critical period of physical development, and all the positive measures to insure normal growth and to prevent disease should be carefully studied and provided by parents.

The factor having most to do with promoting growth and preventing disease is proper feeding. In the early months there is no food which can take the place of the natural one — milk. "Tests made in European countries have revealed the fact that breast-feeding yields the lowest infant mortality, that the use of animal milk causes a larger death-rate, and that the milk substitutes cause the largest death-rates." After the child is weaned, his food must still be fluids, and richer in albuminoids than that of the adult. The way for solid foods must be paved very gradually, for the digestive system is still highly sensitive, therefore easily upset.

Because of the larger radiating surface, and the poorly regulated heating apparatus, the infant is very susceptible to changes in temperature, so that the clothing of the child and the varying temperatures of rooms are important items in insuring good health. To expect an infant to thrive in the hot, dry air of city apartments, where even plants wither and die, is to expect the impossible. Fresh air and sunshine are more important now than at any subsequent time. The furnishings of the nursery and playroom are influential not only in determining the emotional reactions of the infant, but also in predisposing him to certain

æsthetic habits, and should therefore be chosen with care.

Plenty of sleep and lack of intense and rapidly changing stimulation are necessary, as well as plenty of opportunity to exercise the muscles of the body without incurring too great fatigue. One of the most radical changes in recent years in infant education is along this line. The baby used to be considered the plaything of the family, and was always exhibited and "shown off" to guests. While awake, the child was being played with constantly, thus calling for constant change of attention. The forcing of so much violent sense stimulation upon the delicate, growing nervous organism made the baby cross and irritable, induced unnecessary and extreme fatigue, and resulted often in an overexcitable nervous system. The present view is that, though he should be played with and coddled every day, yet much of the time he should be left to himself, to play and to exercise as he pleases, without undue stimulation by adults. Other children later become his companions, and the same principle holds true for the group.

The education of the infant has as its second important factor the formation of good habits. The most important ones, perhaps, are the physiological habits, those of muscular control, — such as talking and walking, — those of perception, and certain moral habits. All education at all times in the life of any individual is conditioned by the capacity of that individual. The instinctive equipment of the infant must determine the habits that can be formed. As some instincts develop later than others, some habits must be begun after the others are well fixed. As the appearance of the instinct, however, depends not only on the stage of physical development reached by the infant, but also upon the environment, it necessarily follows that the presence of an adequate environment at the proper time is a vital factor in the normal education of a child. The formation of a habit on the basis of some instinct, on this level of development, in every case follows the same general course. Blind, uncontrolled movements are made in response to the stimuli of the environment, sometimes many, sometimes few, a proportion of them meet with partial success. The contrast between the two results, and their varying degrees of perfection, tend to develop consciousness in connection with the situation, and the movement which ended in success comes to be deliberately repeated. This repetition of the movement, with the correcting of errors and eliminating useless movements through comparison with a standard, results in a good habit. The importance of the two factors of pleasure from results, and the conscious endeavor to perfect the performance through comparison with a standard, will vary in strength and importance, the latter factor playing a more prominent part as the child

grows older. The duty of the parent or teacher is first, to see that the environment is of such a character that the instinctive reactions will show themselves; second, so to arrange things that good and useful reactions shall meet with success, and harmful or useless ones with failure; third, to make sure that all the elements which form the environment of the developing infant, especially the habits, tempers, and ideals of the adults who surround the infant, shall be of a character worthy to serve as standards toward which his growth may proceed, fourth, to bear in mind that many habits, particularly those in the intellectual and moral fields, need to be progressive, not fixed and left once for all.

In his learning at this stage the infant follows the animal method of trial and "accidental" success; the pleasure which means most to him is physical pleasure, and the pain which really deters is physical pain. Approval and disapproval have considerable influence with the child toward the end of this period, and come to be sought or avoided, at least in the beginning, according to their association with pleasurable or unpleasurable physical conditions. The only motive appealing to the infant is the individualistic one. His only aim is self-advancement and self-gratification. In all children between the ages of two and three the control of this motive is hidden by an apparent unselfishness; this is due to the inability of the child to distinguish between himself and others, his own personality has not yet been differentiated. Because he is not yet a self-conscious being, it makes little difference to him whether he or some one else has the bite or the coddling. This state does not last long, however, for at three, sometimes even before, the consciousness of self appears, and in its emergence the infant shows the individualistic motive in all its strength. To expect a child of three or four to act from any motive other than some form of self-seeking is to expect not alone what cannot happen, but a thing which would be most unfortunate if it did happen. The only method by which the social-minded, altruistic adult can be made is through having the child seek his own well-being alone, with all his heart, mind, and strength. He must learn to know and to be much, before his giving can count for much. Parents and teachers will do well to recognize that this extreme egotism of the young child is both natural and useful; it must be developed, not suppressed. The infant must be won gradually to social interests and motives. During the first three or four years of the child's life it is scarcely possible to make a beginning. In this period to train a baby to be influenced by a word of approval as well as by some reward in the way of food, to want a story instead of a toy, and to be willing to wait for rewards and pleasures instead of demanding them immediately, is to lay a good foundation for future conduct.

Regularity in the physiological processes must be established during the period of infancy. Habits of eating, sleeping, bathing, and evacuation should be fixed. The health of the infant demands at this time the establishment of such habits, and the well-being of the adult, physically and in other ways, may be largely conditioned upon them.

Muscular control comes gradually only, and is evolved from many spontaneous, uncoordinated movements; the baby, therefore, should have wide opportunity to exercise all his muscles, and clothing should not hamper his movements or interfere in the least with circulation or respiration. On a bed or a pile of rugs he can twist, wriggle, kick, swing arms, grasp at the air or anything else, and crow and gurgle, thereby preparing for future muscular control. Such control comes by degrees, first, probably, the large muscles of the arm, then "those of the eyes and head in turning toward sights and sounds, then the body in sitting, the hands in grasping, and finally, near the close of the first year, the legs in creeping, standing, and walking, and the vocal organs in repeating sounds." None of these habits is perfected in this period, but some control is gained, to be perfected and extended during the following period. The habits of walking and talking seldom come together, but a fair degree of control is attained in one, and then attention is called to the other. Walking usually precedes, but if talking is begun early, it may be delayed. Since both of these habits depend on the development of the brain centers in the third level, their appearance is some indication of the development of the nervous system. Undue delay, therefore, in the appearance of activity or in the control of either of these may be a cause for anxiety, indicating a lack of development in higher brain centers. But forcing the infant to walk before the muscles or nerves are ready is unwise, and may result in serious difficulty. After the infant has gained some measure of control of the muscles of arms and legs, he is anxious to use them, and almost any activity will satisfy him, just so he is doing something that does not involve too much fatigue. This, then, is the time to teach him to dress himself, to pick up and put away toys, and to help in many little ways, thus may be established with little effort valuable habits of orderliness and helpfulness.

The development of definite human language from the incoherent babble of the infant has always aroused the interest and wonder of the adult, but the method here followed is that one herein outlined. The babble, involving as it does all the sounds of the language, approaches at times the semblance of a word; the child is then coddled and kissed and made much of. Again and again, his process of accidental success, with subsequent pleasure, takes place, until the child finally deliberately says the word to gain the result; thus grows his control of the

language, imitation of the words and accents of others coming in as aids. At first simple words play the part of whole sentences, for the normal and verbal relations do not exist independently for the young child. For him the object is always acting, for many months, therefore, the verb is neglected, and the noun takes the part of both; this is particularly true of the copula, for gesture and intonation can discharge its function. The other parts of speech appear in the following order: adjective, adverb, preposition, conjunction, and the pronoun at the beginning of the third year. In order that he may once for all learn the correct forms, it is obviously important that the child shall hear good language; this last fact bars from approbation the use of "baby talk," despite the attractiveness it possesses for the adult. Opportunities for verbal expression should be given, and situations presented where needs are satisfied only after the use of such expression. The scope as well as the character of the vocabulary of the child of three depends primarily on the need he has been made to feel for this kind of expression, and the amount of pleasure he has derived therefrom. The language habits formed before school age control for many years.

The relation between the development of language and that of ideas is a very close one, at least to some extent the latter is conditioned by the former. The intellectual life of the child at this age is largely perceptual and imaginative. He is becoming acquainted with himself, with people, with objects. From the mass of unrelated sensory impressions he must evolve unified wholes, possessing certain characteristics. The line of development of this perceptual faculty is suggested by the order of language development noted above. During this process between the third and the fourth year the confusion between the memory of percepts and the images of imagination shows itself. The percepts are still hazy, lacking many essential characteristics, and the images are extremely vivid and interesting, so arises the confusion. The need at this time is for manifold sense experiences, but with opportunity for repetition so that the percept may be fixed with enough variety not to lose the novelty. The broader and more complete the sensory and perceptual experiences of the infant, the greater the possibilities of future intellectual development. Toys afford one of the chief educational means, they should be few, simple, offering much chance for activity, thus offering stimulation for initiative and imagination. With the young child, toys should be changed often, the old ones brought back have the charm of novelty, and so stimulate to further knowledge. Suggestions afforded by the toy congress and by toy exhibits should be of great service to parents in making this stage of the child's development normal and healthful. Before he is four the child

should be asking for stories, these are a very necessary part of his education, alike stimulating the imagination and giving material for the dramatic play. Stories should be chosen carefully, should be within the child's experience, yet with the wonder element prominent. Children of this age are especially interested in other children and in animals, but, whatever the content of the story, it must possess movement, color, life, in order to appeal. Stories told at this time are often the source of the night fears that trouble the majority of children. These fears are due to two factors, the child's lack of experience, which prevents his distinguishing between possible and impossible happenings, and his lack of ability to distinguish between percepts and images. If the story contains anything frightful, the baby is very apt to recall it later, after the darkness has added its mystery, making even the familiar room seem strange. He then may really believe that the bear is under the bed, or that a chance noise is the rattle of the witch's broomstick. As it is the emotional element in any situation that makes the deepest impression on the young child, the fear-producing factor may lie in the telling of the story rather than in its content. The probability of the child's developing night fears at this time is considerably reduced if from infancy he has been trained to go to sleep in the dark, on the other hand, if he is between two and three years of age before he is left in the dark to go to sleep, he will scarcely escape these night terrors, and then, if he is a sensitive, imaginative child, his suffering may be extreme. The other fears which appear in many babies, such as fear of animals, wind, etc., if they are not due to the example of adults, are usually transitory, and can be eliminated by having some definitely pleasurable result connected with the fear-arousing situation.

The period of infancy is the natural time for the establishment of the habit of obedience. It is a natural outgrowth of the relation between the infant and the adult. Obedience must first be given to a personal authority, because pleasure and good results arise from it. Punishment best understood is physical pain, and, a little later, disapproval. The adult should be consistent and moderate in his demands, but the obedience required should be immediate and cheerful. No other habit is of greater importance than this one to the future moral development of the individual. The adult's appreciation of law and his power to command find their source in this habit of obedience. Other moral habits, of self-control in emotions and desires, of cleanliness, of consideration for others, of generosity, loyalty, and truthfulness, must be begun during infancy, the motive appealed to being the same, some form of individual pleasure. The child of three or four who has found out that "it pays" to wait for things, to share with others,

and to obey promptly, is in a fair way to become a social-minded, law-abiding citizen

Briefly summarizing infant education centers about the child's physical welfare, primarily depending on proper feeding, a wise environment including necessarily restful sleep, fresh air, a lack of undue stimulation, judicious "letting alone," and the formation of proper habits as to muscular control, the correct use of language, the regularity of the physiological functions, responsiveness to proper incentives, the development and control of desirable emotions, and the virtues of obedience and self-mastery

N. N.

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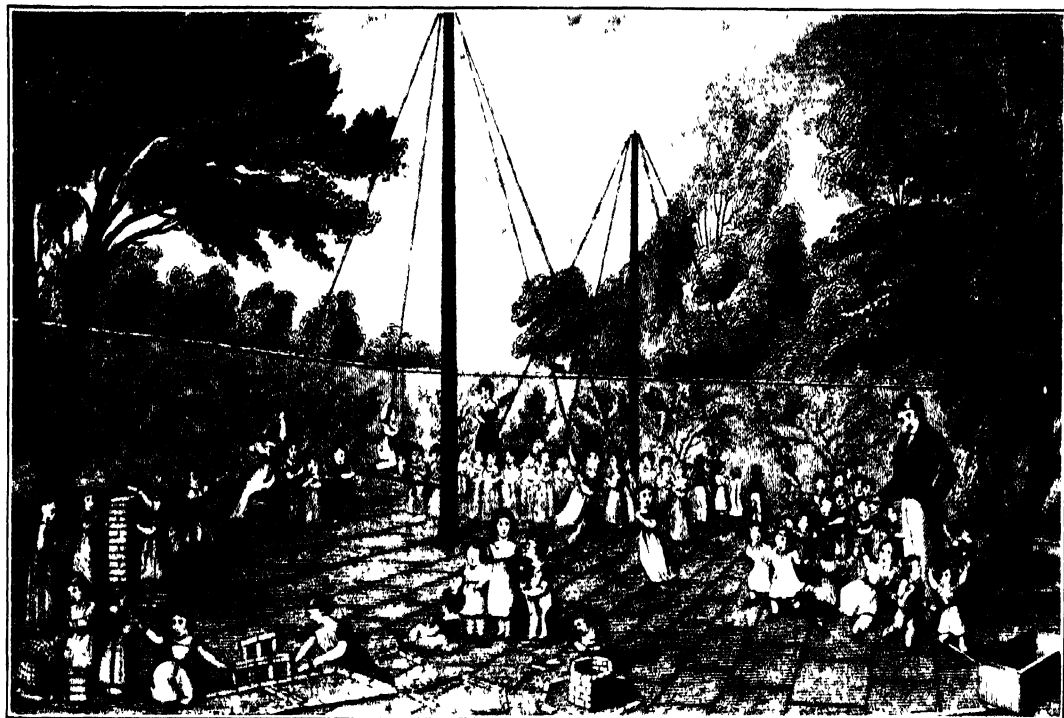
**INFANT MORTALITY.** — See MORTALITY AMONG SCHOOL CHILDREN.

**INFANT SCHOOLS.** — The honor of establishing the first infant school is generally ascribed to Jean-Frederic Oberlin (*q.v.*), but the institution from which sprang the infant schools of the British Islands and the *écoles maternelles* of France was established by Robert Owen (*q.v.*). As soon as Owen had obtained complete control of the cotton mills at New Lanark, "a building which may be termed the New Institution was erected in the centre of the establishment with an enclosed area before it . . . intended as a playground." The upper story was intended to serve for a senior school, lecture room, and church, the lower for an infant school. To the infant school children were admitted almost as soon as they could walk. There they were "perpetually superintended to prevent them acquiring bad habits, to give them good ones, and to form their dispositions to mutual kindness." They were taught also "whatever might be supposed useful that they could understand," and the instruction was combined with singing and dancing and as much amusement as was found requisite for health and to render the little ones active, cheerful, and happy. In fine weather they were much out of doors. There was no punishment, and "the children were not to be annoyed with books, but were to be taught the uses and nature or qualities of the common things around them by familiar conversation" and "by sensible signs — the things themselves or models or paintings." The first master was "a good obstinate domine of the old school," but "he could not and would not attempt to adopt what he deemed to be . . . 'new-fangled' ideas." Owen therefore sought among the population of the village (all depending on the mills) "two persons who had a great love for and unlimited patience with infants, and who were thoroughly tractable and willing unreservedly to follow" his instructions. He found a master in "a poor simple-hearted weaver named James Buchanan (*q.v.*), who had been previously trained by his wife to perfect submission to her will," who "loved children strongly" and had inexhaustible patience with them, and who was willing to be instructed. To aid him "a young woman about seventeen years of age, known familiarly among the villagers as Molly Young," was appointed

The New Institution was only one of many plans for forming the younger or reforming







The Infant School at Play.



The Infant School at Work.

the older inhabitants of New Lanark, and, Owen being skillful in attracting attention, these plans became well known both at home and abroad. The Marquis of Lansdowne, Brougham, James Mill, Zachary Macaulay, Joseph Wilson, and other benevolent Englishmen who approved of the infant school, combined in 1818 to set up a similar one at Westminster, and in order that the copy might be perfect they obtained the services of Buchanan as master. He does not seem to have had the originality or the enthusiasm necessary for working well alone, but he inspired Wilderspin (*q.v.*), who had sufficient originality to evolve a new type and sufficient enthusiasm to make it popular. Wilderspin was himself instrumental in establishing a considerable number of infant schools, and his advocacy may have had some influence in inducing the British and Foreign School Society (*q.v.*), the National Society (*q.v.*), and the Irish Commissioners to make such schools an integral part of their systems. His influence in Scotland can be plainly seen. (See STROW, DAVID.)

In 1836 the Home and Colonial Society (*q.v.*) was founded to train teachers for infant schools, and as a leading member of the Committee, Dr Mayo, had resided for nearly three years at Yverdon, the methods of Pestalozzi were inculcated. These must have tended to correct the "bookishness" which was the chief fault of the earlier schools, for Joseph Fletcher, a government inspector who in 1845 examined the schools connected with the British and Foreign School Society, reported that a great improvement had been wrought. The improvement continued, and the Royal Commission appointed in 1858 reported that infant schools "form a most important part of the machinery required for a national system of education inasmuch as they lay the foundation, in some degree of knowledge and in a still greater degree of habits, which are essential to education, while without them a child may contract habits and sustain injuries which the best school will afterwards be unable to correct and remedy." Even then the school for infants was too much a copy of the school for older children, too much was thought of "lessons," and instruction was too often allowed to usurp the place of education. There was a gradual amendment till about 1874, when the introduction of Froebel's principles effected not a reformation but a transformation, surprising alike in its extent and its rapidity. The aims as well as the methods were changed, and the schools, though retaining their old shape, were animated by a new spirit.

*France* — In the only country outside the United Kingdom where it is an integral part of the national system, the infant school may be traced back to the efforts of Mme. de Pastoret. The *salle d'hospitalité* which she founded in Paris in 1801 (see OBERLIN) does

not appear to have lasted long, but when, in 1825, she heard from the Baron de Gérando, who had recently visited London, of the success of Buchanan and Wilderspin, her interest was revived and she resolved to try again. With herself as president and Mme. Millet as treasurer she formed a committee which on Apr. 1, 1826, opened in the Rue du Bac what was called a *salle d'asile*. This excited the attention of M. Cochin, the Mayor of the Twelfth Arrondissement, who persuaded Mme. Millet to go to England to study the plan. He soon followed, and in 1828 after their return the committee opened in the Rue des Martyres a *salle d'asile* on the English model. The same year M. Cochin opened another in the Rue Saint-Hippolyte which by royal command was named after him. To this was attached a normal department under the direction of Mme. Millet. In 1833 the *salle d'asile* was adopted by the government as part of the national system and M. Cochin, published a manual in which he anticipated several of the kindergarten occupations four years before Froebel had opened his first kindergarten (*q.v.*). In 1837 M. de Salvandy (*q.v.*), the Minister of Education, appointed a commission, with M. Cochin as president, to make rules for the conduct of the *salles d'asile* and to draw up a program for the *examens d'aptitude* of their mistresses. Ten years later M. de Salvandy founded in the Rue Neuve Saint-Paul a *maison provisoire d'études*, intended to complete the instruction of persons desiring to devote themselves to the direction or the inspection of *salles d'asile*. This was ultimately called the *École Pape-Carpentier*, after the distinguished lady who for twenty-seven years consecrated her talents and her zeal to its superintendence.

Benefiting by the experience of the English pioneers, the French pioneers strove to avoid the error of making the schools for infants small copies of the schools for older children. The genius of the *salle d'asile*, said Mme. Millet, was to be found in the heart of a mother; and Mme. Pape-Carpentier said that the *salles d'asile* ought to be what M. Carnot decreed in 1848 they should be called, *écoles maternelles*. The old name was resumed after a *décret* of Mar. 21, 1855. This *décret* and the consequential *règlement* fixed the curriculum and the method as well as the name. The curriculum was to include the elements of religious instruction, of reading, of writing, of mental arithmetic and of linear drawing, a knowledge of common things, suitable manual work, hymn singing, moral exercises, and physical exercises. By a *décret* of Aug. 2, 1881, which incidentally adopted once more the name *école maternelle*, the curriculum was modified. It now includes (1) the first principles of moral education; a knowledge of common objects, the elements of drawing, of reading, and of writing; exercises in the mother tongue,

notions of natural history and geography; suitable recitations; (2) manual exercises, (3) singing and graduated "synoptic" movements.

D S-N.

See ENGLAND, EDUCATION IN; FRANCE, EDUCATION IN

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**INFANTILE PARALYSIS.**—Infantile paralysis, or epidemic poliomyelitis, is considered an infectious disease of contagious character. It is caused by a very minute organism which cannot be seen under the most powerful microscope, a germ of the kind called "ultramicroscopic." These minute parasitic bodies can pass through the pores of earthen and porcelain filters, but no difficulty is encountered in the modern laboratory in dealing with the invisible virus in an accurate manner.

The characteristic symptoms are a high temperature, pain in the back and limbs, then suddenly paralysis, generally in the muscles of the leg. The disease attacks especially children between one and five years of age, but adults are also affected. Young children are more likely to be attacked by the disease, but it is more fatal with adults. It attacks chiefly the spinal cord and the brain. The virus is always contained in the central nervous system, and may be absent from the other organs. The virus may enter the nervous system through the blood or by the lymph channels that connect the nasal mucous membrane with the membranes surrounding the brain. The infection may come through the blood by puncture of the skin by an insect, or after swallowing or inhaling the virus into the stomach or lungs, or it may come through the upper nasal mucous membrane. The nose and throat have come to be looked upon as the places where the germs are introduced into the body and expelled from the body. The virus may survive on clothing and the like, and may perhaps be carried by flies and insects.

"While the period during which patients remain infected is not accurately known, there is reason to believe that in most instances the danger is past about four weeks after the onset of the disease, and this period has been adopted as a safe average one of isolation. In exceptional cases of marked severity this period

should be extended somewhat in order to provide a greater security."

There has been in this country an epidemic more or less prevalent since 1907. This is part of a pandemic which has embraced a large part of the world. The prevalence of this disease is an added reason for competent medical inspection in the public schools. It is important that the disease should be detected when it occurs among school children, and it is necessary that other pupils from the family where the case occurs should be excluded from school for a period of four weeks from the onset of the disease.

W H. B.

See INFECTIOUS DISEASES. CONTAGIOUS DISEASES; PARALYSIS.

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**INFECTIOUS DISEASES.**—Germ diseases, distinguished from the so-called contagious diseases only by the difference of directness in contact required for transmission. Consequently there exists no real distinction between the two groups. Besides the diseases discussed under the caption Contagious Diseases (*q v.*), the most common school diseases, diphtheria, scarlet fever, measles, whooping cough, mumps, as well as trachoma, infantile paralysis, grippe, meningitis, typhoid fever, and tuberculosis (*qq.v.*), are discussed under separate titles. The general relation of these diseases to the schoolroom is discussed under the caption, Medical Inspection of Schools (*q v.*). So far as their importance in the school is concerned, these diseases may be grouped into two classes. (1) Those diseases for which nearly all cities exclude children, they are: smallpox (now very rare where compulsory vaccination laws are enforced), mumps, chicken pox, pediculosis, ringworm, and scabies. Second, those diseases for which only a limited number of cities exclude children; they are: tonsillitis, tuberculosis, acute conjunctivitis, trachoma, acute coryza, favus, impetigo, and molluscum contagiosum.

All these diseases are infectious, and therefore communicable through the close contact which is inevitable in the usual activities of the schoolroom and schoolyard. Some of them, like mumps, chicken pox, smallpox, acute conjunctivitis, tonsillitis, and acute coryza, are self-limiting germ diseases requiring exclusion of infected children for a definite period. In New York City the period of exclusion for mumps and chicken pox is as follows:—

DISEASE	INCUBATION PERIOD	DURATION OF INFECTION-NESS	PERIOD OF ISOLATION	
			Mild cases	Severe cases
Mumps	14-28	2 weeks Until the removal of the scabs 2 weeks	14 days	28 days
Chickenpox	13-19		14 days	21 days

Exclusion of the other self-limiting infectious diseases is usually for five to ten days according to the severity of the case. (2) The parasitic diseases, such as pediculosis, ringworm, scabies, favus, impetigo, and molluscum contagiosum, are not self-limiting, but, in most cases, they respond readily to proper treatment. Exclusion from school must be supplemented with instruction to the parents for the treatment of these cases, otherwise many children affected with such diseases as pediculosis, scabies, impetigo, or ringworm would be kept out of school for indefinite periods. Two methods have been adopted in different cities for the handling of this problem. One is to have the school nurse visit the home and instruct the mother as to the proper method of treatment. The other method is to send printed directions to the parents with the notice of exclusion. In Everett, Mass., printed directions and a drug store prescription are given to children excluded for parasitic skin diseases, as follows:

*Pediculosis (Lice).* — Directions. Saturate the hair with crude petroleum. Keep it wet for three hours. Then wash the whole head with hot water and soap. Repeat this process on three successive days. Then comb the hair with a fine-toothed comb wet with vinegar. To make the treatment easier and more thorough, have the hair cut short before beginning treatment. While under treatment, keep away from the fire or a lighted lamp. Prescription:  $\mathcal{R}$  Crude Petroleum, 6 oz. M. Sig. Apply to the hair as directed.

*Impetigo Contagiosa.* — Directions: Wash the affected parts with warm water and soap. Apply the ointment morning and night until the disease has disappeared. Prescription:  $\mathcal{R}$  Resorcin, .15; White precipitate, .50, Adipis, q. s. 15.00 M. Sig. Apply A. M. and P. M. until disease is cured.

*Ringworm.* — Directions. Remove the scales with soap and warm water. Dry thoroughly and apply the medicine morning and night until disease is cured. Prescription:

$\mathcal{R}$  Tincture of Iodine, 10, Alcohol, 20. M. Sig. Apply once a day until disease has disappeared.

*Scabies (Itch).* — Directions. Take a bath with warm water and soap, scrubbing oneself thoroughly. Then dry the skin by vigorous friction, and rub into every diseased spot the ointment the prescription calls for. Continue

the treatment daily until disease is cured. Prescription.

$\mathcal{R}$  Sulphur, 7 50, Beta Naphthol, 7 50, Adipis, q. s., 90. M. Sig. Apply as directed. G. L. M.

For References see CONTAGIOUS DISEASES; HYGIENE; MEDICAL INSPECTION.

**INFERENCE** — The process of thinking or reasoning, in so far as it arrives at new facts, conceptions, or truths. It is practically synonymous with going from the known to the unknown, from the uncertain to the established. In its widest use, it covers the entire process of reflection so far as that terminates in discovery. Sometimes, however, the emphasis falls so sharply on discovery that inference and proof are treated as the two antithetical functions of thinking — inference making the leap to the new, the hitherto unknown, while proof tests and validates what is inferred. As demonstrative proof and deduction are usually identified, this limited meaning identifies inference with induction (*q v*). J. D.

See PROOF.

**INFINITESIMAL CALCULUS** — See CALCULUS.

**INFORMAL METHOD.** — It is frequently the case that some technical or conventional fact is taught incidentally, as it occurs in the setting of a content, rather than in the systematic relation that it bears to facts of a similar sort. Thus in the composition period, the teacher merely states to the child that good usage requires "he doesn't" instead of "he don't." No attempt is made to give the child a formal knowledge of the distinction through a complete conjugation of the verb. Thus attempt to keep the facts of the formal subjects, *e g.* arithmetic, grammar, spelling, composition, closely related to their content and use, with a minimum of that distraction which would come through reference to tables, rules, inflections, or other systematic and formal treatments, is called an "informal" method of teaching. It is one species of the incidental method, but refers particularly to instruction given in formalities as occasion requires.

H. S.

See INCIDENTAL METHOD.

**INFORMATION.** — That phase or branch of knowledge (*q v.*) which consists of facts and ideas that have been communicated or transmitted by others, and that are accepted, partially at least, on the credit and authority of others; that branch of learning (*q v.*) that concerns the materials learned from other persons, orally or through books. As will be seen from the definition, information has two marks: a body of cognitive material existing irrespective of its original acquisition and utilization — a ready-made character; and dependence upon

**social transmission** Obviously the two traits belong together. The ready-made character of information is due to its being carried along in the social medium; while by means of the social processes of communication, facts and ideas discovered by any individual are taken up into the general body of knowledge, independently of the conditions of the original discovery.

Without the funding of personal experiences into information capable of separation from the experiences in which it originated, so that it may be acquired by others without the necessity of their repeating the original experience, every generation would be obliged to rediscover everything by its own observations and reflections — which means of course that mankind would be forever engaged in a hopeless struggle to emerge from savagery. Since language is the medium of deposit and transmission, it is natural that language as the storehouse and vehicle of information should be, upon the whole, the chief concern of schooling, and that teaching should be largely identified with the processes of purveying information. On the other hand, the attacks which educational reformers have always found it necessary to make against the domination of schooling by language give evidence of certain dangers lurking in the dependence of individual intelligence upon social acquisitions. The material, not originating in personal initiative and motivation, may easily become a foreign dead load, carried by memory, but not entering in a vital way into personal observations, thoughts, and acts. Such an external second-handed body of information is not only useless, but positively harmful. It weighs down native active tendencies, crushing them, and comes between a person and his use of his natural judgment.

There is, therefore, no problem in education more pressing than the right adaptation of information, as socially communicated knowledge, with these modes of knowledge whose achievement involves active personal response. Without the material of information, individual experience is raw, crude, narrow, untrained. But without the organic assimilation of this material, knowledge tends to be useless pedantry, or learning displayed simply for impressing others by its sheer mass. In the degree in which the body of information remains a special isolated set of facts and ideas not entering freely into everyday direct experiences, it fails wholly of its proper enlightening and directive function. It is suggestive to note that we distinguish between a person of much information and an informed person. The latter is not one who is possessed of a large bulk of second-hand knowledge, but one who is wise, posted, equipped to deal with the matters that concern him. In order that information should be really informing, it is necessary that it be communicated in connection with an active direct experience, not simply in association with other information. It is also necessary

that it be applied to use in some direct activity. For example, scientific information communicated in connection with the undertaking of a laboratory inquiry so as to clarify the question at issue and to direct the experiment intelligently is much more likely to be assimilated into effective knowledge (or "wisdom") than exactly the same material conveyed as just so much matter to be learned by itself. The same may be said about the connection of, say, geographical material with the taking of excursions, there is very much important knowledge about the world that pupils cannot possibly acquire by themselves, but this transmitted material is likely to be fruitful in just the degree in which it is conveyed in connection with those activities in which pupils acquire something through their own observations and reflections. In the latter case, the two modes of knowledge blend and reinforce each other, in the former they remain in mechanical juxtaposition, and their isolation prevents the due efficiency of both.

J D.

See KNOWLEDGE.

**INFORMATION TALKS** -- The contemporary emphasis on individual study by children, and the use of the method of development by teachers have in great degree neglected the fact that there is a great deal of accumulated information that the child does not have to discover for himself or have taught him by the slow inductive methods of teaching. To overcome this defect, information talks are now frequently given by the teacher, the function of which is to supplement the knowledge that the child has gotten for himself in a vital but more or less fragmentary way. Such information talks do not do away with individual study or developmental teaching, they complement it. They usually follow rather than precede the more individualistic modes of teaching, the exception arising when the teacher wishes by way of preliminary to develop interest in a situation or to give a setting to the problem under consideration. These information talks are for the most part short, appearing here and there as needed in the class period. In elementary school practice they are the correlatives of the university lecture, undergoing such necessary modification and subordination that a different name is applied. In the best pedagogical sense, information talks are a sane and useful application of the lecture method.

H S

See LECTURE METHOD; TEACHING.

**INGOLSTADT, UNIVERSITY OF, BAVARIA** -- An institution founded in 1472 by Duke Lewis the Rich of Upper and Lower Bavaria, on the model of the University of Vienna. The Papal Bull of Pius II authorizing the establishment of the university was dated 1459, but instruction was not actually begun until thirteen years later. The institution

consisted of four faculties, of which the faculty of philosophy early assumed the chief importance. During the Reformation Ingolstadt sided with the Catholic party, one of the most prominent members of the teaching staff being Johann von Eck, who replied to Martin Luther's ninety-five theses, thereby paving the way for the Leipzig disputation between himself and Luther in 1519. At the close of the sixteenth century the university attracted a large number of students, Jesuit influences being paramount from the middle of the sixteenth to the eighteenth century, *i.e.* to the suppression of the Jesuit order in 1772. The foundation for the present faculty of political science (University of Munich) was laid in 1799 by the establishment of an institute of cameralistics, which comprised a series of subjects from the fields of jurisprudence, natural science, political economy, statistics, technology, agriculture, and forestry. In due course of time technology and agriculture were transferred to the technical school at Munich, but the subject of forestry is to this day included in the faculty of political science of the University of Munich. In 1800 the university was transferred to the city of Landshut, and from there to Munich (*q.v.*) twenty-six years later. Ingolstadt is also the seat of the first Jesuit college founded in Germany (1555).

R. T. Jr.

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**INHIBITION.**—A term applied to two groups of phenomena. the one psychological, the other physiological. Psychological inhibition consists in the conflict of parts of the content of consciousness, and the partial or total suppression of one by another. Awareness of pain, for example, may be inhibited by other sensations. The soldier frequently suffers severe wounds of which he remains unconscious because of the inhibiting influence of emotional experience. In the hypnotic state one of the most obvious phenomena is the inhibition of certain kinds of consciousness by others which, perhaps, have been suggested by the hypnotizer.

Physiological inhibition consists in the partial or total suppression of one physiological process by another or others. The phenomenon is best known in connection with the functioning of the nervous system. There are certain specifically inhibitory nerves, as for example the vagus, whose function is the regulation of certain organic processes by suppression or depression. The activity of the heart may be inhibited by stimulation of the vagus. But the cases of inhibition which result from the functioning of inhibitory nerves or centers, if such exist, are few and unimportant in comparison with those which appear to be due to the conflict or competition of impulses within

the nervous system. The appropriate reflex of the leg of the frog to stimulation of the foot may often be inhibited by simultaneous stimulation of the other leg. As Sherrington says, "the most striking thing that we know of inhibition is that it is a phenomenon in which an agent, such as in most cases excites or increases an action going on, in this case stops or diminishes an action going on." R. M. Y.

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**INITIATIVE** — A term denoting originality and independent force as factors to be maintained and secured in education. Initiative is etymologically connected with the word "initial"; namely, something at the beginning or outset. It thus refers to ability to originate, to undertake independently, some desired line of action. It is opposed to mere docility, passiveness, imitativeness, and other conceptions that denote dependence upon others in entering upon a new course of action. The demand for initiative as an indispensable part of the educational aim is coincident practically with the growth of democracy (*q.v.*). In a feudalistic society personal initiative is undesired with respect to the masses of men, what is wanted is that they should readily subordinate themselves to the carrying out of the demands and ideas of others. The proper adjustment of the personal initiative required by a democracy on its social and political sides to the conditions of industrial employment and wage-earning involved in the capitalistic régime is a problem still to be solved, or even seriously considered, yet it is the heart of the question of industrial education. J. D.

See ACTIVITY; INDIVIDUALITY, FREEDOM

**INJURED, FIRST AID TO.**—Instruction in first aid as it is ordinarily given is of value because of its health-preserving or life-saving possibilities. But in addition to this utilitarian quality, such instruction in the hands of the well-informed and skillful teacher may be given intellectual and scientific qualities. All rational first-aid treatment is based on a scientific knowledge of the relation between anatomical structure and physiological function, and between pathological cause and morbid effect. These relationships are most easily and successfully brought out in those courses where instruction in first aid is made an essential part of a general scheme made up of instruction in hygiene and physiology. Instruction in first aid may then easily be educa-

tional as well as utilitarian. It is, however, chiefly and most seriously valuable because of its utility.

In planning a course of instruction in first aid the teacher must take into account the maturity of his pupils. It is obviously useless as well as dangerous, to instruct young children in the use of poisonous antiseptics, and then expect them to make any practical use of the knowledge they may have gained through such instruction.

Another important consideration is the applicability of the instruction given to the daily affairs of the individual who is receiving the instruction.

Instruction in first aid should always be graphically illustrated and demonstrated in every practicable way. In addition, the individual receiving such instruction will profit a great deal more, if he is permitted to do under supervision the minutest details of what he is being taught. The application of simple bandages, the construction of a sling, the technique of resuscitation of the partially drowned are samples of procedures that each member of the class should be required to do step by step under careful supervision. In other words, the teacher of first aid will do well to employ appropriately the various practical educational methods which he finds advantageous in his other classroom or laboratory instruction.

Instruction in first aid should emphasize the need for medical help in appropriate cases. Serious consequences may be avoided, if the non-medical attendant is not so sure of his own ability as to neglect to call in expert help.

*Scope of Instruction* — The scope of a course in first aid should include instruction concerning preventive and protective measures, emergency treatment, and emergency prophylactic treatment appropriate to the maturity, intelligence, and education of the individuals under instruction and applicable to the conditions under which they are most likely to have practical use for such instruction.

*Preventive and Protective.* — Instruction in swimming, diving, rescue, and resuscitation manœuvres; management of the rowboat and canoe, danger of the undertow, seapuss, waves, breakers and waves in the wake of the passing steamer; the avoidance of street accidents from automobiles, street cars, trucks, railway trains, etc.; the avoidance of injury from lightning and electricity; the transportation of the injured, the handling of firearms, the handling, labeling, and storing of combustibles and explosives, the management of small fires; what to do in case of fire; how to smother burning clothing; escape from suffocation in burning buildings; escape from burning buildings; poisons, their handling, labeling, and storage; avoidance of frost bite, freezing, heat exhaustion and sunstroke; avoidance, particularly by children, of exposure to injury from maddened animals; protective

measures in appropriate countries against poisonous insects, snakes, plants, and fruits.

*Emergency Treatment* — Hemorrhage from the limbs, trunk, head, nose, stomach, intestines, or urethra. Simple and compound fractures of the legs, thigh, ribs, collar bone, toes, fingers, forearm, upper arm, and skull. Sprains and dislocations of the ankle, knee, hip, sacro-iliac joint, fingers, wrist, elbow, or shoulder. Poisoning with the various common acids, alkalies, and poisonous domestic preparations. Foreign bodies in the skin (splinters), the eye, ear, nose, throat, stomach, and trachea. Burning clothing, active acid and alkali burns. Fainting, shock, epilepsy, apoplexy, hysteria, convulsions, and delirium. Pain in the head, ear, face, teeth, chest, abdomen, groin, muscles, bones, and joints. Hiccough, nausea, vomiting and diarrhea, croup, asthmatic attacks, and other sudden evidences of obstructed breathing.

*Emergency Prophylactic Treatment* — Instruction here should include, first, a discussion of the serious value of early treatment for the avoidance of later infection. This instruction should further include aseptic and antiseptic treatment, simple dressings, bandages, the cleansing of wounds, the approximation of the edges of gaping wounds, special care of superficial and deep wounds of the skin and scalp, special prophylactic treatment of powder burns and Fourth of July accidents; special treatment of other burns, special treatment of wounds of the eye, ear, nose, lips, and mouth.

T. A. S

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**INNATE IDEA** — The rationalistic school has always attributed to thought or reason a certain inherent content of its own, irrespective of the processes of experience. It has insisted that without this original equipment experience itself would be a floating, unorganized mass of particulars, incapable of delivering any general or scientific knowledge. The particular mode in which this inherent endowment was conceived varied from time to time according to conditions. In the seventeenth century the supposed rational stock was quite com-



monly spoken of as ideas or conceptions which the individual immaterial soul brought with it to its union with the body as inborn ideas. In the interests of empiricism, Locke attacked this whole theory, contending that none of the tests relied upon by the innate school bore out their contention; that the origin of all ideas could be traced in experience itself, and that the belief in innateness, instead of being favorable to the advance of science, tended to block inquiry by consecrating as unquestionable principles any long-standing prejudice, especially if class interests were concerned in its maintenance. Locke's onslaught was substantially successful against the doctrine which he attacked. But, as Locke himself held to certain innate powers (such as comparing, combining, discerning, abstracting) of the mind, it was not difficult for the rationalistic school to regather its forces. The modified form of the conception found its classical expression in Kant, who, denying the existence of ideas, or mental contents, conceptions, beliefs, prior to sense experience, nevertheless held that the mind brought with it certain *a priori* forms and categories to the reception and organization of the materials of sense. The universal and necessary action of these *a priori* forms alone made experience capable of delivering coherent and instructive judgments. J. D.

See INTUITION.

**INNER MISSION.**—See WICHERN, J. H.

**INNERVATION** — The process of sending a nervous impulse out from the central nervous system

See NERVOUS SYSTEM.

**INNS OF COURT, LONDON** — Originally these were the Hostels or Inns in which lived the apprentices, who belonged to the Guild of Law, the residence of those studying under the Masters of Law. The earliest of such Inns is said to be that of Clifford's Inn, which in 1344 was established in a demise from Lady Clifford to the lawyers of the Court of Common Pleas. Thavies Inn seems to have been established in 1348. The origin of these Inns is apparently connected with the exclusion of the clergy from practicing as lawyers in the civil courts, and the necessary consequence of training of lay lawyers. In the first instance, senior members of the guilds of law teachers and learners of law established their own voluntary classes and small residential Inns, in considerable numbers. The number of such students gradually increased, until, as Dugdale says, they divided themselves into two bodies, *e.g.* the Society of the Inner Temple and that of the Middle Temple. The Inner Temple is first mentioned in 1440 and the Middle Temple in 1442. About the year 1470, Sir John Fortescue wrote his *De Laudibus Legum Anglie*, in which he states that there were four Inns of Court, and ten

lesser Inns called Inns of Chancery, "in each of which there are an hundred students at the least, and in some of them, a far greater number, though not constantly residing. After they have made some progress here, and are more advanced in years, they are admitted into the Inns of Court, properly so-called; of these there are four in number." They were Lincoln's Inn, the Inner Temple, the Middle Temple, Gray's Inn. "In these greater Inns," Fortescue continues, "a student cannot be well maintained under eight and twenty pounds a year (£450 a year of our money), and, if he have a servant to wait on him (as for the most part they have), the expense is proportionally more . . . As to the merchants, they seldom care to lessen their stock in trade by being at such large yearly expenses. So that there is scarce to be found, throughout the kingdom, an eminent lawyer, who is not a gentleman by birth and fortune; consequently they have a greater regard for their character and honour than those who are bred in another way."

With regard to the education of the students, Fortescue gives the following interesting account. "There is both in the Inns of Court and the Inns of Chancery, a sort of Academy or Gymnasium, fit for persons of their station; where they learn singing, and all kinds of music, dancing, and such other accomplishments and diversions (which are called Revels) as are suitable to their quality, and such as are usually practiced at Court. At other times out of term, the greater part apply themselves to the study of the law. Upon festival days, and after the offices of the Church are over, they employ themselves in the study of sacred and profane history here everything which is good and virtuous is to be learned: all vice is discouraged and banished. So that knights, barons, and the greatest nobility of the kingdom often place their children in these Inns of Court, not so much to make the laws their study, much less to live by the profession (having large patrimonies of their own), but to form their manners and to preserve them from the contagion of vice. Neither at Orleans, where both the Canon and Civil Laws are professed and studied, and whither students resort from all parts, neither at Angiers, Caen, nor any other University in France (Paris excepted), are there so many students, who have passed their minority, as in our Inns of Court, where the natives only are admitted."

Fortescue devotes a chapter to answering the question why the laws of England are not (in 1470) taught in the universities, and his answer is that in the universities "the sciences are taught only in the Latin tongue, whereas the Laws of England are written, and made up of, three several languages, English, French and Latin." He mentions that the English "to this very day" speak French in their diversions

and their accounts. "In the Courts of law, they formerly used to plead in French, nor had the practice entirely fallen out, (1) by reason of certain law terms, more apt in French than in English, (2) Declarations upon Original Writs are learned and practised in French, (3) Reports of pleadings etc., in the King's Courts are digested and reported in French; (4) Many Acts of Parliament are penned in French"

The advantage of studying in the Inns of Court, as against the universities, is further emphasized by proximity to the Courts of Law, where students may hear proceedings and listen to the judges and thus become experienced in all sorts of law learning and court practice at the same time Mr C. E. A. Bedwell says it is difficult to define the status of the Inns of Chancery in their earliest days, but by the time of Fortescue the relationship of each one to the Inn of Court to which it was attached approached to that of a college to its university

The Inns of Chancery ceased to exist with the sale of Clifford's Inn in 1900 Stow says the Inns of Court were replenished with young students, graduates, and practitioners of the law, whilst the Inns of Chancery were furnished with officers, attorneys, solicitors, and clerks that follow the courts of King's Bench or Common Pleas Stow mentions that young students from the universities and some straight from grammar schools came both to the Inns of Chancery and the "houses of Court," and having spent time in studying the first elements and grounds of the law, they performed (before admittance as barristers), the "exercises" of their own houses, called "bolts" and "moots" — the course taking seven years — the same length of time as apprentices in business

Educationally, the "boltings" and "moots" are interesting, and represent to law what laboratory work is to science teaching The "boltings" were thus the "sifting" of the law with regard to cases, in which "an ancient and two barristers sit as judges, three students bring each a case, out of which the judges choose one to be argued, which done the students first argue it, and after them, the barristers" This exercise, being a private one, was regarded as inferior to the "moot," which was substantially the same kind of arguing of cases by the students to enable them to see every point of a case, but was a public exercise. The place chosen for the exercise was called the Moot-Hall. The Inns of Court appointed a bailiff of the moot, who chose the mootmen for the Inns of Chancery, and whose duty it was to "keep accounts of the performances of the exercises both there and in the house" For account of the exercises in the different Inns, see Sir Wm. Dugdale's *Origines Juridicales* (1666-1680). J. E. G. DE M.

See LAW, EDUCATION FOR THE, for an account of the present practice.

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#### INNSBRUCK, THE IMPERIAL ROYAL LEOPOLD-FRANCIS UNIVERSITY OF —

The University of Innsbruck in the Tyrolean Mountains, Austria, was established by Emperor Leopold I between 1670 and 1674, the charter dating from the year 1677 The Emperor Joseph II transformed it into a lyceum in 1782, but it was restored to university rank ten years later by Leopold II In 1810 the institution was abolished by the Bavarian government, but in 1826 it once more opened its doors under Austrian protection with faculties of law and philosophy. In 1857 a theological faculty (Catholic) was added, and twelve years later a medical faculty The university library owes its origin to a collection founded in 1745 by the Empress Maria Theresa, various collections of dissolved Jesuit colleges having been added later The attempts made in 1904 to organize in Innsbruck a faculty of law and political science, in which instruction was to be given in the Italian language, met with failure. The University had 1227 students (fifty-one women, all auditors) in the winter semester of 1909-1910, of whom 225 were auditors The largest faculty, contrary to the condition existing in all other German and Austrian universities, is that of theology (337 students), controlled by the Jesuits, which is followed by law (266), medicine (213), and philosophy (186)

R. T., Jr

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**INSANITY.**—A term for a number of abnormal mental states, which are combined into complexes to make up distinct diseases. The usual statement that insanity is a mental disease or that it is an absence of sanity does not define, because we must then state what we mean by mental health or by sanity. The general term may be compared with that applied to any organ of the body, *e.g.* liver disease, heart disease, etc., and we find that the connotations of such terms are equally vague We, therefore, speak more properly of the insanities than of insanity. The variety of forms that are grouped under the general term "insanity" will be considered below.

When the varying phenomena of the insane are grouped, it is found that the differentiation of insanity from sanity is made from two points

of view: the duration of the abnormal mental conditions and the variation of the present conditions from the normal conditions of the individual. The best definition of the term is as follows: "Insanity is a disorder of the mind, due to disease of the brain, manifesting itself by a more or less prolonged departure from the individual's usual manner of thinking, feeling, and acting, and resulting in a lessened capacity for adaptation to the environment" (White). It will be seen that this definition excludes all the abnormal individuals who from birth depart from the normal in a mental way, *i.e.* all the cases of retardation, including idiocy, imbecility, and psychopathic inferiority, for their condition is continuous and not a departure from the usual manner of their thinking, feeling, and acting. On the other hand, there are excluded the temporary departures from the normal, such as slight intoxications, profound grief, fits of anger, etc. The ethical and legal aspects, so often taken as the main criteria, of knowledge of right and wrong are not considered, because these vary in the insanities as much as in normal conditions.

Perhaps of the greatest importance is the factor of the individual variation, *i.e.* the variation of the individual from his usual manner of feeling, thinking, and acting. In themselves the individual mental states may be greater or less than those of the other individuals in the environment without warranting the conclusion of "insanity." The example of the savage transported to a civilized country makes this clear. In an educated person actions similar to those of the savage are taken as signs of an insane state.

Psychologically considered, the abnormalities of the insane are only different in degree from normal mental functions. So far as the abnormal mental conditions have been analyzed, no qualitative difference from the normal has been discovered. The insanity is always a difference in the amount or the prominence of this or that mental state or states, and not a difference in the quality of the mental states. No new functions are introduced, and there are no new qualities of normal mental processes developed in the insane. Another popular misconception is that the term "insanity" is almost synonymous with the term "delusion," that all insane persons are egocentric, fantastic, abnormally excitable, or expansive. The quiet gentleman whom I meet daily has none of the latter qualities, but he is incapable of adaptation to the environment because he can perform no work that the spirits do not approve, and he is often hindered by the action of the spirits.

In civilized communities the proportion of insanity to the total population is almost a constant, 1:300. The initial symptoms are often noticed before the age of twenty, but the disturbances do not usually become sufficiently profound to warrant or to require institutional care for a number of years.

There are both physical and mental causes for the insanities. Head injuries, chronic and exhausting diseases, and various intoxications (*q.v.*) are some of the bodily causes, and on the mental side any great shock, mental stress, or worry may bring about a more or less permanent derangement of the mind. The mental factors have recently been given more prominence than hitherto, and many of the patients who were previously supposed to be insane from physical causes are now recognized as purely psychogenic cases.

The early classifications of the insanities were largely symptomatic, and can be compared directly with the classification of the fevers into hot and cold, intermittent, remittent, and continuous. On the other hand, classifications have been devised to indicate the probable causes of the conditions, and we find mentioned the insanities of childbirth, of puberty, of the climacteric, of religion, and many others. The current classifications of the insanities are either that of Kraepelin or modifications of the Kraepelinian. This author introduced into the consideration of the insanities a new conception, *viz.*, that the different forms were to be differentiated not because of the prominence of some symptom and not because the patient or his relatives assigned some cause, but because of the characteristics of the condition from the beginning to the end. In other words, Kraepelin takes into account causes, course, or development, and the final result. The following classification is a convenient one: paranoia and paranoid states, manic-depressive insanity, paresis, dementia precox, melancholia, involution, senile psychoses, infection-exhaustion psychoses, toxic psychoses, psychoneuroses, psychoses due to organic disease and injuries of brain (*qq.v.*)

The infection-exhaustion psychoses are similar to the toxic psychoses, in that confusion and delirium are usually the prominent symptoms. All of these psychoses are probably due to the presence in the blood of toxins that act upon the nervous structures in much the same way as those introduced from without, such as alcohol, opium and its derivatives, cocaine, etc. The infection-exhaustion psychoses may be divided into (*a*) infection, (*b*) delirium, (*c*) febrile delirium, (*d*) post-febrile psychoses, and (*e*) collapse psychoses. All forms have clouding of consciousness, a greater or less amount of confusion, hallucinations and delusions, and for months these symptoms may alternate with normal mental states. In the most severe states stupor is found. The senile psychoses are of little interest here, except in so far as they are associated with rather definite mental disturbances of memory. The term "second childhood" describes only some of the senile insane, and from the educational point of view these are of interest in that they enable us to make certain analyses of forgetting

and of memory loss. In many cases we find hallucinations, delusions, depressions, exaltations, and on the physical side epileptic and apoplectic attacks. Mental derangements are also sometimes found associated with brain disease or injury. These patients differ greatly in their symptoms, but all may be briefly described as "demented." The injury effects often give a means of diagnosis of the part of the brain which has been injured, and a cure is sometimes produced by appropriate surgical intervention. Aphasia is sometimes associated with these psychoses, and it often simulates a profound dementia.

Although insanity was defined as a "disorder of mind due to disease of the brain," we are still completely at a loss to correlate certain mental diseases with brain changes. In the manic-depressive psychoses, in paranoia, in dementia precox, and in the psychoneuroses no typical cerebral alterations have been found. These conditions are, therefore, sometimes called "functional" in contradistinction to the "structural" diseases, such as paresis, the senile psychoses, and the insanities due to disease and injury of the brain. In paresis the nerve cells are found to be greatly degenerated, and the cerebral cortex is found to have many abnormal elements, due to the disintegration of the cells or to the development of the non-nervous elements. The greatest changes are said to be found in the frontal and posterior association areas. In the senile insanities there is found atrophy of the brain, so that the convolutions are shrunk, and small or large areas of softening (or disintegration) are often found associated with occlusion of the arteries. The changes in the cortical cells differ from those in paresis, although both are retrograde and destructive. The pathology of the psychoses due to brain disease or injury differs in accordance with the part of the brain injured. In dementia precox changes in the structure of the cortex have been observed, but it is not certain that these are typical of the disease.

It will be noted that all the developmental defects, idiocy, imbecility, and other forms of retardation, have been omitted from the discussion of insanity. As was noted above, these are not forms of insanity, but defects or lacks of development, and are to be treated in separate articles.

S. I. F.

See IDIOCY.

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**INSOMNIA** — Abnormal wakefulness or loss of sleep. The condition is the opposite of narcolepsy (*q.v.*). Insomnia may be total or partial, and may continue only one day, or for long periods. The varieties of insomnia are numerous, those most frequent being the conditions in which the individual goes to sleep at the normal time, but wakes up soon and remains sleepless the remainder of the night, and those in which the individual finds it difficult to go to sleep and lies awake for hours, tossing about until exhaustion overcomes him and sleep ensues. In both cases the amount of sleep may be normal, but the going to sleep and staying asleep are abnormal. These two kinds of insomnia are often due to bad habits of sleep, and not to any pathological nervous condition of the individual. Losses of amounts of sleep are common in many nervous and mental diseases, especially in the cases of excitements, *e.g.* in mania and in disturbed dementia precox. In the insane and in mentally normal people who suffer great pain the amount of sleep may be greatly reduced, and the patient sleep little, if at all, for several days. It is usual to find, however, that individuals complain of sleeplessness even when they have had a normal quantity of sleep, and one should hesitate to accept the individual's opinion regarding the amount and character of his sleep.

The effects of loss of sleep are much greater than those of the losses of food, and the effects are found to be mentally effective as well as physically. On the physical side there are loss of body weight, changes in the temperature of the body, and reflex nervous phenomena. A few days' loss of sleep will produce a delirium, a condition that would not follow starvation for five or six times the number of days.

On the mental side slight or continued loss of sleep is accompanied by inability to fix the attention, memory defects from inattention, and feelings of lassitude. When children exhibit these symptoms even to a mild degree, it is important to inquire regarding the amount and character of the sleep, for some cases of retardation are due to bad family surroundings that prevent the child having a sufficient amount of sleep.

Most of the cases of insomnia are due to bad habits, and must be treated as such. If the sleeplessness be due to concomitant pathological conditions of the body, the latter must be treated, and the insomnia will disappear. It should be remembered, however, that bad habits are formed here as well as for other bodily and mental activities, and it is not uncommon to find that the habit of sleeplessness is formed by only a few days' illness. Sleeplessness may also be due to imaginary causes, and it is most easy to produce a sleepless night by calling the attention of one who has taken coffee to the fact that this beverage is a stimulant and will produce wakefulness. On the other

**INSISTENT IDEAS.** — See FIXED IDEAS.

hand, it is equally easy at times to produce sleepiness by calling attention to monotonous sounds and by recommending innocuous drug-like prescriptions. S. I. F.

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**INSPECTION OF SCHOOLS.** — Some system of school control through inspection has always existed, since the time when education was in the hands of the Church and teachers were licensed by the *scholasticus* or the chancellor, to the modern period when the State has taken over the charge and maintenance of schools. For the medieval period see BISHOPS' SCHOOLS; CHURCH SCHOOLS, CHANCELLOR, SCHOLASTICUS, VISITATIONS. During the Reformation period immediate inspection and visitation of schools was exercised by the local pastor, and consisted usually in an examination of pupils and teachers. The earliest system of state inspection was probably introduced at Gotha (*q v*) under Ernest the Pious (*q r*). Inspection by official inspectors of the State was introduced on a large scale when the State began to supply funds for the maintenance of schools. Thus in England the first government inspectors were appointed in 1839, when a grant was made in aid of school buildings. Inspectors who visited Church of England schools had to be approved by the Archbishop. The first instructions were issued in 1840, and required the inspectors to report on the number of schools in their districts and the state of education there, to inspect aided schools, and to recommend the appointment of teachers. These remained essentially the duties of inspectors for many years. After 1861, when payment by results was introduced into elementary education, the inspectors began to examine the pupils, and this system left its mark on English inspection. The large majority of inspectors were professionally untrained, although from 1879 a number of schoolmasters were appointed as assistant inspectors. Administrative duties, such as the examination of registers, time-table, and log-books, continued. The broader function of supervising instruction and the teaching process, and in this way assisting the teachers, is only gradually being recognized as of primary importance. No special professional qualifications are yet demanded from those who are appointed to inspectorships, as long ago as 1879 Mr Rathbone moved in the House of Commons that "before being appointed to an independent post, newly appointed inspectors should have one year's training under an experienced in-

spector, unless they have previously been engaged in the education of children for a sufficient time to make this unnecessary." The great need of the present, however, is a requirement of professional training and experience as a necessary qualification for appointment, if the inspecting staff is to secure the confidence and professional support of teachers. Special inspectors are also employed for art, domestic subjects, drawing and handicrafts, rural education and agriculture, music, and the training of teachers. The employment of local inspectors, in most cases teachers of experience, by local authorities is increasing rapidly. Since 1899 the Board of Education has undertaken to inspect secondary schools on request, while all schools which desire to qualify for the state grant must submit to an inspection of both instruction and premises.

See SUPERVISION OF TEACHING; SUPERVISION, PRINCIPLES OF; also ACCREDITED SCHOOLS, ENGLAND, EDUCATION IN; FRANCE, EDUCATION IN, GERMANY, EDUCATION IN.

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**INSPECTORS, STATE.** — See SUPERVISORS, HIGH SCHOOLS, STATE SYSTEMS OF.

**INSTINCT** — **Use of Term** — Modern writers have not agreed upon a fixed meaning of the term "instinct." The field of instinct is the common ground of both psychologists and biologists. The experimental biologists take an objective viewpoint with respect to instinct. For them, instinct is a combination of congenital responses, unfolding themselves serially under appropriate stimulation: the series as a whole being generally but not necessarily adaptive in character (always so from a Darwinian standpoint). Each unit reaction or element in this series may be looked upon as a "reflex." An instinct is thus a concatenated series of reflexes. Such a series of reflexes, or an instinct, is illustrated by the first attempts at nest building of young birds, by the first fighting responses in young animals of any kind, and by the capturing, killing, and eating of prey (as appears in kittens), etc. The combination must be observed on its first appearance if it is to be seen "pure," i.e. without the presence of the habit-factor.

**Reflex** — If this definition of instinct is to be acceptable to the animal psychologists, it is necessary to add that the term "reflex" (including tropisms under this head) should not be understood to mean an absolutely fixed and unalterable type of response. Jennings, Mast, Yerkes, and many other American writers have shown that the responses even of the pro-

tozoa and of the lower metazoa are not reflex in the sense of being fixed and stereotyped. Two factors determine the overt observable response: the extra-organic stimulation (sensory stimulus) and the intra-organic processes (physiological states). If either set changes, the overt response changes, either greatly or little; *e.g.* the stentor may react in several different ways or in the same way, but more or less intensely, to the same (extra-organic) stimulus, provided the physiological state of the animal be different at different moments of stimulation. Yerkes has shown that the amount of the reflex movement of the leg of the frog called forth by an electric stimulus can be greatly increased by introducing an auditory stimulus simultaneously with the electric stimulus, although the auditory stimulus calls forth no visible response when given alone. As the interval between the auditory and the tactual is gradually increased, the reinforcement of the reflex response gradually decreases, and finally gives place to an actual inhibition. Similar conditions hold in the case of the human knee jerk and other reflex-like phenomena.

In general terms, then, while the reflex is the simplest type of organic response, calling on the structural side for the presence merely of an open pathway from receptor to effector (or from sensory surface to muscular mass when the nervous system is lacking), at the same time many influences, as has been well brought out by Sherrington, are at work, or may be at work, to alter the perviousness of this pathway (blockage on the reverse at the synapses, momentary or more lasting differences in tonicity of the musculature, etc.), and thus to alter the intensity, and to some extent, even the character of the so-called "simple reflex" responses. "Simple reflex," then, is a mere concept — a general term to cover segmental reactions which appear at first sight to be relatively simple in character. If the individual units composing the series of responses which are grouped together to give us the total picture of an instinct in action are variable in their function, then the series as a whole must necessarily offer still greater possibilities of variation. If the above contention for the variable character of the simple reflex is granted, the biological or objective definition of instinct is acceptable.

**Presence of Consciousness** — The older psychologists, the early naturalists, and the metaphysicians have complicated the discussion of instinct by bringing in the question as to whether consciousness is present, and if so, to what extent. This additional element of consciousness in the instinctive response was supposed to differentiate instinct from reflex. However interesting a question this may be from the standpoint of general psychological theory, it seems relatively futile to attempt to introduce psychological considerations of a structural kind into any discussion of instincts

in the present state of animal psychology. If instincts are defined as above, it is clear that neither the human animal nor one lower in the scale is conscious of the end to be gained by the first exercise of any instinctive group of responses. Even the human adult cannot image what has never formed a part of his perception. It is unreasonable to suppose that there can be any plan, picture, or image of a nest of any kind in the mind of the thrush which has been hatched in an incubator and reared in isolation from all other birds; nevertheless, at the proper time she will construct her nest true to the species type, and go through with the whole breeding cycle. The separate movements from a psychological standpoint are not voluntarily initiated; there are no images anticipatory of the series of acts or of their results. As James states it, the animal is so constructed that it must act in that way, in the presence of such stimuli. On the other hand, it may be argued with some justice that the process may be and probably is an intensely conscious one from the standpoint of the presence of sensations, one has good reasons for supposing that the bird is visually aware of the stick and the twine — of their form, size, and color (though even these functions are really hypothetical until decisive experiments have been made), — and that she is conscious of her movements toward them, of their weight and contact values as she picks them up, and, furthermore, that she is vividly conscious of her own emotional state. It may be likewise argued that after the bird has built her first nest, arguing by analogy from human processes, she might be able to image it when absent from it, since by building it instinctively she has laid a perceptive basis for the rise of an image. In other words, while the animal is not planning or controlling the situation voluntarily in this first exercise of the instinct, she is "feeling" vividly her emotional state and is conscious, however poorly she may analyze the experience, of the visual, auditory, tactual, and kinesthetic stimuli which assail her from within and without as she successively goes through with the separate acts.

**Method of studying Instincts** — Present-day comparative psychology, looking at instincts from the above objective standpoint, is taking up individual instincts and making a detailed experimental study of them. It is thus rapidly enlarging and making more definite our concept of what in any given case is an instinct. It is showing that what was earlier called instinct is in most cases a delicate and complex combination of instinct and habit. It is impossible except by laboratory methods to separate the congenital (phylogenetic) from the acquired or habit form of reaction (ontogenetic). Within the last few years it has been shown that the responses of practically every organism, from amoeba to man, are plastic and modifiable, and that all animal forms actually do alter their

original or primary congenital modes of response, where necessary, in the direction of habit. The young of any given species must be watched from the moment of birth until the last instinctive cycle (those connected with reproduction) appear. This has now been partially done, but only in a general way, for the young of several species of birds and mammals. The work of Morgan, Spalding, Porter, Watson, Craig on the birds, and of Wesley, Mills, Small, and Yerkes on young mammals, shows quite clearly that many apparently simple instincts are not completely congenital at all. Lloyd Morgan has shown that the drinking response in young chicks is very imperfect until habit factors enter in. Breed, at Harvard, has shown that the pecking response in the same animal is very imperfect at birth, and that it is only gradually learned.

Many of the instincts at birth, however, appear, though later experiments may prove the case to be otherwise, perfect without modification, such as the building of the first nest by young birds, brooding, rearing of the young, many of the responses of the insecta, etc. Unquestionably, as these activities are engaged in from season to season, habit factors may and do enter in. The scientific way, then, of approaching the problem of instinct is to isolate the young animals, and to observe what reactions will from time to time unfold themselves (congenital responses), and then to determine experimentally how these congenital responses are supplemented and changed by habit.

The explanation of why there is a congenital response taking place before experience or tuition can have played any part must be sought for on evolutionary grounds. All organisms are born into the world with certain structural modifications which force the animal to react, however imperfectly, in a certain way in the presence of certain stimuli. The origin of such structures is a mooted question to-day, and no satisfactory answer can be given. We sketch below the two most important hypotheses.

**Origin of Instincts.** — Darwin's theory of the origin of instincts by the process of gradually heaping up favorable fluctuating variations, the process as a whole being under the influence of natural selection, has already been discussed (See DARWIN.) In recent years Darwin's theory has been shown to be untenable. In the first place, while it is true that all individuals of a given species do show fluctuating variations when compared with the norm or average, it has been shown by a number of investigators, including Nilsson, De Vries, Jennings, Morgan, Pearl, and others that such variation cannot be heaped up along specialized lines, as Darwin supposed. Fluctuating variations are not inherited; consequently, they have no bearing on the theory of evolution.

"The use-and-disuse hypothesis" (and the

theory of lapsed intelligence of Wundt, Cope, and others, based on it) of Lamarck, and espoused as a supplementary hypothesis by Darwin, has been practically abandoned by biologists for lack of experimental support. The same may be said of the third of Darwin's principles for accounting for the origin of instincts, namely, his theory of secondary sexual characters. Being forced to abandon these Darwinian hypotheses, we are forced by the experimental method to seek some other mode of accounting for structural differentiations. Fortunately, the recent work of Bateson, De Vries, Nilsson, McDougall, Vail, and Shull, and of Tower and others, throws light on this question. De Vries's work on the evening primrose, *Oenothera lamarckiana*, is probably best known. For over twenty years De Vries bred this plant under conditions of scientific accuracy. His first culture gave a wholly new mutation — *i.e.* a wide and totally unexpected and unpredictable variation, as distinct from the usual slight, fluctuating variations. In the continued cultivation of it other mutations — some of which are very striking, such as the dwarf, *O. Nanella*, and the giant, *O. Gigas* were observed. Some twelve mutations from the original pure strain, *O. Lamarckiana*, have been described by De Vries, all of them breeding true to the type, and appearing without intermediate forms. In other words, differentiation in this plant takes place by jumps — mutations, and such mutations are hereditary. McDougall, Vail, and Shull have shown that these mutations may be experimentally produced by the injection of certain solutions directly into the plant ovaries.

By far the larger amount of this work on the production of new types and races has been done on plants. The color form and behavior changes noted by Tower in his chrysomelid beetles parallel the work of De Vries on plants. A great mass of work, similar in character to that of Tower, is accumulating. In addition to mutations which have been obtained experimentally, it is now generally recognized as being the most probable assumption that the breed of hornless cattle in Paraguay, the long-horned sheep in Brazil, the Ancon sheep in Massachusetts, to use familiar illustrations, arose suddenly and by mutation. De War and Finn in a recent book, *The Making of Species*, devote several pages to a discussion of mutation in animals.

The conception that the special structures underlying instinctive responses arise by discrete and sometimes large variations, as well as that species themselves arise in this way, is rapidly gaining ground. According to the mutation theory, congenital adaptations are not slowly produced by environment, but are the accidental correlates of the particular structures with which the mutant happens to be endowed; and it is with these adaptations that the new type must begin its struggle for

a suitable environment. If the mutant springs forth at a time when the environment is such that the actions on the part of the animal necessary for obtaining food, shelter, and the reproduction of its kind can be called forth, — or, put the other way around, if the mutant is fortunate enough to begin life with a series of responses adequate to meet environmental demands, that type of mutant can exist and procreate its kind, leaving adequate paleontological record behind it, if not, the variant is annihilated, without leaving marks of its temporary existence. Natural selection, while not being responsible for the formation of new structures, and hence of new responses, is still operative in eliminating the unfit variants. What boots it whether the snail is coiled to the right or to the left; or that certain crustacea have one claw so much overdeveloped that its possession must be a disadvantage, so long as these animals possess enough favoring adaptations to make the necessities of life obtainable? Selection will allow the mutant many peculiar and non-advantageous structures, it steps in only when there is an actual deficiency in the number and complexity of functions necessary for life and reproduction.

Human psychology is especially interested in this theory of mutations by reason of the fact that it does away with the necessity of looking for adaptive value in certain emotional and instinctive attitudes, as in dizziness, trembling, nausea, and many other such reactions which put the human subject at a disadvantage in critical situations.

**Important Human and Animal Instincts** — Any complete or general inventory of animal instincts is impossible at the present time, because (1) animals possess so many instincts that students of behavior have not had time to study them exhaustively in any one species, and (2) instincts differ too widely in the different species. All animals may be said roughly to possess many adaptive specialized congenital modes of reacting to food, enemies, shelter, and sex, and to possess, in addition, many other congenital modes of response which are accidental and non-adaptive. Special studies in animal psychology will give soon, it is hoped, a clear and concise knowledge of the order of appearance and the number of instincts in any given form, their fixity, variability, and modifiability, their constant, cyclic or deferred character, etc.

The important human instincts appearing later than the group immediately connected with the preservation of life (such as sucking, crying, sneezing, etc.) are in just as much need of careful study as are the instincts of animals. Angell in his *Psychology* gives the following as the probable list: Fear, anger, shyness, curiosity, affection, sexual love, jealousy, envy, rivalry; sociability, sympathy, modesty (?), play, imitation, constructiveness, secretiveness, and acquisitiveness. It is easy to see

first that many of these are questionable instincts, as for example, modesty, imitation, affection, secondly, that many of these are general terms which cover groups of instincts. Play, for example, consists in the releasing of many congenital responses, and the number and character of these responses differ widely with respect to the objects calling them forth. A kitten will play with its tail or a ball of twine, or it will engage in a mock combat with its fellow, or tease a helpless mouse. The responses differ greatly in the several cases. A similar condition obtains in the child. Thirdly, many of them are so masked by the network of habits which the child has formed before the responses appear that the pure and characteristic instinctive group cannot be isolated. Jealousy, envy, rivalry, sociability, and sympathy are of this type. In the child they show really the beginnings of conscious attitudes. There is an instinctive *Anlage*, but little more. The works of Preyer, Perez, Shinn, Major, Baldwin, and Stern deal largely with instincts in the child, but mainly from an observational standpoint.

**Psychological Bearing of Instinct** — While the mechanics of instinct *per se* interests the student of behavior mainly, the human psychologist is concerned with them first because of the light they throw on the origin of emotion, emotion always appears in the human being in conjunction with instinctive expression. Secondly, by reason of the fact that all volitional control has its origin in instinctive movement. Thirdly, by reason of their intimate bearing on adult impulses, motives, and attitudes.

**Pedagogical Bearing of Instincts.** — A study of instincts is of the highest importance pedagogically because the changes in the interests of the child are somewhat determined by changes in the instinctive and emotional complexes. Instincts ripen serially and decline serially — each one as it comes brings about an interest in a different set of objects and a different focus of attention, as shown very clearly at the onset of puberty. James, in his *Principles of Psychology*, speaks very vividly of "striking while the iron is hot," i.e. of choosing the favorable moment when the child is instinctively interested in a group of objects, to instill proper modes of reacting to these objects and to store up knowledge about them. While he largely overestimates the number, independence, and permanence of instincts of this class in man and of their adaptability for such a stamping-in process, there is such an element of truth in what he says that no teacher can neglect the study of human instincts.

A large group of educational psychologists, in their adherence to the reduplication theory of Cope, have carried the process just described to an unwarranted extreme. The child is supposed to duplicate in ontogeny the whole phylogenetic process. We are taught by them to find in the growing child a series of culture



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epochs, similar to the rough-stone age, the hunting stage, and the agricultural stage in primitive man. The above school has based educational theory and practice on this hypothesis. It remains to be said that this aspect of the reduplication theory is based on the most flimsy biological speculation, and that modern experimental biology finds few data supporting it. In exceptional and isolated cases there appear to be certain growth processes which are apparently reduplicative in character. But nearly all such changes take place in the embryonic stages or during the early period of infancy. To carry this process over to the child of eight, ten, and twelve years of age, and to base an educational system upon it, is building upon a foundation of sand.

J B W

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### INSTITUTE, FRENCH (INSTITUT DE FRANCE)

— A French association comprising a group of societies for the advancement of literature and science in all their branches. An association of this type had been planned by Richelieu when the French Academy was established in 1635. In the same century, under the influence of Louis XIV and some of his ministers, there sprang up the Academy of Fine Arts (1648), the Academy of Inscriptions (1663), and the Academy of Sciences (1666). These were all abolished by the Convention in 1793, and in their place the *Institut National des Sciences et des Arts* was established in 1795, "charged with collecting discoveries and with perfecting the arts and sciences." Its members were now drawn not from Paris alone, but from all parts of France, and foreign associates were also elected. The plan appears to have been suggested by Talleyrand and Condorcet. There were three classes devoted to (1) physical sciences and mathematics, (2) moral and political sciences, and (3) literature and fine arts. In 1803 the Institute was reorganized with four classes with a new distribution, excluding moral and political sciences at the order of Napoleon. In 1816 the old names of the academies were restored, and in 1832 the Academy of Moral and Political Sciences was revived and the name was changed to *Institut de France*. The membership consists of regular and honorary members, foreign associates, and corresponding

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members. Election is by ballot, confirmed by the government. The members receive 1500 francs a year each. The Institute is located in the old Mazarin Palace. The library, which includes the old town library of Paris allotted to it in 1797, contains a valuable collection of books. The Institute has the right to nominate professors to the College of France, the Museum, Schools of Rome and Athens, School of Maps, School of Oriental Languages, Conservatory of Arts and Handicrafts, the Observatory and the *École Polytechnique*. One of the important functions exercised by the Institute is the award of prizes for distinguished services to literature, science, and arts. Funds are provided by the state and private benefactions, the general funds being administered under the supervision of the Minister of Public Instruction, and departmental funds by each academy.

See ACADEMY.

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**INSTITUTES** — The teachers' institute is a distinctly American institution. As originally organized, the purpose of the institute was to provide opportunities for the review of the subjects taught in the common schools, to give suggestions on methods of teaching and school management, and to stimulate teachers to self-improvement. For a time the institute did the work of the normal school in the professional training of teachers, and in parts of the country, where normal schools do not meet the needs of rural communities, the institute continues to provide abbreviated courses of professional training. Where, however, normal schools are reasonably well organized, the institute serves the purpose of an education gathering for the discussion of broader professional subjects. The summer school, in many parts of the United States, is taking over the function of the teachers' institute.

In some parts of the country the institutes are under state auspices and are generally organized by the state superintendent of public instruction. In most states the county is the unit, and the county superintendent is the responsible director. In cities of 20,000 and more inhabitants, separate institutes are generally held under the direction of the city superintendent of public schools. In most of the states there are special appropriations from the school funds that meet part of the cost of the institutes. Such funds are generally supplemented by membership fees on the part of the teachers or by fees that accrue from the licensing of teachers. The duration of the institute varies from one day to six weeks. Some states have paid corps of institute in-

structors, but most states secure the services of members of the faculties of the state normal schools and colleges and other educational workers to give the instruction. In institutes that are in session a week or less, the instruction is generally of a purely professional character and is given in the form of lectures. Where the sessions are of longer duration, the teachers are organized into classes for more definite academic instruction in the elementary school studies.

**Historical Development** — The first teachers' institute was held at Hartford in the autumn of 1839 by Henry Barnard (*qv*). Twenty-six young men, some of whom had already taught in the common schools, were organized into a class and given instruction for six weeks. In the previous winter Barnard had asked the state legislature to make an appropriation to enable him to organize two such institutes, one for male and one for women teachers. As the measure failed in the senate, he organized a class of men at his own expense, with slight aid from some friends of education in Hartford. He wished to show the people of Connecticut, he said, "the practicability of making some provision for the better qualification of common school teachers, by giving them the opportunity to review and extend their knowledge of the studies usually pursued in the district schools and the best methods of school management, instruction, and government, by means of recitations and lectures conducted by experienced and well-known teachers and educators."

At this first institute held at Hartford, Charles Davies, (*qv*), the well-known author of mathematical textbooks, gave instruction in arithmetic, Thomas H. Gallaudet (*qv*), had the classes in composition and school government, Mr. Barton, of the teachers' seminary at Andover, gave lessons in reading, Mr. Brace and Mr. Wright, of the Hartford schools, had charge of the subjects of geography, spelling, and writing, and Mr. Barnard himself gave lessons in principles of teaching and school hygiene. "A portion of each day," writes Mr. Barnard, "was devoted to oral discussions and written essays on subjects connected with teaching. The students also spent some time in visiting the best schools in Hartford."

The experiment was repeated the next year (1840), with the addition of a class for women teachers. It was not until 1847 that the legislature of Connecticut provided the funds for the organization of institutes (two in each county) at state expense. Private initiative, however, had made possible many such institutes in different parts of the state, at which such well-known educators as Henry Barnard, Thomas H. Gallaudet, William A. Alcott, Jesse Olney, Charles Davies, and J. E. Lovell gave instruction. These early gatherings in Connecticut were not called institutes, but teachers' classes.

In 1842 J. S. Denman, the superintendent of schools in Thompsons County, New York, conducted for two weeks a class of teachers for the purpose of "reviewing and extending the topics taught in the common schools." He called his class a teachers' institute. This was probably the first use of the term. In the following year Mr. Denman held an institute for six weeks. He was assisted in the instruction in his institutes by James B. Thomson, David Powell, Salem Town, and David P. Page (*qqv*). By 1844, remarks Mr. Fowle in an article published at that time, institutes were held in most parts of the state. In 1847 the legislature of New York appropriated \$60 toward defraying the expenses of teachers' institutes in each county in the state.

Rhode Island was probably the first state to organize institutes under state auspices. Henry Barnard, then at the head of the school system, held institutes at Westerly and Providence in 1844. During the next few years institutes were held in all parts of the state, and such well-known educators as William H. Wells, John Kingsbury, Charles Davies, Josiah Holbrook, Samuel S. Greene, Francis Wayland, and William B. Fowle (*qqv*), were secured as instructors. The institutes of Rhode Island had several unique features. One of these was the teaching of "model lessons" by William G. Baker. A covered wagon was fitted up, and this conveyed Mr. Baker and a dozen children about the state. At each institute Mr. Baker gave lessons in the different elementary school subjects, to show the members of the institute "how to teach." Another feature was the distribution of educational tracts and almanacs at the evening sessions, which were of a general nature and attended by the people of the community.

An institute was held at Sandusky, Ohio, in 1844, under the guidance of Judge Ebenezer Lane. He was assisted by Henry Barnard, Salem Town, and A. D. Lord. Many similar meetings were held during 1845 and 1846, that were supported by private contributions, but in 1847 the state legislature authorized the county commissioners to appropriate certain funds for the payment of instructors and lecturers at teachers' institutes.

As Massachusetts had organized two state normal schools in 1839 (Framingham and Westfield) and a third in 1840 (Bridgewater), institutes were not held in that commonwealth until 1845. In October of that year, Horace Mann (*qv*) organized a ten-day institute at Pittsfield, and before the end of the year institutes were held at Fitchburg and Plymouth. Massachusetts secured from the first a corps of strong men to give the instruction at the teachers' institutes, including such distinguished educators as William Russell, John Pierpont, Sanborn Tenney, Samuel S. Greene, Lowell Mason, C. D. Colburn, Josiah Holbrook, William H. Wells, and at a later date the

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three Swiss-Americans, Louis Agassiz, Arnold Guyot, and Hermann Krusi, Jr (*qq v*). As the instructors were employed by the state board of education, they were also assigned to the different normal schools to give courses of lectures and lessons. It may also be mentioned that in Massachusetts such new subjects as singing, physiology, and mental arithmetic were popularized at the institutes before being introduced into the schools.

The first teachers' institute was held in Pennsylvania at Columbus, Warren County, in 1848. It was conducted by Fordyce A. Allen (*qq v*) and J. C. Moses. Institutes were held in Lawrence County in 1851, Indiana County in 1852, and Lancaster County in 1853. In 1854 the legislature granted aid to teachers' institutes, and in 1867 they were made an integral part of the Pennsylvania school system. Among those who took active part in the early institutes held in the Quaker State were Thomas H. Burrowes, James P. Wickersham, Fordyce A. Allen, John F. Stoddard, and S. S. Halde-man (*qq v*).

With the organization of the state school systems, teachers' institutes in one form or another became a part of the educational machinery, and although they have changed greatly in character in the more thickly populated states, they are still a part of the school systems of practically all the American states. Originally peripatetic normal schools, often extending their sessions into weeks, to-day in such populous states as Massachusetts, Rhode Island, Connecticut, and New Jersey, they are rarely in session more than one day. At an earlier period the institutes were of special value in arousing and solidifying public sentiment in favor of state-supported schools, in disseminating useful knowledge concerning methods and principles of teaching, and in enriching the common school course by popularizing new subjects. As the number of trained teachers has increased, the institutes have tended more and more to become general education conventions for the discussion of current educational problems. W. S. M.

**Present Status.**—As at present conducted, the teachers' institutes aim to provide general academic instruction, professional training, discussion of immediate problems, and professional inspiration. They thus attempt to take the place of training schools, teachers' associations, and social organizations. As a rule institutes are held once a year and last five days, though they vary from one day, in New England, to five or six weeks in some of the Southern states. The most common unit is the county, except in Colorado and Nevada (institute districts), and New York (school commissioner districts). In Rhode Island a state institute is held. Counties may join to hold institutes. In three states (Michigan, Nevada, and Nebraska), state institutes are held. Attendance is compulsory in twenty-eight states, and, although

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optional elsewhere, various inducements (*e.g.* continued salary, per diem expenses, mileage allowances, and a percentage toward grading) are offered. The institutes are maintained by the state or by fees from teachers for examinations, licenses, and registration. Instructors may be appointed by the state or by the local authority from a list prepared by the State, in some states the instructors must be licensed. Commonly the normal school faculties supply instructors, although the range and scope is, of course, much wider. The institutes are in the main attended by rural school teachers, occasionally by city school teachers, hardly ever by high school teachers. The system of institutes has been severely criticized within recent years. The chief ground of objection is that it is an anachronism. It had a place when there were no facilities for the training of teachers. But since the establishment of normal and summer schools it merely connives at inadequately trained teachers in attempting to do training work for about five days in a year. Further, the programs are as a rule haphazard, unconnected, and require no preparation, and are followed by no discussion. Frequently the lectures have become inspirational and entertaining in the worst sense. The tendency at present is to permit teachers to attend summer schools in place of institutes, to lengthen the period of the institute, making it almost a summer school, to require definite preparation of some connected educational topics, and to conduct the meetings as classes in a school or college. Ultimately the institute will disappear, but before that time professional standards must be raised, universal training and higher qualifications must be insisted upon, and teachers' associations must play a more significant part in the teacher's life than at present.

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**INSTITUTES OF INSTRUCTION** — See AMERICAN INSTITUTE OF INSTRUCTION.

**INSTRUCTION.** — See EDUCATION AND INSTRUCTION

**INSTRUCTION, COST OF, IN COLLEGE AND UNIVERSITY.** — See UNIVERSITY AND COLLEGE, COST OF INSTRUCTION IN

**INSTRUCTION, HYGIENE OF** — See HYGIENE, SCHOOL

**INSTRUCTION PERIOD.** — The weekly program of the school is made up of periods which are assigned in varying quantity to the several school subjects, hence we speak of the arithmetic period or the grammar period. These class periods are further classified according to the function, use, or value of the activity employed. Thus, if the period is assigned for the purpose of instruction by the teacher, it is called an instruction or recitation period, if for preparation by the pupil, a study period. All periods cannot be thus classified, as several purposes may be present in one exercise. H. S.

See LESSONS, TYPES OF, MANAGEMENT, SCHOOL, TEACHING, TYPES OF.

**INSUBORDINATION** — See SCHOOL MANAGEMENT, REWARDS AND PUNISHMENTS

**INSURANCE COMPANIES, EDUCATIONAL WORK OF.** — Quite recently insurance companies have realized that in addition to guarding the interests of policyholders by thorough medical inquiry, it may be possible to lower the death rates generally by a system of education along the lines of sanitation and hygiene. It is recognized to-day that many diseases are preventable, and that, if the population generally could be educated regarding the possibilities of prevention, the population mortality might be effectively reduced. It is for this reason that certain life insurance companies are working hand in hand with public officials in the direction of spreading the gospel of education in sanitary and hygienic matters. The general subject of prevention of disease and conservation of human life has been fully dwelt upon in the report of the National Conservation Commission by Professor Irving Fisher, entitled, *National Vitality, its Waste and Conservation*.

The large majority of life insurance companies conduct so-called "ordinary" business. The risks on which they write policies belong to a better financial stratum of society, and are able to take insurance in amounts of \$1000 and upwards. The mortality in this group, for obvious reasons, is lower than in the general population, and at some ages is only one half of the mortality in what may be termed "industrial" population. A number of the companies not only write so-called ordinary insurance, but industrial insurance as well. This form of insurance has been arranged for the working

classes, and permits them, through the payment of small weekly premiums, to insure themselves against death. For this group, however, it has been necessary to devise a special mortality table based on the experience gained from a study of the mortality in this particular group. The individuals comprising the industrial masses are less in a position to avail themselves of the opportunities to guard themselves against disease, and for this reason a campaign of education directed specifically to them may have a tendency to bring about better results than a campaign among the better circumstanced.

Of the companies which have attempted a campaign to improve the physical conditions and the health of their policyholders, probably the most noteworthy are the Provident Savings Life Assurance Society, recently merged with the Postal Life Insurance Company, the Metropolitan Life Insurance Company, and the Equitable Life Assurance Society. The first named company, in August, 1909, organized a so-called "Policyholders' Health Bureau," through which the company has issued health bulletins to policyholders, keeping them informed of the most recent advances of science in the promotion of health and the prevention of disease, and answering inquiries on matters of health. The various bulletins which have been issued by the company treat of the evil results due to intemperance, and overeating, and the contingencies from various poisons. In one number, the bureau discussed certain of the so-called preventive diseases, such as pneumonia and typhoid fever. Another number was given over to the use of narcotics and the dangers attending their use.

Outside of the field of the life insurance companies several of the accident companies have published bulletins in reference to the prevention of accidents. Here in particular may be mentioned the bulletin published by the Fidelity and Casualty Company of New York on *The Prevention of Industrial Accidents*.

The campaign of education which was begun in 1909 by the Metropolitan Life Insurance Company of New York has been directed primarily to its so-called industrial policyholders, representing all nationalities, and in many instances individuals who have but little education and no opportunity of coming in contact with modern current thought on the subjects of health and hygiene. To meet the needs of this large group, the company through its agents who visit the policyholders weekly has distributed pamphlets of various kinds on the movements which have sprung up to improve living conditions and to prevent disease. For years the company has published a periodical. Incidentally, it has attempted to place in the hands of its policyholders articles written in a popular fashion on subjects dealing with the health of the family, and in particular with the health of the children in the family. The magazine in a sense is a children's magazine.

The illustrations which it contains, and many of the articles especially prepared for it, have been published with the children in mind. Some of the articles which have appeared in the last year are the following. *Just Flies*, calling attention to the danger of the fly as a transmitter of disease; *If you have a Baby, Place this where you will See it Every Day*, *Chinese Doctors*; *Daily Health Hints*, *Summer Clothing for the Children*; *Our Glorious Fourth*; *Seven Laws of Infant Health*; *Physical Defects which may be Overcome*, etc.

The company, as would be expected, suffers a heavy loss from deaths due to tuberculosis. In the year 1908 there was a total of 92,411 deaths, of which 16,585 were caused by tuberculosis. Of these the number of deaths of children over one and under fourteen years of age was 1330, or 8.01 per cent, and it is clear that the reduction of mortality from this dread disease is of vital importance to the company. An effort has been made to educate policyholders regarding the causes of the disease, its cure, and its prevention. Over four and a half million copies of a pamphlet, *A War upon Consumption*, printed in ten languages, have been distributed to policyholders. This pamphlet, as well as others which are issued by the company, was put in an attractive form so that it would be read. Copies have been distributed to school children in certain cities at the request of the authorities, and in one instance the pamphlet has been used as the text for compositions and essays written by the children. Supplementing the above pamphlet, the company prepared a list of the tuberculosis sanatoria, hospitals, dispensaries, classes, and associations in the United States and Canada, which it has distributed among its policyholders suffering from the white plague, and one which is entitled, *Directions for Living and Sleeping in the Open Air*. It is hoped through this pamphlet many policyholders who are unable to obtain sanatorium treatment may attempt to obtain treatment in their own homes. The company has at present in preparation a booklet on domestic hygiene and the care of children.

The company has also been experimenting for the last two years in the direction of sending visiting nurses to its industrial policyholders suffering, not only from tuberculosis, but from any disease which may require nursing. But the actual treatment and care given by the nurse is probably the least of her activities. From the standpoint of prevention, the value of the nurse consists in the education along sanitary and hygienic lines which she is spreading broadcast in every home which she visits. There can be little doubt that in time, while it may not be possible to prove the matter by actual statistics, there should be an improvement to a greater or lesser extent in the mortality of policyholders, and in particular their general welfare will be materially en-

hanced. It is hoped that the nurse will be of particular value in preaching the doctrine of the prevention and cure of tuberculosis in connection with the pamphlet, *Directions for Living and Sleeping in the Open Air*, to policyholders unable to obtain sanatorium treatment. A nurse, plus the pamphlet, should in time produce tangible and visible results. Maternity cases have been given particular consideration in this nursing experiment both before and after the birth of the child.

As a matter of interest, it may be mentioned that at present the experiment is being conducted in approximately 775 cities and towns, in the greater number of which the service has been installed but a very short time. The statistics for the year 1911 show a total of over 675,000 visits. Visits are requested in the main for acute diseases, that is, where there is a stronger possibility of recovery. Under these may be included pneumonia, grippe, bronchitis, and various children's ailments such as convulsions, paralysis, etc.

It may be said that an insurance company that protects the lives of the working classes has assumed very definite responsibilities. To what extent such a company may further enlarge or increase its activities is problematic. The activities mentioned above indicate the possibilities, at any rate. Much will depend on the extent to which it may go under the provisions of its charter and the laws of the several states. That the extension of such work by an insurance company, that the endeavor on its part to better the circumstances of its policyholders and in particular to increase the length of their lives, are subjects worthy of the deepest consideration, is beyond doubt.

L K F

**INTEGRAL CALCULUS** — See CALCULUS

**INTEGRATION OF STUDIES.** — See CORRELATION

**INTELLECT.** — Intellect is a term which has been employed in a broad and in a narrow sense. In its broadest sense it includes all of the processes of knowledge as distinguished from the emotions and will. Thus we speak of the exercise of the intellect on the part of any "one who is of higher grade than the imbecile." In the narrow sense, the term intellect has been employed to designate the higher forms of mental activity as distinguished from certain of the lower forms of knowledge. Thus the mere processes of sensory experience are not to be regarded as belonging under this term when used in its narrower sense. This distinction is clearly marked in the title employed by one of the great English psychologists, Bain, in his volume *Senses and Intellect*. Here the intellectual processes are those of discrimination, comparison, memory, judgment, reasoning, etc. The processes of

## INTELLECTUAL EDUCATION

sense recognition, on the other hand, are treated as forms of knowing which are carried on at a lower level. This distinction is very often employed in defining the relation between human and animal consciousness. Man is said to be distinguished from the animals by his possession of intellect. This, of course, does not signify that man is superior to the animals in sensory processes. It indicates rather that the material which is supplied by the senses is employed in human life in higher forms of comparison and discrimination.

C H J.

See MIND; PSYCHOLOGY; and for educational bearings, EDUCATION, IDEAS; KNOWLEDGE

**INTELLECTUAL EDUCATION.** — See EDUCATION

**INTELLIGENCE TESTS, BINET.** — See TESTS, INTELLIGENCE.

**INTEMPERANCE.** — See TEMPERANCE, INSTRUCTION IN; ALCOHOL, THE USE AND PSYCHOLOGICAL EFFECT OF.

**INTENSITY** — One of the attributes of sensation. The intensity of the sensation is related to the amount of energy that affects the sense organ. The difficulty in dealing with the intensity of mental states is that it is impossible to compare two intensities unless they are in consciousness in close succession, and then it is not possible to do more than say that one intensity is greater or less than another. Measurement in the sense that it is used in the physical sciences is impossible. The only measurements that have been made are of the amount of physical stimulus that will just give rise to a sensation in any department and the difference in two physical intensities that may just be appreciated. The discussion of the first problem is given under the different senses, of the second under Weber's Law. W. B. P.

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**INTERACTION** — See BODY AND MIND; NERVOUS SYSTEM

**INTEREST** — The "doctrine of interest" in education is a sort of shorthand expression for a number of different motives, which focus in the recognition of the necessity of discovering points of genuine and intimate contact between the subject matter of instruction and the vital experience of pupils, an experience that exists and operates independently of attempts to master the subject matter. The etymology of the word "interest," namely, *inter* and *esse*, to be between, suggests, if it does not adequately convey, the idea. Interest indicates that no

## INTEREST

gulf exists between material to be learned, lesson material, and the concrete mind of the pupil — that the mental powers and tendencies find themselves at home in the material of study, that the material awakens congenial responses in the self. So regarded, an interest in a problem, a topic, a subject, is evidence that there is a vital union between the student and his study. Its opposite is the feeling of alienation and repulsion that accompanies the presentation of matter that is foreign to the experience of the student.

Psychologically, interest and attention are closely allied events. They are frequently regarded as the subjective and objective aspects of the same activity. That is to say, the effective assimilation of new material into the course of experience is interest when viewed from the standpoint of the mental affection, the emotion and personal attitude, that accompany it. It is attention when viewed as the active outgoing of mental habits in grasping and mastering the subject matter. Other views regard interest as prior and as the source of attention; or, *vice versa*, conceive interest as the emotional result of a prior act of attention. All views, however, acknowledge the intimate connection of the two, and it is this close connection which is the significant matter for education. Like attention (*qv*), interest as a state of mind depends upon the proper balance of the old and the new in experience. Where the material is almost wholly new, there is excess of stimulation; the responsive powers of mind are overwhelmed and confused. Discouragement and aversion result. As the term "aversion" implies, there is a strong tendency for the mind to turn away and devote itself to some more congenial and rewarding topic. Even if this tendency is partly overcome, it means divided, and consequently wasted, energy as compared with the unified, whole-hearted activity where interest is naturally and directly sustained. On the other hand, the thoroughly familiar denotes the mastered, the habitual. It sets off tendencies that work automatically and mechanically. If there is also a new factor about which habits may play, these habitual tendencies will furnish the background for intense and concentrated interest. But if there is no stimulation beyond that evoking the established habits, the result will be ennui, monotony, routine. The effect is that of walking in a treadmill where nothing new is achieved. Put in other words, a certain degree of difficulty, a certain amount of obstacle to be overcome, enough to set the problem of a readjustment of habit, is necessary for sustained interest. If the self is to put itself wholeheartedly into what it is doing, its powers must be thoroughly awakened, and this is impossible without a challenging difficulty.

The fact just stated throws light upon the relation between desire (as standing for in-

terest) and effort, and helps place the relation of the doctrine of interest to that of discipline. As long as children "live in the present," they are absorbed in their immediate concerns. All their powers are directed at and, so to speak, discharged upon, the immediately present stimulus. There are no *ends*, that is to say, no conceived results to be reached, after an intervening time, through the controlled adaptation of conditions as means — or the end lies in such a near future that but little thought has to be given to the management of intermediate conditions.

This state of *immediate* interest characterizes the "play activities." When more remote ends are entertained as objects to be reached by the consistent and sustained maintenance of a series of acts that, of themselves, lack immediate interest, (but that are of interest because of their importance for the remoter end in view), we have *mediate* interest. Being dependent on an idea, mediate interest involves an intellectual interest in a way, in which the emotional heightening accompanying direct absorption does not. The interest in a more or less prolonged series of acts is dependent upon the persistence of an *idea* — the thought of an end and the thought of the bearing of the immediately present upon the attainment of this end. The control of the activity, and the source of interest, reside in what is *conceived*, what is physically absent, not in perception or what is physically present.

The remoteness of the end in time means of course increase in the number of difficulties to be dealt with, there is a series of difficulties to be dealt with one after another. Consequently the seriousness, the depth of the interest of the self in its objective — its aim — is continually being tested and retested. If the interest is slight and passing, the emergence of a difficulty in an unexpected form or in an unusually strenuous way will distract the mind from its pursuit, and lead to taking up something which has an immediate, non-intellectual value. On the other hand, if the self is deeply concerned with, thoroughly committed to, its object, each successive obstacle will deepen the sense of the importance of the object and increase the *effort* expended in behalf of its realization. In many cases, perhaps the majority of cases, there will be an oscillation — a tendency to surrender the end in behalf of some more immediately interesting object, and a tendency to cling to the end, to emphasize its importance, in order to enlist further effort in its behalf. Under these conditions, while physical effort will go to the means for reaching the end, moral and intellectual effort will be directed to sustaining the idea of the end in such force as to give it motive power.

We have here all the elements of a seeming conflict of interest and effort, with immediate attractiveness, immediate agreeableness on the side of interest, while serious and important

values are all on the side of effort. Hence the situation has been frequently completely misinterpreted in theories of education, with respect to both its intellectual and its moral implications. That is, interest has been regarded as an inherently unworthy and objectionable factor, operating only as a temptation away from the objectively important; it has been identified with the attractive and swerving power of the immediately pleasurable over against what thought — or reason — shows to be *really* worth while. This implies that the objectively valuable end is totally lacking in inherent interest, so that sheer effort of the will has to be relied upon as the sole motive for keeping the self in its right course — for keeping it struggling against the seductions of "interest."

The previous analysis should reveal what is at fault in this interpretation. What sustains effort is not sheer appeal to will power, but interest in the end — the interest that is indirect and intelligent, as distinguished from that which is immediate, purely personal, emotional, and sensuous. The genuine educational need is, therefore, not to eliminate interest, but to foster the *indirect* interest, the interest attaching to the end in view, to make it more powerful than the immediate interests which would, if they became motive forces, take the self away from its end, and reduce action from the plane of thought to that of sense. The import of immediate interest is quite different before and after reflection and the conceiving of remote ends have entered in. When thought is not playing an important part, or when the situation is such that there is no need that it should play a considerable rôle, immediate interest is simply an indication of hearty, wholesome outgoing activity of the self, a sign of its ability to identify itself with its surroundings, to express itself therein and to find itself reflected by the environment. It remains a fundamental trait of all æsthetic and artistic manifestations. Moreover, in the degree in which the interest in the end is seriously sustained and worked out, it tends to transfer itself to interest in the means of reaching the end. A new type of immediate interest is thus developed, one which is as direct, as hearty and spontaneous, as the earlier personal and sensuous interest, but one which depends upon the intervention of thought. When an individual becomes intensely and sincerely interested in an end which reflection holds up, the sense of separation between means and end tends to disappear. The means become saturated with a sense of the value of the end; and the end is so identified with the means of achieving it that it ceases to seem remote and far away, every one of the present means represents, embodies it. This mutual interpenetration of means and end is constantly exhibited in scientific pursuits as well as in endeavors to achieve wealth and political distinction. But there is

often a period between the original absence of the end dependent upon reason and the final unification of interest in intellectual end and existent means, when the thought of an end pulls one way while the immediately present conditions pull in another. In this intervening state, there is temporarily a real conflict between thought, standing for continuity of purpose, and reason, immediate interest, standing for the agreeable, the pleasurable, the direct urgency of desire. But, as already indicated, the effective way of dealing with this critical juncture is not to attempt the hopeless task of crushing out all interest by sheer effort in behalf of something totally lacking in interest; it is to reinforce by all possible means the interest in the end, so that its interest may fuse with that of means for its attainment.

We are now in a position to perceive the true and false signification of discipline in connection with interest. A disciplined mind is one that can hold to a train of thought in spite of the attractions and distractions of irrelevant considerations, it means power to attend to the conceived, and to relate the perceived (and what the imagination incidentally presents) to the conceived. A disciplinary process in education is one which tends to bring about the state of mental control. True discipline, in short, is distinctly a matter of intellectual attitude and method—the power to keep thinking in dominant control of the situation when the situation needs reflective survey and estimation. Since this clearly involves the overcoming of obstacles and the holding of mind to what is directly more or less disagreeable, the false notion of discipline arises by ignoring the function of intelligence as the source of concentration, order, and regular sequence, thereby identifying discipline with sheer effort directed to the disagreeable. Hence disciplining methods are supposed to be effective whenever a person is forced to occupy himself with whatever is uninteresting and naturally repellent. Difficulties are multiplied for the mere sake of having difficulties, tasks are assigned as tasks to discipline *will*, the power of attention to the repellent. The error is in isolating will or the power of attentive application from thought as the function of sustaining remote ends and of bringing them into close connection with means, or existent conditions.

This fallacious conception of discipline which relates it to effort to the exclusion of habits of thought is strengthened by an opposite error. One school of educators, noting the waste that comes from trying to work against interest, substitutes appeal to momentary emotional agreeableness, for both appeal to will and to the interest of the remoter end. Like the so-called disciplinary school, it fails to denote that thought, that ideas of ends or purposes, holds the key to the situation. By interest it means various devices that tend to

conceal the real end from view, that lessen the need of serious thinking, and that place the control of action in the direct stimulation of present conditions. Interest thus comes to mean a sort of sugar-coating over of difficulties. Since this method inevitably relaxes discipline in its proper sense—that is, the power to utilize thinking as an effective method of guidance of action—its failure to develop continuity of application and serious industry evokes a reactionary appeal to the method of securing “discipline” by the assignment of obnoxious tasks. Then as this method fails to secure motivation and genuine regard for the materials of instruction, it in turn calls out recourse to the method of emotional stimulation. The only way out of this vicious circle is the recognition of the importance of the intellectual factor, the idea of a more or less distant end, and the necessity of reinforcing interest in it as the controlling factor.

We have noticed above that indirect interest involves an intellectual interest. At the outset, this intellectual interest, while genuine and indispensable, is secondary to the interest in achieving an end or purpose—to a practical interest in the broad sense of “practical.” The transfer of interest from ends to means is, however, one of the commonest phenomena of experience, having its traditional illustration, on its undesirable side, in the miser’s transfer of interest in what money will do to the money itself. But the principle has also its positively valuable side. It shows itself whenever there is developed an interest in thinking for its own sake, an interest in conducting reflection, pursuing inquiries, with no ulterior aim. Different minds differ immensely in their susceptibility to this transferability, but whenever it occurs we have strictly intellectual interests. A certain amount of intellectual interest for its own sake is necessary to a proper degree of detachment, of generosity and impartiality, of comprehensive survey of the field, even in practical matters. Hence it is an end to be cultivated in educational procedure. Some minds are as likely to fall into excess upon this side, however, as others are in the narrowly practical, unintellectual direction. Such minds become academic and scholastic, “abstract” in the bad sense of that term; their knowledge is divorced from influence upon action, theory is separated from practice. Hence ideas remain untested and unfertilized by application, while practice remains hard and narrow because not enlightened and inspired by breadth of intelligence. Owing to various historic circumstances, most schooling has come to favor unduly the fostering of the pale academic type, at the expense of those individuals whose natural and persistent interests are more active and objectively constructive. (See *ACTIVITY and CULTURE*.)

We have approached the subject of interest from the psychological side. This implies, how-



ever, its objective side. The term "interest," or an interest, is constantly used to denote that in which interest is taken. It is used as synonymous with a concern, a value, a dominant direction of thought and action, an occupation that is persistently important. Thus we speak of business, of science, of art, of religion, of politics as interests. This objective use of the term "interest" bears out what was originally said of interest as the point of identification of mind with its object, or subject matter. This identity may be approached and discussed — as above — from the side of the mind, but it may be equally well approached from the side of the subject matter in which the self finds its powers sustained and fulfilled. The fundamental thing, educationally, is that interest has both of these aspects. As a guiding principle or norm in education its influence should be to protect educators from two harmful abstractions. On the one hand, from viewing mind as something which can operate and manifest its nature all by itself in a mental, subjective region. As against this notion (and the many educational practices connected with it) the doctrine of interest holds up to view the need of subject matter of content in art, in science, in literature and history, in technical constructive activities, etc., in order that mind may be active and be fulfilled. On the other hand, there is the fallacy which makes the mind equally indifferent to subject matter, which supposes that if it only *will* (if it but will choose to do so), it may apply itself to any subject matter, and that any regard for the inherent choice and spontaneous direction of mind is a concession to a weak and enervating principle. As against this notion, the doctrine of interest is important in maintaining the fact that subject matter is assimilable and capable of having educative influence only so far as it is caught up into and held by certain inherent active tendencies of the self, thereby becoming an interest, a vital concern, a significant occupation of the self.

J. D.

See EFFORT, FORMAL DISCIPLINE; HERBART

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 See also the references under HERBART.

**INTEREST** — In medieval Europe the objection to paying for the use of money was so

great that the borrower was supposed to return only the amount of his debt. If, however, he delayed, he was held to pay as compensation a sum representing that which was between ("id quod interest") the creditor's position because of the delay and that which he would have occupied if the debt had been promptly paid. Hence our word "interest."

The taking of interest is very ancient. From the old records on the clay cylinders, it appears that the usual rate in Babylon was a shekel on a maneh, or about 16 per cent, although it ran even higher than this. Tablets as early as the seventh century B.C. relate that interest was computed either by the month or by the year. In ancient India it appears that 15 per cent a year was not uncommon, and six different forms of interest appear, including compound interest. In the writings of Bhaskara (*q v*) problems appear like the following: "If the interest of a hundred for a month and one third be five and one fifth, say what is the interest of sixty-two and a half for three months and one fifth?" In Greece the interest (*τόκος*) was apparently not restricted by laws but the rate varied from 12 per cent to 18 per cent. In Rome, interest was called *fenus*, or, later, *usura* (generally in the plural, *usurae*). The rate was at first unrestricted, but the *Duodecim Tabulae* (450 B.C.) limited it as between Romans to 8½ per cent. The *Lex Genucia* (342 B.C.) prohibited the taking of interest, but, like the medieval law, it was probably laxly enforced. In later Roman times the Eastern custom of monthly interest came into use, the ordinary rate being 1 per cent, or 12 per cent per annum. In Cicero's time 48 per cent was allowed, but by the time of Justinian this had been reduced to 6 per cent. Some idea of percentage appears in the *usura centesima*, or 1 per cent per month. The "id quod interest" of the Middle Ages came in the thirteenth century to be agreed to in advance, and Leonardo of Pisa (see FIBONACCI) gives problems involving 20 per cent. Matthew Paris says that in his time 10 per cent was exacted every two months, and that thus the unscrupulous "circumvented the needy in their necessities, cloaking their usury under the show of trade." The supposed antagonism of the canon law to all forms of interest was seriously questioned in the fifteenth and sixteenth centuries (as by Franciscus de Platea, *Opus de restitutionibus usurarum et excommunicationibus*; Johannes Nieder, *Tractatus de contractibus mercatorum*, and others), and as a result the subject appears in many of the early printed arithmetics. For example, Calandri (1491) speaks of lending money "per 3 anni a 10 per cento lanno." Some of these writers introduce the subject under protest, as a "diabolical" one, as in the case of Cataneo (1546), Gemma Frisius (1540), and Pagani (1591). From that time to the present, the topic has appeared in practically all arithmetics.

Compound interest was known to the Romans, and was not forbidden by the earlier laws. It appeared in printed arithmetics in the sixteenth century as interest "*à capo d'anno*" (compounded from the first of each year), and "*à capo d'alcun tempo*" (compounded from the beginning of some other fixed period). From the Italians the latter passed over to the French as "*merite à chef de terme*" (Trenchant, 1566), and to the Dutch as "*interest op interest*". It was unjustly charged that compound interest was chiefly used by the Hebrews ("*vsitato da gl'hebrei ne suoi Banchi*," as Pagan writes in 1591), and it was occasionally called by their name ("*che chiamano Giudaica*," as the Italian edition of Gemma Frisius misspelled it in 1567, "*Een loodtsch profijt*," as Vander Schuere gave it in 1600).

The method of reckoning simple interest has never been settled. The year is about 365½ days long, and hence there is practically no such thing as exact interest. For convenience 360 days are taken for the year in ordinary computations, and 365 days for more accurate work. Tables were early constructed to facilitate computation, and they appear in many of the first printed arithmetics.

As an educational topic, interest usually appears among the early applications of percentage. The subject has become unduly complicated in the schools through the elaboration of problems requiring the finding of the time, rate, or principal. The chief emphasis should always be laid upon the finding of the interest, the other cases demanding relatively little attention.

The growth of banking facilities has developed short-term notes to such an extent that the subject as formerly taught is losing much of its practical value. Interest is now commonly paid every thirty, sixty, or ninety days, or else every year, and we may reasonably expect a gradual simplification of the subject as taught in the schools. D. E. S.

**INTERFERENCE OF HABITS.** — Mental processes of all types are so interrelated that no single phase of mental life can develop without influencing all of the other types of activity. The same is true in general of the physiological processes of body activity. Thus, if one moves a certain portion of the body, the circulatory system responds by abstracting blood from other parts of the body and sending it to the exercised region. If now the individual trains himself so that a certain portion of his body, or a certain type of thought, is highly cultivated, he may thereby interfere with an equally high development of other phases of his nature. Examples of interference of mental habits can readily be drawn from ordinary experience. The individual who is very much interested in natural objects is not likely to develop an equal degree of interest in literary

forms. The individual who has learned one form of handwriting cannot so readily take on another type. In short, the negative side of habit cultivation is one which deserves very full recognition in educational discussions. Whenever a habit has been perfected, the possibilities of developing other habits are correspondingly curtailed. When two habits must be cultivated side by side and mutually interfere with each other, they require more exercise for their perfection than would be required for a single habit unaccompanied by the interfering type of activity. The whole matter here under discussion relates itself to the problem of formal discipline (*q.v.*). C. H. J.

See HABIT.

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**INTERFERENCE TONE.** — See COMBINATION TONES

**INTERMEDIATE GRADES** — The middle grades of the elementary school, always the fourth and fifth, and sometimes inclusive of the third or sixth grades. H. S.

See ELEMENTARY SCHOOLS, PRIMARY GRADES; GRAMMAR GRADES, GRADING AND PROMOTION

**INTERMEDIATE HIGH SCHOOL** — A term applied, in a few cities, to a school intermediate between the elementary school system and the high school proper, and including parts of each. The city of Berkeley, Cal., offers a good illustration of the use of the term. Here the first six years of the elementary school system are taught by grade teachers, and along grade lines. The seventh, eighth, and ninth years are grouped together, in separate buildings, termed Intermediate High Schools, and are taught by teachers who have had college training, and on the departmental system. (See DEPARTMENTAL SYSTEM.) The course of instruction during these years is materially enriched, and certain options are offered. These schools also serve to make the transition to the high school easier. The tenth, eleventh, and twelfth years then constitute the regular high school. The plan serves also to relieve the pressure for seating space in both the elementary schools and the high schools, as two or more intermediate high schools may be provided for in different parts of the city, and these serve to take two grades out of each elementary school and one out of the high school. While not saving anything in classrooms, it provides better for the educational needs of the city. The main argument for the plan, however, lies on the educational side. E. P. C.

See HIGH SCHOOLS, SIX-YEAR.

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**INTERMEDIATE SCHOOLS** — See ELEMENTARY SCHOOLS; GRAMMAR GRADES; INTERMEDIATE HIGH SCHOOL; GERMANY, EDUCATION IN, under Middle Schools.

**INTERMISSION** — See RECESSES; SESSION, LENGTH OF.

**INTERNAL SPEECH, INNER SPEECH.**— The efforts to carry on ideational processes are accompanied by certain incipient contractions of the vocal organs. These incipient contractions of the vocal organs can be shown to be of the highest importance in the formation of ideas. Whenever they are interrupted, the individual is handicapped in memory and in clearness of recognition. The distinction between internal speech and ordinary speech is not great in a child. Here the tendencies are always strong toward external, complete expression, but as development goes forward the individual suppresses more and more the grosser forms of activity, and carries on his mental processes with the aid of internal speech alone. C. H. J.

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**INTERNATIONAL CONGRESS IN PEDAGOGY** — See PARENTHOOD, EDUCATION FOR.

**INTERNATIONAL CONGRESS OF HOME EDUCATION.** — See PARENTHOOD, EDUCATION FOR.

**INTERNATIONAL CONGRESSES OF EDUCATION** — Educational congresses have been held in connection with practically all the international expositions (*qv*) of the last half century. There was an educational conference in connection with the international exposition held at London in 1851, at which representatives from Germany, France, and the United States joined English educators in the discussion of the educational aspects of the exhibits and other topics of international interest. The recently organized kindergarten (*qv*) in Germany was one of the subjects discussed at the London conference. Americans who participated in this conference were Henry Barnard, Walter R. Johnson, and Mrs. Emma Willard (*qv*). There were also conferences on elementary, secondary, and higher education at the Paris expositions of 1855 and 1867. President F. A. P. Barnard (*qv*) was the official representative of the United States at both congresses. Somewhat broader in scope and more international in character was the conference held at the Vienna exposition of 1873. The various phases of infant education and child welfare — the crèche, the *salle*

*d'asile*, the kindergarten, the care and training of defective children — the blind, the deaf, and the feeble-minded; elementary education, school gardens, and sex in education were among the subjects presented. The United States was represented by John Eaton, John D. Philbrick, and Edward Seguin (*qv*).

Four international congresses of education have been held in the United States, — Philadelphia, 1876, New Orleans, 1885, Chicago, 1893, and St. Louis, 1904. At the international conference on education held in connection with the exposition which celebrated the first anniversary of American Independence, thirteen foreign countries and most of the states of the American Union were represented. Sir Richard Barry of Australia presided, and Commissioner of Education John Eaton organized the program, which included ten topics for discussion, — courses of study, methods of instruction, supervision of schools, pedagogical museums and exhibits, technical education, training of teachers, the kindergarten and elementary schools, university and professional education, and the education of women.

The third Paris conference was held in connection with the international exposition of 1878. Besides the general congresses there were numerous special conferences on the education of the blind and deaf, technical and industrial education, etc. The United States was represented by John D. Philbrick, James P. Wickersham, and F. A. P. Barnard (*qv*).

There was also a general conference on education at the Brussels exposition of 1880, at which William T. Harris represented the United States.

The second American congress was held in connection with the international cotton exposition at New Orleans, February, 1885. John Eaton, Commissioner of Education, presided. Besides the general meetings, there were departmental meetings devoted to elementary, secondary, and superior instruction, school architecture and hygiene, care and training of defective, dependent, and delinquent children, national aid to education, care of the Indians, and educational journalism. The fourth Paris congress was held in 1889, at which M. Gréard (*qv*) presided. There were three general congresses of education — primary, secondary, and superior instruction — and six special congresses — physical education, commercial and industrial education, psychology, mathematics, and chemistry.

The third American congress was held at Chicago in 1893 in connection with the Columbian exposition and under the auspices of the National Education Association (*qr*). William T. Harris presided. Besides the general sessions there were fifteen departmental congresses, including higher, secondary, and elementary education, experimental (genetic) and rational psychology, school supervision, manual training; the kindergarten, training

## INTERNATIONAL CONGRESSES

of teachers, and educational journalism. Most of the countries of the world were represented. The fifth and last Paris congress was held in 1900. It included practically every phase of educational activity, and conferences (more than twenty) were in session for two months.

The fourth American congress was held at St. Louis, September, 1904. Its purpose was to "bring to the consciousness of the world the too much neglected idea of the unity of truth." In consequence the congress was organized into seven general divisions — normative science, historical science, physical science, utilitarian science, mental science, social regulation, and social culture. These divisions were again subdivided into a great number of departmental conferences (128 in all), in each of which the fundamental methods and the progress of the century formed the basis of the addresses. A second international congress of education was held at Brussels in 1910. Besides the general congress on popular education there were numerous departmental congresses.

In addition to these general congresses of education, there have been a number of special congresses, such as the International Congress of Home Education, with meetings at Liège in 1905, Milan in 1906, and Brussels in 1910; the International Congress of School Hygiene at Nuremberg in 1904, London, 1907, and Paris, 1910; the International Congress of Psychology at Paris, 1889, London, 1892, Munich, 1896, Paris, 1900, Rome, 1905, and Geneva, 1909; the International Congress of Technical Education at Bordeaux, 1886, Paris, 1889 and 1900, London, 1897, and Brussels, 1910; International Congress of Educators of the Deaf at Paris, 1878 and 1900, Milan, 1880, Brussels, 1883, Chicago, 1893, and Edinburgh, 1907; and International Congress for the Education of the Blind at Paris, 1900, Brussels, 1902, Naples, 1909, and Cairo, 1911.

W S M

See EXPOSITIONS, INTERNATIONAL, AND EDUCATION

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**INTERNATIONAL EXCHANGE OF TEACHERS AND PROFESSORS** — See TEACHERS AND PROFESSORS, INTERNATIONAL EXCHANGE OF.

**INTERNATIONAL LAW** — See POLITICAL SCIENCE

**INTERNATIONAL PEACE, EDUCATIONAL ASPECTS OF.** — See PEACE, EDUCATIONAL ASPECTS OF

**INTERNATIONALISM, FOUNDATION FOR THE PROMOTION OF, THE HAGUE, HOLLAND** — The main purpose of this Foundation, organized in 1910, is to promote internationalism in movements for intellectual and social progress, and is part of the broader movement for world's peace. It aims to establish permanent international organizations dealing with related problems and grouped according to related interests. Three such bureaus already exist: Bureau de la Commission permanente des Congrès internationaux de Médecine (1909), Bureau permanent de la Fédération internationale de Pharmacie (1910), and the Bureau permanent de l'Institut international de Statistique (1912). Other bureaus are contemplated for pure science and letters, hygiene, and technology. The leading spirit in the movement is Dr P H Eijkman, director of the Preliminary Office of the Foundation and author of *L'Internationalisme médical* and *L'Internationalisme scientifique*.

See SCIENTIFIC SOCIETIES

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**INTERPRETATION** — Every impression has added to it in individual experience certain meanings, which are derived through comparison and memory. These added phases of experience which enlarge the significance of a given impression are called interpretations. Whenever, therefore, an impression is enlarged upon through mental activity we have an example of interpretation. In common usage,

## INTERVAL

this term is employed to cover such cases as translation of a passage from a foreign language where the additional factors are the elements of the vernacular which are used to explain the foreign terms. An example of psychological meaning is that of a sound which in addition to being heard is amplified by association and understood as a word. C H J

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STOUT, G F. *Manual of Psychology*, Bk II, ch II (New York, 1899)

**INTERVAL.** — The lapse of time between one event and another is known as a temporal interval, the qualitative difference between one tone and another is known as a tonal interval, distance in space is designated a spatial interval. In general, any transition from one point to another involves the traversing of an interval. C H J

**INTERVAL.** — See MUSICAL TERMS

**INTOXICATION** — In the broadest sense any kind of poisoning, usually restricted to the mental and physical effects following an overpowering dose of poison, and popularly used to designate the mental condition following the continued or excessive use of alcoholic liquors.

Two kinds of intoxication are recognized, that of endogenous and that of exogenous origin. Endogenous intoxication is due to the poisons (toxins) manufactured within the body by its different organs, such as those of faulty metabolism from disease of the liver or of the gastro-intestinal tract, and the condition is then known as or called autotoxic. The exogenous intoxications are due to the introduction into the body of substances that act deleteriously upon the organs, and especially upon the nervous system. Intermediate between these two kinds of intoxication are the intoxications due to toxins produced by micro-organisms. In this form of intoxication the micro-organisms are introduced from without, but the formation of the toxins takes place within the body. Because of the latter fact these intoxications are usually classed with the endogenous.

**Endogenous Intoxication.**—Normally, digestion is the chemical breaking up of the food into simpler compounds that may be absorbed and utilized for the upbuilding and the repairing of the body. Abnormal conditions occur, however, in which the chemical division of the food does not stop when the food is fit for bodily consumption, but continues to the elaboration of some products that are deleterious to the organs. With the normal working of the kidneys and the liver most of these products are taken care of, are rapidly changed into innocuous compounds and excreted. In the normal working of the body tissues are broken down and the metabolic products are eliminated

## INTOXICATION

through the joint action of the kidneys and the liver. It requires the normal activity of both of these organs, and of many others, to keep the body in a normal chemical condition, and if these organs be diseased, there may be too great a formation or a lack of elimination of the waste products, with the result of poisoning all the tissues. This is in an autotoxic condition.

The auto-intoxication effects from diseases of the thyroid glands are well recognized. The congenital absence of the gland is productive of imbecility (*qv*) of the form known as cretinism (*qv*). In exophthalmic goiter hallucinations and states of anxiety and of agitation are found. In myxædema, the mental symptoms are stupidity, apathy even to the degree of complete dementia, attention, apprehension, association, and memory defects. In this connection it is worthy of note that Kraepelin at first grouped dementia precox with thyrogenous insanity, and there have been repeated attempts to explain all the symptoms in dementia precox from an autotoxic standpoint.

**Exogenous Intoxication** — Most drugs, when taken in sufficient quantities, produce mental and physical symptoms that may be called intoxications. Certain drugs have this property more than others and are called intoxicants, hypnotics, narcotics, and anæsthetics (See ANÆSTHESIA). Among these we find ether, chloroform, chloral and its derivatives, sulphonal, trional, paraldehyde, urethane, veronal, hedonal, ethyl and methyl alcohols, and nitrous oxide. Opium and its derivatives (*eg* morphine), cocaine, atropine, hyosine, salicylates, mercury, lead and many other substances give similar symptoms of intoxication. Some of these produce intoxication effects only after long-continued use, and the effects are somewhat similar to those of chronic poisoning. Lead poisoning may result in a condition similar to that of alcohol. Hallucinations, agitation, anxiety, incoherence, disorientation, and intellectual defects may be present. Morphine brings about hyperæsthesias, hallucinations, slow and slightly incoherent mental state, but usually memory is not impaired. For the effect of alcohol see ALCOHOL, USE AND PSYCHOLOGICAL EFFECT OF.

Although most of the intoxications of exogenous origin are found in adults, it should be remembered that children may be similarly affected. The use of soothing syrups, of certain patent medicines, and even of physicians' prescriptions containing any of the drugs mentioned above may produce intoxication. It is well known that soothing syrups contain morphine in some form, and once the habit is formed in a child we have a condition similar to that of the adult morphine fiend. Many patent medicines contain alcohol, and from their use (or abuse) there may result an alcohol intoxication, usually of a chronic nature.

Whenever a child exhibits any degree of stupidity, of incoherence, or of agitation, and always when hallucinations are present, a careful examination regarding the food and drink should be made. Special attention should be paid to the quantity of candy and its nature, for it is known that alcohol may be formed in the intestine from ingested sugar, and it may be introduced in the form of "brandy drops," which are not uncommonly sold to children. Lead in toys and in drinking water is another common intoxicant, but the symptoms are usually chronic. S. I. F.

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**INTROSPECTION.**—This is the method of psychology whereby the individual observes his own internal mental processes. For example, one has a feeling of pleasure, and when he notes this fact and observes its character he is introspecting his own mind. Attention has always been called to the difficulties of such introspective observation. The will to turn one's attention upon one's self interferes with the normal flow of normal processes. Most introspection is therefore retrospection. Formerly it was said that introspection was the only method of psychological investigation. With the development of experimentation in psychology it has become obvious that one can study the mental activity of another individual without coming into direct contact with the inner mental processes involved. C. H. J.

See **PSYCHOLOGY**.

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**INTUITION.**—A name given to direct, as distinct from mediate or logical knowledge. In the history of thought two types of intuition have been discriminated: sense perception and rational perception. With respect to the former, the chief problem has been whether it is in and of itself a mode of knowledge, or whether it is a mode of judgment, that is, of inferential interpretation. If the former, there is such a thing as knowledge without thinking; in the latter case, the instantaneous character of a perceptual intuition expresses the fact that recurring previous inferences have finally formed an automatically operative habit. The perception is then, in its strict sense, a *re-cognition*, a knowing in terms of prior knowings that involved judging. In this controversy, the party that held that perception was acquired rather than primitive

intuitive knowledge is admitted to have been successful. However, as far as the philosophical point at issue was concerned, this conclusion was offset by recourse to sensation as a substitute form of immediate knowledge. The doctrine of rational intuition was first systematically developed by Plato. He felt the need of some way of knowing which should combine the rationality of discursive, or demonstrative, knowledge with the directness and vitality of pure immediacy. So he introduced the conception of a face-to-face perception by pure reason of ultimate absolute essences (see **IDEA**). This intuition involved a mutual interpenetration of knower and known and an assimilation of the former to the latter. This motif was developed by the Neo-Platonists in their conception of an ecstatic vision transcending all logical categories, and by the mystic school of Christian theologians in the idea of the beatific vision of God.

In the Platonic tradition rational intuition was an envisagement of absolute reality, and implied a quasi-mystic factor. After the collapse of the doctrine of innate ideas (*q. v.*) the rationalistic anti-mystic school introduced the idea of rational intuition of abstract truths, like those of morals and mathematics. This doctrine of an immediate certitude of first and necessary truths became the bulwark of the Scotch school in opposition to the skeptical turn given empiricism by Hume. Kant employed the notion of an intuitive understanding as an ideal of knowledge, unattainable but useful in providing a limiting notion by which both sense perception and reflective judgment could be criticised and their pretensions to yield more than relative knowledge exposed. In contemporary thought Bergson has introduced an interesting variation of the idea of rational intuition. According to him, logical or discursive intelligence has been evolved in the interests of action, and is accordingly quite unadapted to the speculative task of grasping Reality in itself. Intelligence and instinct represent, however, diverging lines of evolution out of a common reality; while a sort of vague penumbra of instinct still surrounds the clear-cut outlines of intellectual knowledge. By retracing that phase of the evolution of reality which has taken the road of instinct, human beings may by an extreme effort of will bring about a fusion of intellectual results with the residual penumbra of instinct they still directly possess, and thereby secure at least a fleeting glimpse of the inner creative impetus of reality itself. J. D.

See **EMPIRICISM**; **IDEA**; **INNATE IDEA**; **MYSTICISM**; **NEO-PLATONISM**; etc.

**INVENTION.**—A general term referring to that type of mental activity whereby one departs from experience which he has had and works out a novel combination (See **IMAGINATION**, **IDEAS**) In its usual form invention

realizes itself in the construction after the pattern of the mental recombination of some external mechanism. Thus, the inventor of a machine, after working out the relations between the parts of the machine in his mind, realizes his ideas in some actual construction.

Royce has shown that the range of individual possibility of invention seems to be limited by certain habits of the individual's life. One cannot deliberately invent a new form without exhibiting his natural tendency to operate within a fairly limited range of possible forms. That individual who is capable of the largest number of unique combinations is said to be most inventive. His mental activities are closely related in type to biological variations (q v.).

C. H. J.

See GENIUS; IMAGINATION; IMITATION

**Reference: —**

ROYCE, J. *Outlines of Psychology*, ch. xiii (London and New York, 1903.)

**INVENTIONAL GEOMETRY.** — A term rather loosely used in the United States to designate an introduction to elementary geometry, the pupil being led to discover for himself the theorems he is to prove, and to invent the proofs. It is substantially the same as the heuristic teaching of the beginnings of geometry in the German schools. The Germans have an expression, *Vorschule der Geometrie*, that happily represents this initial stage. In this are developed the fundamental concepts of plane and solid geometry, and the mensuration of the simplest forms. This is followed by easy propositions relating to angles and triangles, with simple constructions by the aid of the ruler and compasses. This is taken up in the spirit suggested by the name Inventional Geometry. The latter term is not a fortunate one, since it gives the impression that it refers to a kind of geometry different from that of the secondary school, as is the case with the projective and descriptive geometries, when it really refers only to a method of teaching a part of that geometry to young pupils. For this reason it is not liable to be used extensively. The spirit suggested by the term is, however, worthy of serious attention. Up to the present time the work in geometry in the elementary grades has been little besides mensuration, and under the present school conditions there is not likely to be any change in this limitation. With departmental teaching in grades seven and eight it would be quite possible to introduce the German plan.

Inductive geometry is, as the term indicates, substantially synonymous with inventional geometry as it is usually considered. The first steps in any science may properly be inductive, leading to the discovery of probable truths. This should be followed by the deductive stage in which the probable becomes the veritable

D. E. S.

**INVOLUNTARY ACTION.** — That form of behavior in which no conscious choice or deliberation is present.

See WILL.

**INVOLUTION.** — The operation of raising a number to a power. The word comes from the idea of rolling or involving a number into itself by means of multiplication, and was not common until rather recently. The earlier arithmetics proceed at once to Evolution (the extraction of roots) without any preliminary work on Involution. Thus in *De Arte Supputandi* of Tostall (1522), division (*De partitione*) is followed by roots (*De quadrati et cubi lateribus investigandis*). The reason for the presence of a chapter on Involution in arithmetic is to be sought in the reflex influence of algebra on the subject. There is no need for the word in elementary arithmetic, nor for any more than a passing reference to the subject, together with the expansion of  $(a + b)^2$ , if square root is to be studied, and of  $(a + b)^3$ , if cube root is included. It may confidently be expected that the topic will cease to have any separate treatment in elementary arithmetic.

D. E. S.

**IOWA, STATE OF** — Originally a part of the Louisiana purchase, and organized as a part of the Territory of Missouri in 1812, Michigan in 1834, Wisconsin in 1836, and as the separate Territory of Iowa in 1838. It was admitted to the Union in 1846 as the twenty-ninth state. It is located in the western portion of the North Central Division, and has a land area of 55,475 square miles. In size it is one fourth larger than Pennsylvania, and nearly as large as the six New England states. In 1910 Iowa had a population of 2,224,771 and a density of population of 40.01 persons to the square mile.

**Educational History.** — The first school in Iowa was taught in 1830, near the present site of Keokuk. By the time of the organization of the territory in 1838 some forty schools were in existence in different places. All of these were private or subscription schools. The first school building, a combined church and schoolhouse, was erected near Dubuque in 1833. By the time of the admission of Iowa in 1846, there were one hundred log schoolhouses in the state. In January, 1838, five seminaries were chartered for Iowa by the Wisconsin Territorial Legislature, but no means of maintaining these schools was provided. Two colleges were also chartered at the same time. The first legislature under the territory of Iowa enacted the first school law in 1838. This provided for the formation of districts, the establishing of schools, and authorized the voters of each district to levy taxes for schools up to a total of five mills and \$10 per person. The second legislature in 1840 enacted a law which made provision for

free public schools, but the law was in advance of public sentiment, and practically remained a dead letter. The census of 1840 reported but one academy and sixty-three common schools in the territory. In 1841 the office of Territorial Superintendent of Public Instruction was created, but the superintendent made but a single report, and the office was abolished the next year. Though the territorial governors urged important action, little was accomplished during the territorial period.

The state constitution of 1846 made careful provision for the establishment of a system of state schools. A Superintendent of Public Instruction was provided for, to be elected for three-year periods by the people, the General Assembly was instructed to provide for a system of common schools by which a school should be kept up and supported for three months in each school district each year; and the school and university funds were enumerated and declared perpetual funds, the income only to be used. At the time of admission to the Union there were 416 school districts in the state. The law of 1847 made partial provision for carrying out the instructions of the constitution. The election of a Superintendent of Public Instruction was provided for, who was to look after the school fund and report to the legislature, means of organizing school districts, electing directors, raising funds for schoolhouses, the inspection of schools, and the examination of teachers by the inspectors were also provided for. School fund commissioners were to be appointed in each county to manage the county's share of the school fund and to report to the State Superintendent. In 1848 the legislature authorized a district tax both for schoolhouses and support, and in 1857 towns and cities were authorized to provide a graded school system, including schools in which languages other than English might be taught, and to levy a tax up to five mills therefor. Notwithstanding these efforts, the schools continued to be supported in large part by the rate bill until 1858, when they were made free, while inspection and examination of teachers existed little more than in name. In 1857 there were 3265 school districts in the state.

In 1857 a new constitution was adopted which made detailed and very advanced provision for a strong state school system. The constitutional provisions relating to education were divided into two parts. The first made detailed provision for a State Board of Education, to be elected by the people, and constituted it a legislative body with power to make laws and rules and regulations for the schools, levy taxes, make appropriations, and to appoint a Secretary, who was to supersede the Superintendent of Public Instruction and act as the executive officer of the board. This board was charged with the duty of providing for a system of common schools whereby a common school should be kept up in each school district

at least three months each year. A final clause gave the legislature power at any time after the year 1863 to reorganize the board and abolish its legislative functions, and this was done in 1864. The second part of the article on education made detailed provision for the care of the school lands and school funds, provided for its increase, and for the distribution of its income. In the preceding year the Governor of the state had been authorized to appoint a commission to revise the school laws of the state and to provide an efficient school system for Iowa. Horace Mann and the Chancellor of the State University, Amos Dean, were the two commissioners who framed the report. The commission submitted their recommendations in the form of a bill, December, 1856, but it was not until early in 1858 that any action was taken. The recommendations were then enacted into law by both the legislature and the new Board of Education. The "rate" was abolished, and the schools were made free to all the children in the state, the office of county superintendent was established for the examination of teachers and the visitation of schools, county institutes were to be established and to receive aid, county high schools were authorized, and the township was made the unit of organization, and the school districts were reduced to subdistricts. Later, in 1858, cities and towns were allowed to organize into independent districts, and since then this objectionable permission has been extended and extended, until now any village of 100 residents may segregate itself and form an independent district, and thus escape the burden of general taxation. From 334 independent districts and 1176 school townships in 1870, the number has increased to 3766 independent districts and 1182 school townships in 1905. The new law of 1858, providing for taxation for free schools, was enacted at a time of great financial stringency, when the people found it difficult to accept any new financial burdens, and the new legislative State Board of Education did a valuable service, during the few years of its existence, in steadying affairs and in upholding the new law until the people could get used to it and accept it. In 1864 the board was abolished and the office of State Superintendent of Public Instruction was revived. This law marks the establishment of the present school system, the changes since then having been nearly all in the nature of the expansion and development of the system.

In 1847 the State University had been founded, and in 1868 the Agricultural College was opened. In 1849 the first permission to form higher grades in schools had been granted; in 1851 the first graded school had been organized; and in 1870 the County High School Law was passed. In 1868 the standards for certifying teachers were raised, and in 1882 a State Board of Examiners was created and



state teachers' certificates authorized. In 1876 women were made eligible to hold school offices, and in the same year the state normal school was established. In 1896 school corporations were authorized to provide free textbooks if permitted to do so by vote of the people. In 1882 Arbor Day was instituted. In 1906 a compulsory education law was enacted. In 1911 the consolidation of schools and the transportation of pupils, free high school tuition, and county teachers training classes were provided for.

**Present School System** — The school system of Iowa, as at present organized, is as follows. At the head is a State Superintendent of Public Instruction, elected by the people for two-year terms. He is charged with the duty of preparing and distributing courses of study for the rural and high schools of the state, of collecting and publishing certain kinds of statistical information, of preparing questions for the use of county teachers' examinations and grading the papers; of rendering opinions and determining appeals from the decisions of the county superintendents, of calling the county superintendents together in convention, of designating a time and place for holding county institutes and approving the conductors selected, and of making an annual report to the Auditor of State and a biennial report to the Governor. His salary is \$2200, with \$300 for traveling expenses. He is also *ex officio* a member of the State Educational Board of Examiners and president of the board, of the board of regents of the state university, of the board of trustees of the State College of Agriculture and Mechanical Arts, and of the board of trustees of the state normal school, and president of this board.

The State Educational Board of Examiners is the nearest approach to a State Board of Education that Iowa has had since the abolition of that board in 1864. It was established in 1882 to hold examinations for state teachers' certificates, and is composed of the State Superintendent of Public Instruction, the president of the state university, the principal of the state normal school, and two persons appointed by the Governor for four-year terms, one of whom must be a woman. They are charged with the duty of holding two examinations annually for state certificates and state diplomas, they may issue special certificates for special lines of work, and may validate certificates from other states if these have been issued on equivalent requirements. This board is also a board of inspection and supervision of schools for the training of teachers, approving institutions, and providing rules for the certification of graduates of the approved institutions. The board also makes out lists of books for which the library fund may be spent by the School Directors of the state.

For each county a county superintendent is elected by the people for two-year terms.

He is to serve as a means of communication between the State Superintendent and the township or district school authorities, must visit the schools of the county, must hold four examinations for county teachers' certificates each year, using questions prepared by the State Superintendent, and transmit the answer papers, with his opinions and impressions, to the State Superintendent for grading, may conduct a special examination with the permission of the State Examination Board, if there should prove to be a shortage of teachers for the county; must conduct an annual county teachers' institute, must see that all school laws are enforced, and must make an annual report to the Superintendent of Public Instruction. To qualify for the office, a county superintendent must hold a first-grade county teachers' certificate, a state teachers' certificate, or a life diploma. The salary is \$1250 a year for all counties. There also exists in each county a rudimentary type of a county board of education, consisting of the county superintendent, the county auditor, and the county board of supervisors. The duty of this county board seems to be only to submit the question of county uniformity in school textbooks to the voters of the county, when petitioned to do so by one third of the school directors of the county, and to adopt uniform textbooks for the county in case the voters decide that they want county uniformity.

Aside from a certain centralized control over teachers' institutes, and the examination of teachers, Iowa may be said to represent a decentralized system, somewhat analogous to that of certain New England states, as the greatest power and authority is in the hands of the township and district school corporations. Each congressional township was created a school township by the law of 1858, but since then great numbers of independent districts have been organized. While the township is nominally the unit of organization, with subdistricts, as a matter of fact, any city, town, or village having 100 residents, and any rural subdistrict may be set off as independent school districts, having their own board of school directors, escaping township taxes, and managing their own affairs, subject only to the control of the county and state superintendents, as enumerated above. This is the weakest feature of the Iowa school system. Subdistricts and townships hold annual school meetings. Women are eligible for school offices, and may vote on all questions relating to taxes and the voting of bonds. Subdistrict annual meetings have the power to elect a member of the board of school directors, and to vote extra subdistrict taxes for maintenance or for schoolhouse purposes. The township annual meeting has power to direct a change of textbooks; to provide for free textbooks; to add to the branches of instruction; to sell, lease, or let school property, to authorize the

construction of roads to the schoolhouses; and to vote bonds and a schoolhouse tax up to ten mills. Township boards are required to take an annual school census in June, to notify the county superintendent when the schools are to begin; to determine the amount of the teachers' and contingent fund necessary, and to notify the county board of supervisors, whose duty it is to levy it, to prescribe the course of study for the schools, to care for the school property, locate schoolhouses, determine what schools pupils may attend and fix the length of term; to carry into effect the legal instructions of the annual school meeting, to elect teachers and dismiss them for cause; to designate school visitors from among their own number; and to make an annual financial report to the annual meeting and to the county superintendent. Boards of directors may also contract with other corporations to teach children if more convenient, or may furnish transportation, if cheaper, either within or without the township; may establish graded union or high schools, of their own volition, may establish kindergartens and employ a township superintendent, may petition the county superintendent for a vote on county uniformity and free textbooks, may authorize each director to furnish fuel, supplies, and a teacher for his subdistrict; must expend between five and fifteen cents per pupil for the school library each year, and may expend up to \$25 per school per year for library and apparatus; may appoint a truant officer, may contract for all the textbooks used in the schools and buy and sell them to the pupils at cost, furnishing free books to indigents, or they may furnish them free to all pupils and pay the expense out of the township contingent fund, if so directed by the annual school meeting. The treasurer of the board of directors receives all money due the township or district and pays the same out on the order of the president and secretary of the board.

**School Support.** — At the time of its admission into the Union, Iowa received the sixteenth section in each township, or a total of 905,134 acres from the government, for the benefit of common schools. The 500,000 acres of land granted to new states, some saline lands, 5 per cent of the sale of United States lands within the state (after 1857), and the net proceeds of the estates of persons dying without will or heir have been added to the permanent fund. The lands have all been sold, and a fund of about four and three quarter millions has been produced. The income on this was \$214,132 30 in 1905, and remains nearly constant from year to year. This is equal to about thirty cents per census child, five to twenty-one years of age, and is distributed to the counties by the State Auditor on this basis. No state school tax is levied or appropriated. The only state grant for education, aside from the appropriations for the support of the higher educational

institutions, is a grant of \$50 per county each year for the benefit of county institutes.

In each county a county school tax of not less than one nor more than three mills must be levied for schools, and the proceeds of this tax together with the income from the state school fund and the net proceeds of all fines collected for breaches of the penal laws, is distributed by the county auditor to the different school corporations of the county wholly on the basis of the school census. Each school corporation raises the balance of the money needed to maintain its schools by local taxation. When a district or town withdraws from the township organization and sets up an independent district, this action renders void any tax previously levied on the new independent district. The result of this is to effectually prevent any equalization of school burdens, as the wealthier subdistricts can escape all general taxation except the county tax. The local tax for contingent funds is limited to \$5 per census child and not over \$75 per school, and the local tax for teachers' salary fund is likewise limited to \$15 per census child or \$175 per school. Low teachers' wages are the result of such limitations.

**Educational Conditions** — The state is essentially rural and agricultural, and the large number of small schools which must be maintained is probably the cause of the low expenditure. Of the total population about 75 per cent live in country districts, and only about 16 per cent lived in the seventeen cities of over 8000 inhabitants. Of the total population 99.4 per cent are white, and about 85 per cent are native born. The foreign-born are chiefly Germans, Scandinavians, and English. The state consequently has no negro problem or foreign problem to deal with. The percentage of illiterates in the total population, ten years of age or over, was but 2.3 per cent, which, with Nebraska, was the lowest of any state in the Union. The compulsory attendance law requires that all children between seven and fourteen must attend school for sixteen weeks if physically and mentally capable and if living within two miles of a schoolhouse. Private and parochial schools must make attendance reports. Any school corporation may appoint a truant officer, but the means provided for enforcing the law are not such as to ensure any adequate enforcement.

In addition to the regular elementary school instruction, a number of counties provide some instruction in agriculture; about thirty cities and towns maintain kindergartens, a rapidly increasing number report instruction in manual training; and in domestic science. School libraries exist in all schools, and each school corporation must devote from five to fifteen cents per census child to the purchase of books for the school library. The law provides that the Bible shall not be excluded from the schools of the state, or from any state in-

## IOWA COLLEGE

stitution, and readings from the Bible with a repetition of the Lord's Prayer by the teacher and school is authorized.

**Teachers and Training.** — The state maintains one large and well-organized normal school for the professional training of teachers, which has a little over 200 graduates annually. In addition to the state normal school, a number of colleges assist the state in the preparation of teachers, being accredited for this purpose by the State Educational Board of Examiners, which is authorized to inspect and accredit such institutions, and to determine the conditions under which the graduates of these institutions may receive teachers' certificates. Normal training classes in high schools were authorized in 1911, and in time they will add materially to the number of trained teachers in the state. All teachers' certificates are issued by the state.

**Secondary and Higher Education** — Graded schools and high schools are to be found in all the cities and larger towns, and also in many of the independent districts and consolidated townships. The state is well supplied with high schools. No state or county aid is given to them, each being maintained by local taxation. Although provision exists in the law for forming county high schools, few have been formed, and the law has not been regarded as successful.

The University of Iowa (*qv*) at Iowa City, opened in 1855, and the Iowa State Agricultural College (*qv*) at Ames, opened in 1868, form the culmination of the public school system of the state. The state also maintains the Iowa Industrial (reformatory) School for Boys at Eldora; the Girls' Industrial (reformatory) School at Mitchellville, the Iowa College for the Blind at Vinton, the Iowa School for the Deaf at Council Bluffs, and the Iowa Institute for Feeble-Minded Children at Glenwood. E. P. C.

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**IOWA COLLEGE, GRINNELL, IA.** — See GRINNELL COLLEGE, GRINNELL, IA.

**IOWA STATE COLLEGE, AMES, IA.** — An agricultural and mechanical arts college for men and women founded by act of the state legislature in 1858. In the following year a

## IOWA WESLEYAN UNIVERSITY

farm of 640 acres was purchased for the use of the college. In 1862 the General Assembly accepted the land grant offered by Congress for the establishment of agricultural and mechanical arts colleges. By a state act of 1882 provision was made for giving a necessary liberal education in addition to the purely specialized courses. The entrance requirements are fifteen units. The college offers four five-year courses in engineering and fourteen four-year courses in engineering, the different branches of agriculture, veterinary medicine, general science, and home economics, all leading to degrees. The faculty consists of eighty-eight professors; there are eighty-four instructors and assistants. In 1911, 2307 students were enrolled in different courses, including short winter courses and music.

**IOWA STATE UNIVERSITY, IOWA CITY, IA** — A coeducational institution forming an integral part of the public educational system of the state. An act establishing the university in Iowa City was passed in 1847, but the opening was postponed until 1855. Until 1860 only a normal department was maintained. Subsequently the following departments, now colleges, were added: law (1868), medicine (1870), homœopathic medicine (1876), dentistry (1882), pharmacy (1885), graduate (1905), applied science (1905). Since 1909 the university, together with the State Teachers' College and the State College of Agriculture and Mechanical Arts, is under the control of the State Board of Education. The university plant consists of thirty buildings on a campus of fifty acres. The income is derived from invested funds and state appropriations. The university was among the first to organize university extension courses in different parts of the state, a movement which has met with success. Students are admitted on satisfying the entrance requirements of fifteen units. The usual university degrees are granted by the institution. The total enrollment in all departments in 1909-1910, including summer session, was 2352. The faculty consists of sixty-nine members of professorial rank and 150 instructors of other grades.

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**IOWA WESLEYAN UNIVERSITY, MT. PLEASANT, IA** — A coeducational institution founded in 1842 as the Mt Pleasant Collegiate Institute; the present title was adopted in 1854. It is under the auspices of the Methodist Episcopal Church. The university maintains an academy, college of liberal arts, normal, music, and commercial departments. The entrance requirements are fifteen units. The college, on the completion

of appropriate courses, grants the degrees of A B., B S., and Ph B. There is a faculty of twenty-eight members.

**IRELAND, EDUCATION IN. — Early History.** — *Under the Druids.* — In the most valuable information given by Cæsar about the druids (see DRUIDS, SCHOOLS OF THE) there is much which may be almost certainly transferred to the earliest teachers and schools of Ireland. The Irish term for a druid was *drui*, modern *draoi* (*dhree*), but its genitive is *druid*, from whence no doubt the Latin *druidis*. The Irish druids were the learned class in early Ireland, as they were in Gaul. They were the lawyers, poets, astronomers, and instructors of youth, and are intimately connected with all early Irish history and fiction.

The invading Milesians had, according to Irish legend, three druids with them in their ships, one of them the poet Amergin. They continue to be frequently mentioned, down to the times of the early Irish Saints. They are met with not only as teachers or tutors, but also as ambassadors and spokesmen. Kings were sometimes druids; so were poets. The word, indeed, seems to have been used with much laxity in early Ireland, and they do not seem there to have formed a definitely established order or caste, still less a regular sacrificial priesthood, as they did upon the Continent, nor does there appear anything to connect them in any way with human sacrifice. In the Latin lives of the Saints the word *druid* is generally translated by *magus*. Some of the early saints appear to have lived on fair terms with them.

When the druid died out as a druid is doubtful; the word evidently had an evil sound in the ears of the early Christians, and, while much of the druids' teaching and school organization must have been quietly perpetuated, they themselves either disappeared or else silently adapted themselves to the changes introduced by Christianity. The doctrine of metempsychosis, which was so vigorously insisted upon in Gaul (*cf* Cæsar *de Bello Gallico*, VI, 14) was perfectly familiar to the early Irish, as saga after saga shows us, though there is nothing to prove that the Irish druids elevated it into a doctrine to be taught in the schools with the deliberate ethical purpose of making men valiant. Again the early books of the Brehon law (and the druids appear to have been the first brehons or judges) contain many curious teachings about the heavenly bodies, the colors of the various winds, and the like, things about which, as Cæsar tells us, the Gaulish druids taught also. There are many other indications that the Gaulish and the Irish druids had much in common, as the chief teachers of their respective nations.

*Schools of the Bards and Brehons.* — With the gradual abolition of paganism in Ireland the druidic name seems to have died out, and

their place to have been taken by the bards and brehons, who were probably their direct, gradually christianized, successors. We know that, side by side with the colleges of the early clergy, there flourished, perhaps in a more informal way, the purely Irish schools of the bards and brehons, but though, thanks to the very numerous lives of early saints, a great deal is known about the Christian colleges, little can be discovered with certainty about the bardic institutions, which represented something much more antique than even the very earliest schools of the Christians. Unlike the Christian schools, however, they do not seem until the end of the sixth century to have been centered in a fixed locality or in a cluster of houses, but to have been peripatetic. The bardic scholars appear to have grouped themselves rather round personalities than localities and to have wandered freely over the entire country, gladly supported by the people. From what must have originally been the druidic school we can see gradually emerging the poet, the brehon, and the historian. At first a poet was by virtue of his office a judge, and there is an interesting account of how through their predilection for technical language which none but themselves could understand they lost this privilege in Conor MacNessan's time, shortly before the Christian era (*Irische Texte*, III, B, 1, pp 187–204). But we lack exact data to show how and when the historian, the poet, and the brehon differentiated themselves from the more primitive druid. The brehon and historian were frequently united in the same person, for where the lawgiver's judgments concerned, as they so frequently did, the holding of tribal land by virtue of descent, it was almost necessary for him to be a tribal historian as well as a lawgiver; and as much of both tribal genealogy and law was enshrined in verse, he had to know something about this as well. The poets, however, were not necessarily historians or judges. They were a class in themselves, and they were at one time so numerous and so insolent that they constituted an intolerable burden upon the country. Three separate attempts (Keating's *History*, and MacFirbis's *Genealogies*) were made to get rid of them; but each time they found refuge in the northern province of Ulster. At length at the end of the sixth century, a period when, according to the Irish historian Keating (*History*, O'Mahony's translation, p 446), nearly one third of the free tribes or patrician families had embraced poetry as a pursuit, a determined effort was made by King Aedh MacAmmirech to shake off their incubus. He held a great convention of all Ireland at Drum Ceat, near Limavaddy, in the north of Ireland, to discuss several matters of importance, not the least of which was the banishment of the poets.

It was the intervention of St. Columcille, a poet himself, who saved the bardic institution

from extinction or banishment on this occasion. The numbers, however, were cut down to a mere tithe of what they had been. The High King, the kings of the provinces, the chiefs of each territory, and the lords of each subdistrict were all allowed to keep their own Ollamh (*ollav*) or chief poet. None, except those specially sanctioned, were to be allowed to pursue a bardic calling. On the other hand, the order was compensated for this in another way. Their unchartered freedom and licentious wanderings were checked, but they now became for the first time possessors of fixed property and of local stability. Distinct public estates in land were set aside for their maintenance, and they were obliged in return to give public instruction to all comers in the learning of the day. Rathkenry in Meath and Masree in Cavan are particularly mentioned as bardic colleges then founded, where any of the youth of Ireland could acquire a knowledge of history and the sciences. The High King, the provincial kings, and the sub-kings were all obliged (MacFibris Ms., *Book of Genealogies*, Preface) by law to set apart a certain portion of land for the poet of the territory to be held by him free of rent, and a law was passed making the persons and property of the poets sacred. At the same time the amount of rewards which they were allowed to receive for their poems was legally settled. From this time forward, for nearly 1000 years, the bardic colleges, as distinct from the ecclesiastical, taught poetry, law, and history, and educated the lawyers, judges, and poets of Ireland.

There were two kinds of poets, the *file* (*filla*) and the bard, the first being the most important. The legal price of his poems was much greater than that of the bard. There were seven grades of *file*, differently named and of different dignity. In his first year the *file* had to learn fifty Ogams, and straight Ogams amongst them. He had to learn the grammar, called *uraicept na n-éigisne*, with its preface, and that part of the book called *reimeanna*, or courses, with twenty *dréachts* (story-lays?), six meters, and other things. The original course of study seems to have been taken in seven grades, but afterwards it lasted for at least twelve years or more (O'Curry *Ms Materials*, p. 290). Compare with this Cæsar's statement about some of the Druids' pupils continuing their study for twenty years. The highest poet was called an Ollamh (*ollav*) and the annalists give the obituaries of the arch-ollamhs as if they were so many princes. When a poet had at last, after twelve or twenty years of study, worked himself up through all the lower degrees and had attained the rank of an Ollamh, his knowledge, amongst other things, included the following. He knew three hundred and fifty different kinds of versification, he was able to recite and coordinate two hundred and fifty Prime Stories and one

hundred Secondary ones. The ancient and fragmentary *Miss (Irish Texts, III, Heft 1)* in which these details are preserved not only give the names of the meters which the poet had to know, but have actually preserved examples of between two and three hundred of them, taken from different ancient poems, almost all of which have long since perished. Nearly all the textbooks used in the career of the old Irish poet during his twelve years' course are lost, and with them have gone the particulars of one of the most unique and interesting civilizations in Europe. The bards, who were not nearly so important as the *files* were divided into two great classes, the Saor and Daor, or patrician and plebeian bards. There were eight grades in each class, each having a title and honor of his own. Each of these sixteen classes had his own peculiar meters, and the lower bard was not allowed to encroach upon the meters sacred to the bard next in rank. The elaborateness of the system they evolved, the prodigious complexity of the rules, the subtlety and intricacy of their poetical code are astounding, as was also the number of people who followed the profession of poet.

It was not until the Northmen (who first invaded the peaceful shores of Ireland at the close of the eighth century) had laid waste the country and thrown everything into the wildest confusion, that the distinction between the *bard* and the *file* was lost.

**The Great Christian Schools** -- St. Patrick (died 493?) and the early Christians of the fifth century spent most of their labor upon the conversion of pagans and the building of churches. Columcille (521-597) and the leading churchmen of the sixth century had leisure to give themselves up to the foundation of monastic institutions and the conduct of schools. By the middle of this century Ireland found itself dotted all over with schools, monasteries, colleges, and other foundations belonging to the Christian community, and books had already multiplied to a marvelous extent. The three patron Saints of Ireland, Patrick, Bridget, and Columcille had established their schools at Armagh, Kildare, and Iona. After them St. Edna, whom Dr. Healey (*Ireland's Ancient Schools and Scholars*, p. 164) calls one of the fathers of monastic life in Ireland, settled down finally about the year 483 on the rocky and nearly inaccessible Island of Aran Mór, and he was the first of the holy men who won for it the appellation of Aran of the Saints. Here he was visited by many other celebrated men, among them by Brendan the Voyager, whose wanderings, under the title of *Navigatio Brendani*, became so celebrated later on throughout medieval Europe. To him came St. Finnian, of Clonard, known later as the "Tutor of the Saints of Erin," Finnian of Moville, Ciaran of Clonmacnois, Jarlath of Tuam, and Carthach of Lismore. It is said that even St. Columcille himself in his youth

sought Aran to hold converse with him. St. Finnian's school at Clonard, hard by the river Boyne, was founded about the year 520, and even during his own lifetime became a great institution, and three thousand students are said to have gathered round it. It continued to grow in wealth and dignity until the ninth century, but after that time Ireland was in the throes of the Norse invasion, and it was plundered and destroyed twelve times, and burnt down wholly or in part no less than fourteen times. Clonfert on the Shannon was another great college, founded by Brendan the Navigator, and it is said to have produced three thousand monks. Fursa, whose visions were known all over Ireland, Britain, and France, and no doubt (through Bede's *History*) to Dante, was a grand nephew and pupil of Brendan. Even a greater school than Clonfert was that founded by St. Ciaran, the carpenter's son, about the year 544 at Clonmacnois, at a curve in the Shannon near Athlone. This college was resorted to impartially by all the various tribes of Ireland, and the most divergent races both from the North and South gave it assistance and buried their dead in its shade, so that it became the greatest university in Ireland, and produced some of the most distinguished scholars. But, like every other home of Irish civilization, it fell a prey to the barbarians. The Northmen plundered it or burnt it, or both, on ten separate occasions. Bangor on Belfast Lough founded by Comgall, the friend of Columcille, between 550 and 560, was, after Armagh, the greatest school in the northern province, "a noble institution," said St. Bernard (*Life of St. Malachy*). Columbanus, who evangelized large portions of Burgundy and Lombardy, St. Gall, the evangelizer of Switzerland, and Dungal, the astronomer, were all disciples of this college. St. Bernard says that the northern pirates slew as many as nine hundred of the inhabitants of Bangor. Other great institutions were Moville at the head of Strangford Lough in the County Down, founded by St. Finnian, who was born some time before A.D. 500, Clonenagh in Queen's County, founded by St. Fintan, Glendalough, founded by St. Kevin, Lismore, the great college of southeast Ireland, founded by St. Carthach, Cork College, founded by St. Finnbar, the school of Ross in Southwest Munster, founded by St. Fachtna, Innisfallen, founded upon an exquisite site on the lower lake of Killarney by St. Finan, and Iniscailtra, on an island in Lough Derg, founded by Columba of Terryglass, who died in 552. In addition to these, a great number of lesser schools existed, and they were crowded with students not only from Ireland, but from foreign lands. Bede tells us of the crowds of Anglo-Saxons who flocked over into Ireland during the plague about the year 664, and how they were all warmly welcomed by the Irish, who took care that they should be provided with food every

day without payment on their part, that they should have books to read, and that they should receive gratuitous instruction from Irish masters. Aldhelm, abbot of Malmesbury (a corruption of Mael-dubh's-bury, Maeldubh, its founder, having been an Irishman), tells us that, while the great school at Canterbury was by no means overcrowded, the English swarmed to the Irish schools like bees. The office of St. Cathaldus states that the school of Lismore was visited by Gauls, Angles, Scotti, Teutons, and scholars from other neighboring nations. The same was true of Clonmacnois and other foundations.

The original design of the founders of these schools may have been the propagation of the Christian religion, but it is certain that almost from the very first they taught the heathen classics and the Irish language side by side with scriptural and theological studies. All the knowledge of the time appears to have been taught through the medium of the Irish language, not merely theology but arithmetic, rhetoric, poetry, hagiography, natural science as then understood, grammar, chronology, astronomy, Greek, and even Hebrew. "In Ireland," sums up M. Darmesteter (*English Studies*), "the Classic tradition to all appearances dead in Europe burst into full flower." "The Renaissance began in Ireland seven hundred years before it was known in Italy", and again "at one time Armagh, the religious capital of Christian Ireland, was the metropolis of civilization." "In the next (sixth) century," says Babington (*Fallacies of Race Theories*, p. 122), the old culture lands had to turn for some little light and teaching to that remote and lately barbarous land (of Ireland)."

The Greek language, all knowledge of which may be said to have died out on the Continent ("had elsewhere absolutely vanished" says M. Darmesteter), was widely studied in Ireland. There is a Greek *Ms* of the Psalter, written in Sedulius's own hand (he was Abbot of Kildare about 820), now preserved in Paris, and at least a dozen other Greek texts written by Irish monks are preserved elsewhere in Europe. The knowledge of Greek, says Professor Sandys, in his *History of Classical Scholarship*, "which had almost vanished in the West was so widely dispersed in the schools of Ireland that if any one knew Greek, it was assumed that he must have come from that country."

*Irish Teachers on the Continent* — From about 600 to 850 A.D. was the most barbarous and the darkest period of the Middle Ages upon the Continent, a period when all study, both classical and ecclesiastical, was at its very lowest ebb. It was at this period, especially toward its close, that the Irish nation, by general acclamation the most cultured in Europe, sent forth the swarms of scholars to the Continent to teach and preach and found monasteries and preside over schools. About

the year 800 Cambrai was a celebrated rallying place of theirs "Not only Cambrai," says M. Dom Louis Gougaud (*Les Chrétiennes celtiques*, p. 289), "but also Rheims, Soissons, Laon, and Liège, had at one and the same period colonies of Irishmen" At Laon, indeed, thanks to the efforts of the erudite Hibernians, it became for a while the fashion to dabble in Greek "Bishop Hincmar tried it, and more, he who did not know his own language — according to his uncle Hincmar of Rheims — prided himself upon learning to speak in Irish" (*Hincmar opusculum LV Capitulum*, quoted by Gougaud) "If," says M. Gougaud, "we consult the evidence given by their contemporaries concerning the learned men that had come amongst them out of Ireland, we must acknowledge that they all show that they are conscious of being greatly in their debt for the progress realized in their studies. Irish knowledge is in their eyes something apart from all else, and worthy of their most pompous encomiums" (p. 293)

But with the evil days of the Vikings came change. The ancient monasteries, shrines, schools, and colleges, and all settled institutions of society offered to the fierce Norsemen the first objects of onslaught, and the shrines of the churches, above all, promised them plunder. For two centuries they made, to quote the words of the almost contemporary Irish historian, "spoil-land and sword-land and conquered land of her, ravaged her chieftainries and her privileged Churches and her sanctuaries, and they rent her shrines and her reliquaries and her books, and demolished her beautiful ornamented temples — in a word, although there were an hundred sharp, ready, cool, and never-rusting brazen tongues in each head and an hundred garrulous loud unceasing voices from each tongue, they could never relate or enumerate all the Gael suffered in common, both men and women, laity and clergy, noble and ignoble, from these valiant wrathful purely-pagan people" (*Wars of the Gael and Gall*, p. 51). One aim of the Norsemen was to destroy all learning. "It was not allowed," writes Keating, "to give instruction in letters . . . No scholars, no clerics, no books, no holy relics were left in Church or monastery, through dread of them. Neither bard nor philosopher nor musician pursued his wonted profession in the land" (Keating's *History*).

On the afternoon of Good Friday, Apr. 13, in the year of our Lord 1014, the dream of a Scandinavian kingdom in Ireland was shattered forever by the crushing defeat of Clontarf, where, however, fell the King of Ireland, his son and heir, and his son's son and heir, leaving the monarchy greatly imperiled and the High-Kingship thrown open, as it were, to competition — to any one who was powerful enough to wrest it to himself. Nevertheless the succeeding century and a half witnessed a great revival of art and learning, of schools

and scholarships. The books "drowned" by the Northmen were rewritten in the language of the period, the churches and monasteries rebuilt, the schools repeople, the bards and brehons reinstated, and some of the old civilized polity brought back. Even before the battle of Clontarf, King Brian had sent emissaries "to buy books beyond the sea and the great ocean," because, says the history, "their writings and their books in every church and in every sanctuary where they were had been burnt and thrown into water by the plunderers" (*Wars of the Gael and Gall*). It is from the brief period of comparative rest succeeding the battle of Clontarf that the most important relics of Celtic literature now in the world date.

The Irish still continued, however, to travel and preach. In 1076 they founded the great monastery of Ratisbon. That of St. James they completed in 1111. They are now to be found as far afield as Bulgaria and Poland. They founded the Monastery of Wurzburg in 1134, Nuremberg in 1140, Constanze in 1142, St. George in Vienna, in 1155, Eichstadt in 1183, St. Maria in Vienna in 1200, and scores of others.

*The Norman Invasion and Irish Learning.* — One hundred and fifty-five years after the battle of Clontarf, that is to say, in May, 1159, appeared the first Norman invaders, and these repeated, though perhaps in a milder form, the havoc and plunder of the Northmen. By the close of the century they had established themselves over Ireland. Then commenced that permanent warfare between the English and the Irish which rendered all literary scholastic and artistic advancement practically impossible. Ireland became, to use a graphic expression of the Four Masters, a "trembling sod." "Since the Norman invasion," wrote the late Miss Stokes, the highest authority upon this subject, "the native character of Ireland has best found expression in her music. No work of purely Celtic Art, whether in illumination of the sacred writings or in gold or bronze or stone was wrought by Irish hands after that century."

The exact position of learning and of education during the four centuries which follow are very obscure. The Normans almost invariably attacked church and monastic property, as being generally the least vigorously defended. They deliberately quenched the holy fire which had burned unceasingly in the shrine of St. Bridget from the fifth century onward,

"The Lamp which once shone in Kildare's holy fane  
And burnt through long ages of darkness and storm,"

and generally set themselves from the first against native Irish institutions, monasteries, schools, and colleges, both in church and state. They established churches and sanctuaries of their own, and to these institutions no native Irishman was to be admitted. Gradually, however, the bulk of the Normans became

largely assimilated with the Irish. They soon gave up talking Norman-French, and spoke and wrote only in Irish. The schools of the bards and brehons which existed throughout the island supplied them, as they did the Gaels, with their family poets, and as most of them adhered to the Brehon law as proper and more suitable to their surroundings than the English, they no doubt were dependent largely upon the Irish schools for their judges and historians also. In most or all of these schools, Latin was spoken as a second language. Every one of any education at all in Ireland spoke it fluently, and through it the Irish, cut off from England by the perennial war between the two nations, kept in the closest touch with the Continent. "They speak Latin like a vulgar language learned in their schools of Leachcraft and Law whereat they begin children and holde on sixtene or twentie yeares," wrote Campion in 1574. "I have no doubt," writes the Right Hon. Mr. Justice Madden in his book on the *Classical Learning in Ireland* (Dublin, 1908, p. 43), "that the use of Latin as a written and spoken language outside the Pale is a survival from the centuries during which Ireland was the University of Western Europe."

*Irish Schools under Elizabeth and her Successors* — Elizabeth's wars did much to break up the power of the native Irish and with them their schools and institutions. Their monasteries had, whenever the English could get at them, been already secularized by her father, Henry VIII, and the collegiate establishments connected with them broken up.

It was the deliberate policy of the English to destroy all the schools and institutions of the native Irish and to kill or banish their learned men, especially the poets. In the Pale, however, and in those parts of Ireland where the English plantation held there were some good grammar schools conducted on English lines which were not interfered with, and some of their best scholars went on to Oxford or Cambridge, generally Oxford. At one time great numbers of native Irish went there, too, but they were soon prohibited by law from availing themselves of this means of education, as Mrs. Green has shown in her *Making of Ireland and its Undoing*. The most ferocious laws of all were passed against the unfortunate poets, and many of them were hanged. James I followed the same policy. Under him the native schools seem to have been ruthlessly closed by Ussher, who became, later on, the Protestant Primate, on the convenient ground that the teachers did not conform to the established religion. Yet some of the bardic schools and of those of the brehons continued surreptitiously to exist, though in ever decreasing numbers and with diminishing prestige, until the first quarter of the seventeenth century. When the Confederate Irish rose to arms in 1642, they strove to reestablish their

native schools, and we find Rory O'More, the close friend of Owen Roe O'Neill, writing to Brussels and urging that the "learned and religious fathers" at Louvain should hasten over to Ireland with their Irish printing presses so as to open an Irish school "before Flan MacEgan dies." This MacEgan was an eminent brehon and head of a celebrated school of law and history in Lower Ormond at the time. The sword of Cromwell, however, put an end to this dream.

The bardic school, to follow the description of them given in the *Memoirs of Clanrickard*, printed in London, 1722, was usually a group of low whitewashed buildings lying in the hollow of a secluded valley or shut in by a thick, sheltering wood, far removed from human traffic and the noise and bustle of the great world. It had few apertures. Each student as he arrived was assigned a windowless room to himself with no other furniture than a couple of chairs, a clothes rail, and a bed. Those students who did not know all about the intricacies of the Irish metrical system, its syllabification, quartans, concord, correspondence, termination, union, laws of nudation, etc., were turned over to the inferior professors. After breakfast the students, having been allotted a theme, returned each to his warm but perfectly dark compartment to throw themselves each upon his bed, to think or compose until supper hour, when a servant came round with candles for each to write down what he had composed. They were then called together into the great hall and handed their written compositions to the professors, and chatted and amused themselves till bedtime. The schools always broke up on the 25th of March, and the holidays lasted for six months. Only members of bardic families as a rule were admitted to the bardic schools, and poetry as a profession ran very largely in special clans, thus tending from the fourteenth to the seventeenth century to become in a way hereditary. The O'Dalys were perhaps the principal poetic family of Ireland, but there were over a score of other families who followed poetry as a profession or from hereditary instinct, as the O'Clearys, O'CoFFEys, O'Higgins, Wards, etc.

Elizabeth having extirpated, so far as her power extended, both bards and brehons, and broken up the native Irish schools, set about giving the Anglo-Irish, the planters, and Protestants a university of their own in Dublin. To do this, she founded Trinity College, which has now flourished as a great seat of learning for over three hundred years, supported, however, largely by the lands plundered by the Queen from native Irish institutions. (See DUBLIN UNIVERSITY.) James I and his successor followed this up by founding a number of "Royal Schools," evidently intended as feeders to the new college, — Portora, Enniskillen in 1618, Armagh and Dungannon in 1627, and others. Peter Lombard, the Catho-



the Archbishop of Armagh, who died in 1625, describes in his *Commentary on the Kingdom of Ireland*, published on the Continent, in Latin, how it had been the steady policy of the English government to cut off all education from the native Irish, even before the difference in religion brought about by the Reformation gave them an additional excuse for doing so. And when the University, so long and so anxiously sought for by the natives, was at last founded *sumptibus indigenarum*, at the expense of the native inhabitants, "most capacious, most splendid," in the shape of Trinity College, Dublin, and they saw themselves excluded from it nominally on religious grounds, their indignation knew no bounds. But indignation availed them little. When they backed it with their swords, Cromwell beat them, and their last state was rendered worse than their former one.

The Restoration and the short-lived rule of James II did not avail very much to reinstate Irish learning or Irish schools. The period was too short and the times too troublous. Then came the defeats at the Boyne and Aughrim and the treaty of Limerick in 1691. After this, all hopes were shattered. The era of the Penal Laws against Catholics commenced, and as almost all the native Irish were Catholics, they were practically deprived of all education. Henceforth, so far as the education of the native Irish, who were the vast bulk of the Irish population, is concerned, it is as an organized thing nonexistent, picked up furtively at home or illegally acquired abroad. Stories are told of children deprived of books learning their letters on their fathers' tombstones. The possession of an Irish Ms might easily involve the owner in serious trouble or send him to prison. Many valuable books were buried or built up in walls. It was in a wall that the great valuable old Irish Ms, the *Book of Lismore*, was found during the last century. There were no native schools any longer existing except those of the kind later known as Hedge-schools (*q.v.*), where in fine weather the children assembled under the hedges. Still, despite indescribable educational hardships and privations, the classical tradition did not wholly die out. Crofton Croker (*Researches in the South of Ireland*) at the beginning of the last century mentions that "among the peasantry classical learning is not uncommon, and a tattered Ovid or Vergil may be found even in the hands of common labourers." For an account of these hedge-schools in later times, Crofton Croker and Carleton may be consulted. But, to sum up briefly, from the period of the battle of the Boyne down to about the year 1790, when Catholics were at last admitted to matriculate in Trinity College, though allowed none of its honors or emoluments, the words "education" and "Ireland," with regard to schools, colleges, or institutions, have no connection, except in so far as they concern the Anglo-Irish and the Protestant population. D. H.

**Modern Period — Primary Education —** The cradle of Irish, and in a sense of English and Scotch, primary education, in the modern acceptance of the term, is to be found in a large school founded in Dublin in 1786. (For this school were built, in 1798, the premises used to this day by the West Dublin Model Schools.) Here was devised a monitorial system, similar to that afterwards connected with the names of Bell and Lancaster, and here took origin the principle of educating the poor without religious interference.

A quarter of a century later, in 1811, the success which had attended the experiment encouraged the formation, on a national scale, of the "Society for the Education of the Poor," better known as the "Kildare Place Society." They proposed to cover Ireland with schools, open to all, and interfering with the religion of none. Their fundamental principle was that the Bible, as common to all sections of Christians, should be read daily, but without note or comment. A commission on education appointed in 1806, in its final report published in 1812, indorsed the principles of the society, and, in 1815, Mr., afterwards Sir Robert, Peel, then Chief Secretary, considered that the recommendations of the commissioners could best be carried into operation by parliamentary grants to the Kildare Place Society. The work of these pioneers, affecting as it has done, in a marked degree, England and Scotland, and to some extent each of the colonies, deserves fuller recognition than it has yet received. Here only the barest outlines are possible. The whole machinery of education had to be called into existence *ab initio*. As has always been the case in Ireland, the demand for knowledge was keen, but the means for satisfying it were crude. It is computed that perhaps five thousand schools of all kinds existed, but so wretched were they commonly that the term "hedge-school" (*q.v.*) was invented to describe them. For the application of the remedy, the society went vigorously to work. At Kildare Place they founded a model school for the training of teachers, which won the admiration of all — (see MODEL SCHOOLS), they published a series of schoolbooks which was largely used not only in Ireland, but in England and Scotland, holding that without a library no school was complete, they issued at cheap rates a collection of works, instructive and entertaining, which had no rival at the time, and in consequence went all over the world; with the help of the sums voted by Parliament, which rose to upwards of £30,000 a year, building grants were made to encourage and supplement the exertions of the localities, with the result that substantial schoolhouses, built commonly in accordance with plans furnished by the society, sprang up everywhere. Finally, a careful system of inspection was planned, the prototype, in many of its features, of every subsequent system, and a staff of

inspectors trained for the purpose visited the schools all over Ireland.

The success which rewarded the society was signal: 150 masters and 60 mistresses left the Training School each year; the annual output of the "Cheap Publications" was 60,000, the society's schools, which numbered 8 in 1816, had risen to 1621 in 1831, pupils to the number of 137,639 were in attendance, the average per school being between 84 and 85. It is not surprising that, with such a record in view, distinguished visitors from other countries, expressed their admiration and approval in the strongest terms. Professor Pillans (*qv*), prominent for his work on behalf of Scotch education, was of opinion that the Kildare Place Schools were a hundred years ahead of those in Scotland. The Count de Lasteyrie, in a letter still extant, pronounced the model school the best in the world.

In 1831 the Kildare Place Society was succeeded by the National Board. The fall was the result of the strictness with which they enforced the rule which enjoined the reading of the Bible without note or comment. The rule was never popular, churchmen objected to the prohibition of definite catechetical teaching, Roman Catholics received with suspicion anything of the nature of joint religious instruction, in 1827 the Commission of Educational Inquiry reported against the rule, and in 1829 a select committee of the House of Commons recommended that Irish primary education should be intrusted to a board responsible to Parliament, whose principle should be combined literary and separate religious instruction. The National Board, whose constitution was framed in accordance with this recommendation, met with violent and protracted opposition. The Presbyterians were the first to move; quite satisfied themselves with the Kildare Place Society, they resented what they considered a slight to the Bible, and in particular they found fault with certain regulations for promoting combined instruction, which would force them into joint action with Roman Catholics. Churchmen were not long in following. The absence of distinctive teaching had seemed to them a blemish in the Kildare Place Society, the Society, however, had insisted on the reading of the Bible, but the National Board not only made no such demand, but was even disposed to exclude from "school hours" any time which might be devoted to its study. The result was an educational schism which lasted more than fifty years, and at times threatened the very existence of the Board. For the prosecution of the attack the Church Education Society was founded in 1839. By adding definite denominational teaching to the Bible reading of the Kildare Place Society, a new warmth of interest was evoked, and the income from voluntary sources rose as high as £45,000, — more than Kildare Place had enjoyed at the height of its pros-

perity. So numerous were their schools that, as late as the date of the Powis Commission in 1870, they were held to constitute a dangerous menace to the Board. The last to oppose were the Roman Catholics, satisfaction at the overthrow of Kildare Place made them disposed to welcome the National Board, for a time even the Christian Brothers placed their schools in connection. Roman Catholics, however, were not more favorable towards combined instruction than the other opponents, and when the Board early changed "combined literary" into "combined moral and literary" by introducing for all a book of *Scripture Extracts*, their suspicions were aroused, and they lost no opportunity of giving publicity to their objections; in particular, the Synod of Thurles in 1852 openly denounced the system of the Board.

As the result of these attacks, many modifications were introduced into the original constitution. Two call for mention here (1) Non-vested Schools, as distinct from Schools Vested in the Board, were permitted, — a concession by which the principle of combined instruction was virtually abandoned, because, in a non-vested school, religious instruction cannot be given, as of right, except by the denomination with which it is connected (2) A compulsory conscience clause was introduced whereby the teacher must send away during religious instruction pupils of differing beliefs. In consequence of these and other concessions, the Board, which began with an undenominationalism more marked than that of Kildare Place, became transformed into a denominational system with a conscience clause, and as such it has completely solved the religious problem in connection with primary education in Ireland.

The education given in national schools began on Kildare Place lines, and the books of the society were largely used. Gradually the Board prepared books of their own, and until lately no others were permitted. The teachers were paid by local contributions, by school fees, and by fixed salaries depending on their classification. In 1870 a modified system of payment by results was superadded. It had the usual effect of emphasizing the subjects or portions of subjects which brought fees, to the detriment of the rest. In 1900 the resulting system was abandoned, and a new method of paying the teachers was introduced. At this date the amounts contributed by the localities were insignificant, and school fees had been abolished by the act of 1892. For purposes of salary, three grades were introduced. Teachers, who formerly rose by examination, are now promoted from the lowest to the highest grade by seniority and merit; they are also awarded triennial increments for good service, and receive a pension which is arranged on a contributory basis, on retirement. The average incomes from state sources are as follows: —

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PRINCIPALS		ASSISTANTS	
Men	Women	Men	Women
£112	£90	£81	£68

In addition to the more ordinary branches, the curriculum includes singing, drawing, object lessons, physical drill, hand and eye training including kindergarten, elementary science, cookery, and laundry. Instruction in these subjects has been much developed since 1900, and the same is true of Irish, which is now taught in 3066 schools to 180,000 children, as compared with 105 schools and 1825 children in 1899. On the 31st of December, 1909, there were 8401 schools in operation in connection with the National Board. In the following table the progress of primary education is shown from the Census Reports:—

	PROPORTION PER CENT				
	1861	1871	1881	1891	1901
Read and Write .	41	49	59	71	79
Read only	20	17	16	11	7
Neither Read nor Write .	39	33	25	18	14

*Higher Grade Schools* — The board, owing to the inadequacy of the grants, has hitherto been unable to make satisfactory provision for the higher education of promising pupils. For the Roman Catholics, the Christian Brothers have done much to remedy this deficiency, for the Church of Ireland the scholarships of the Incorporated Society have discharged a similar office.

*The Training of Teachers* — As was seen above, the training of teachers in Ireland had attained to European celebrity under the Kildare Place Society. The National Board founded its college in Marlborough Street in 1833. Till 1883 it remained the only government college, being undenominational, it met with little support from churchmen or Roman Catholics. In 1883 the English system of denominational colleges was extended to Ireland, and specially favorable terms were granted in 1890 in order to place the new college on a level with Marlborough Street. There are now seven colleges, one of them being the old foundation of the Kildare Place Society, which, as the Church of Ireland Training College, became a government denominational college in 1884.

*Secondary or Intermediate Education.* — The position of secondary, or, as it is generally termed, Intermediate, Education, during the century previous to the Commission of 1885, may be estimated by means of a passage from the commissioner's *Third Report*. After draw-

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ing attention to the inadequacy of existing endowments, they say "the subsequent course of our enquiries has confirmed our belief that the provision for intermediate education in Ireland is wholly inadequate, and bears no just proportion to the provision for university and primary education." Unsatisfactory as the results were found to be where the resources were so slender, the common mismanagement of the endowments made matters still worse. In striving to account for the failure of the Royal Schools, whose endowments were the largest in Ireland, the commissioners were of opinion that a prime cause was to be found in the constitution of the supreme authority. In 1813, as the result of the Commission of 1788, the royal and other endowed schools, were placed under a newly formed board, entitled the Commissioners of Education in Ireland. The constitution of the board was such that the commissioners were not brought into contact with the schools, nor had they direct interest in or control over them. But whatever the contributory causes may have been, the deficiencies of the intermediate schools as a whole were marked. During the last twenty-five years, however, a decided change has taken place, the credit for which is largely due to the Educational Endowments Commission, 1885-1894, and to the Intermediate Education Board. The Royal Commissions reorganized the Commissioners of Education, and perfected schemes for the management of upwards of 200 endowments. In all they did they emphasized the importance of giving the localities a definite share in the control of the schools, and made provision for dealing with neglect or inefficiency. The Intermediate Board represents an attempt of government to subsidize secondary education. Founded in 1878, and endowed with £1,000,000 out of the Irish Church Surplus, its funds were increased by the local taxation (customs and excise) act of 1890, — a variable source of income against whose fluctuations they have recently been guaranteed by fixed sums included in the estimates. As originally constituted, the sole duty of the board was to hold examinations in centers all over Ireland, and to distribute its funds upon the results, the schools receiving fees for each pupil who passed, and the pupils being rewarded with exhibitions and prizes. In 1900, in accordance with the recommendations of a royal commission, this cast-iron system was modified, and extended powers were granted; in particular, provision was made (a) for introducing inspection, (b) for arranging with the newly formed Department of Agriculture for practical examinations in science, and (c) for the encouragement of specialization. While few defend the methods of examination, and the payment on individual results which are indorsed by the acts under which the board works, and while none can excuse the sluggishness with which the required

funds are supplied by Parliament, there can be no question as to the quickening power which the board has exercised. As an illustration, it may be mentioned that though inspection was approved in 1900, the appointment of inspectors had to be delayed till 1909 through lack of the necessary funds. The intermediate schools of Ireland fall under three main divisions: the old endowed schools which, for the most part, are in Protestant hands; schools founded and managed by the different Roman Catholic orders; and schools which are the result of private enterprise. In 1850 the income of fifty-four of the largest endowed schools was under £15,000, and in ninety towns with population of 2000 and upwards, there was no provision of any kind for secondary teaching. Since the establishment of the Intermediate Board, a sum which has averaged £50,000 has been distributed annually among the schools, in addition to the prizes and exhibitions whereby deserving pupils have been helped. How the work has grown, the following table will show:—

NUMBER OF STUDENTS WHO PRESENTED THEMSELVES FOR EXAMINATION

	Boys	Girls	TOTAL
1879	2143	521	2664
1890	5726	2042	7768
1910	7967	3933	11900

The examinations in 1910 were held at 988 centers, in 127 different localities.

*Technical and Commercial Education.*—As early as 1841 the demand for education with a definite practical end took shape in the establishment of an engineering school in connection with Trinity College, Dublin,—a step in which the Irish university gave the lead to both Oxford and Cambridge. In 1867 the Royal College of Science was founded with the specific object of giving instruction in science as applied to the industrial arts, especially mining, engineering, and agriculture. In 1900 a step of much importance and fruitful in results was taken in the establishment of the department of agriculture and of technical instruction. With the help of parliamentary grants of upwards of £180,000 annually the department has been able to make progress in many directions, and has taken a prominent part in the industrial revival of the twentieth century. In many parts of Ireland special industries have been promoted and helped, much attention has been bestowed upon the improvement of live stock, and, in particular, admirable work has been done in connection with agriculture. The aim has been to place within general reach good technical knowledge of all subjects relating to agriculture. Local schools have been set up, and classes conducted in the most remote districts; itinerant instructors

and field demonstrators have gone everywhere. With such kindred institutions as the Albert Agricultural College, Glasnevin, and the Munster Institute, the department has willingly cooperated, it has made full use of the machinery of the county councils, and has employed the College of Science in many practical ways. The college is now under the management of the department, and its splendid new buildings opened in July, 1911, are rich with promise. Specially worthy of notice is the educational work done in promoting practical instruction in experimental science, drawing, manual work, and domestic economy in secondary schools. Unlike the Intermediate Board, the department enjoys freedom of action, and has been able to plan its educational activities upon modern lines, with the most satisfactory results.

*Higher Education*—Trinity College, Dublin (see DUBLIN UNIVERSITY), and Maynooth were the universities of Ireland in 1800. Since 1794 Trinity had received students of all creeds, but Roman Catholics were debarred from its fellowships and scholarships. Maynooth had been founded by the Irish Parliament in 1795, with an endowment of £8000 a year, to prepare students for the Irish priesthood. From 1800 onwards the university question has passed through many phases, in all of which two sets of influences have been at work. The Roman Catholics, with fixed purpose, have been struggling to obtain for themselves a university which would combine unquestioned efficiency and due recognition of ecclesiastical authority. Trinity College, eager for the maintenance of its supremacy and independence, has either sought or accepted reform after reform, thereby demonstrating its liberality and enhancing its influence.

The steps taken toward satisfying the requirements of the Roman Catholics have been many. At the Union the endowment of Maynooth was continued. In 1813 it was raised to £8928. In 1815 the Maynooth Act gave a permanent subsidy of £26,000 a year, which was commuted in 1869 for a capital sum of £372,000 out of the Irish Church Surplus. Sir Robert Peel, who had shown a similar spirit in his recognition of the Kildare Place Society, was the first to take definite steps to meet the desire for a university which would be available for and acceptable to all. His plan was to found a group of federated non-sectarian colleges, affiliated for examinations and degrees with a central university. The Queen's Colleges, as they were called, were established and endowed in 1849 in Belfast, Cork, and Galway; they were given faculties in law, medicine, arts, and engineering. The establishment of the Queen's University in 1850 completed the scheme. From the first, anything of the nature of permanent success was hopeless. Before the plan was tried, its wholly secular character incurred the con-

denunciation of the Pope, and in the year of its foundation the university was denounced by the Synod of Thurles. Furthermore, the same year saw the Roman Catholics preparing to open a university for themselves. The result was the Catholic University of Dublin, which was founded in 1854, with Doctor, afterwards Cardinal, Newman, as its first rector. Perhaps the chief purpose served by this university was to emphasize the demand of the Roman Catholics for equality of treatment with reference to higher education. Refused a charter by the government, and therefore unable to grant degrees, depending wholly on private support, and for this reason compelled to work in a restricted area, the university could never satisfy the requirements. Very effectually, however, it drew the attention of statesmen alike to the earnestness and the determination of the Roman Catholic party, both clerical and lay, with the result that, for the rest of the century, and up to 1908, the question of a Catholic university was always prominent. After several previous attempts by other statesmen, Mr Gladstone (*qv*) introduced his bill in 1873. His plan was to have one great university, which would include different colleges, such as Trinity College, the Catholic University, and any other properly qualified. The project met with little favor, as provision was not made for endowing the Catholic College, the Roman Catholics were only lukewarm in their support, Trinity College, considering that anything which interfered with independence must be injurious, offered the most strenuous resistance. The bill was thrown out, and the ministry fell. Lord Beaconsfield was more successful when, in 1879, he abolished the Queen's University, and replaced it by the Royal University of Ireland. With the exception of its medical faculties, which required courses of lectures at certain recognized institutions, the new university was wholly an examining body which had power to bestow prizes, and confer degrees, on all who presented themselves, irrespective of their colleges. This alone was sufficient to include Roman Catholic colleges in university benefits, and the Catholic University of Dublin enjoyed some special advantages through being able to appoint on its staff fellows belonging to and paid by the Royal University. The effect was seen immediately in the reorganizing of the Catholic University. As a set-off to the Queen's Colleges, which would be credited as a whole with the distinctions of their students, six Roman Catholic colleges, viz. Maynooth, the Catholic University of Dublin, henceforth known as University College, University College, Blackrock, St. Patrick's College, Carlow, Holy Cross College, Clonliffe, and the Catholic University School of Medicine, were federated to form the Catholic University. The Royal University met with some favor, on account of its recognition

of the Roman Catholic colleges, there was, however, a feeling that the students of these colleges were at a disadvantage, as compared with those from the state endowed and equipped Queen's colleges, and it was strongly held that the whole scheme kept the Roman Catholic colleges in "tangible and humiliating inferiority to Trinity College, Dublin." In consequence, the agitation for equality of treatment continued. An attempt made by Mr. Bryce in 1906 failed, as Mr Gladstone had failed, because it proposed to interfere with the privileged independence of Trinity College. It remained for Mr Birrell to find what may perhaps prove a satisfactory solution of the difficulties in his Act of 1908. By this act two new universities were founded and endowed, viz the National University, and Queen's University, Belfast. The Royal University was dissolved, and University College, Dublin, Queen's College, Cork, and Queen's College, Galway, became constituent colleges of the new National University. Though the National University is undenominational, and free from tests, in awarding its honors and making its appointments, it encourages the teaching of religion, provided the expenses are not paid out of state funds, and its governing body is so constituted as to command the confidence of Roman Catholics. By way of endowment the National University received £170,000 for such expenses as buildings and equipment, together with an annual grant of £64,000. Queen's University, Belfast, received for building and equipment £60,000, with an annual grant of £18,000.

The Presbyterian Church has two colleges empowered to grant degrees in divinity, one in Belfast, the other in Londonderry.

The higher education of women has been promoted in particular by Alexander College, Dublin, the Queen's Institute, and the Ladies' College, Belfast. The Royal University stimulated the movement by being the first university in the United Kingdom to open its degrees to women.

H. K. M.

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**IRELAND, NATIONAL UNIVERSITY OF.** — See IRELAND, EDUCATION IN.

**IRENÆUS** (c 130-202) — Church Father, a pupil of Polycarp, who in his turn was a disciple of St. John, and is therefore a most important witness as to the life and faith of the Christian Church in the first two centuries of its history. In early life he removed from

Asia Minor to Rome, where he became influential as a teacher. In 177 he was made Bishop of Lyons, and for the next twenty-five years figured prominently as a peacemaker in the controversies of that period. He took great pains to ascertain and transmit the apostolic tradition as to Christian doctrine and practice, and did good service in establishing the unity of the Old and New Testaments. He was the first writer to treat the Bible as an inspired whole, and took a prominent part in the formation of the New Testament Canon. His chief significance as a theologian consists in his doctrine concerning the Person and Work of Christ. He was the first doctor of the Church who worked out with any thoroughness the great doctrines of the incarnation and redemption, and his treatment of these subjects was by far the deepest and soundest which they received in the ante-Nicene age. His method was to oppose a true Christian gnosis to the heretical gnosis which disturbed the early church. It was by this conflict with Gnosticism (*qv*) that Christian theology was developed and vitalized, and Irenæus was its earliest champion. His acute and striking polemic subverted the interests of philosophy as well as those of religion. He was a writer of painstaking accuracy, and his writings are of the highest value as sources of ecclesiastical history. None of them have survived in the original Greek, but there are very ancient Latin versions of two of them. His *Refutation of Knowledge Falsely so Called*, commonly known as *Adversus Hæreses*, in five books, is our chief source of information as to gnosticism (*qr*) and other heresies. It is one of the most precious remains of early Christian literature and is an inexhaustible storehouse of apologetic materials. His *Proof of Apostolic Teaching*, a later work, is of a more positive character and was written, not to confute heretics, but to confirm the faithful by a defense and exposition of the Christian Faith. W R

See CHRISTIAN CHURCH, EDUCATION IN THE EARLY, Gnosticism, SCHOLASTICISM

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**IRNERIUS** (c 1050-1130). — Italian jurist, probably born at Bologna. He was a master of liberal arts and taught rhetoric at Bologna while still comparatively young. Extravagant claims have been made for him as the founder of the study of law at Bologna, and the introducer of glosses. That he was neither has been shown by Rashdall, but his importance in the development of legal study cannot be denied. Previous to the time of Irnerius, the chief center for the study of law was Ravenna. Several circumstances combined to bring about

the decline of Ravenna and put Bologna in the position of importance. Irnerius undoubtedly contributed to this by introducing and lecturing on the new parts of the Digest, hitherto unknown in Bologna, as well as the old, and he was possibly the first glossator of it, the old philosophic study of legal principles was replaced by a closer and more professional study of texts; at this time the whole *Corpus Juris Civilis* began to form the curriculum for students of civil law, the specialization now demanded led to a law faculty as distinguished from liberal arts, and law became a professional study with more mature students. These facts tended to give the law students and law doctors a position of great influence not only in Bologna, but throughout Italy, and to this influence Rashdall traces the rise of the student-university characteristics of Bologna.

Irnerius was the author of a legal formulary (*formularium tabellionum*, see **DICTAMEN**), and of many other works, the chief being the *Summa Codicis*, the earliest medieval system of jurisprudence. He held an important position as an imperial jurist, and his name appears frequently in royal documents from 1113 to 1125. On the question of papal election he supported the claims of the Emperor Henry V.

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**IRRADIATION.**—Whenever a portion of the retina is stimulated by a beam of light, there is a tendency for the stimulation to spread over neighboring portions of the retina. The result is a sensation which is not limited to the direct source of the stimulation. Illusions sometimes arise from the spreading of the stimulation. Like phenomena of spreading of irritation have been observed in other parts of the nervous system.

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**IRRATIONAL NUMBERS.**—A number that cannot be expressed as the ratio of two integers is called an irrational number. It is not necessary that such a number should be expressible as a terminating decimal. For example,  $\frac{1}{3} = 0.777 \dots$ , and  $\sqrt{2} = 1.4142 \dots$ , but the former is rational while the latter is irrational. There are irrational numbers that cannot be expressed in such a surd form as  $\sqrt{2}$ , as, for example,  $\pi$  and  $e$ . (See **TRANSCENDENTAL NUMBERS**) The modern theory of irrational numbers is due largely to Weierstrass, Dedekind, and G. Cantor. For

this theory the reader may consult Dedekind's *Essays on Number* (translated by Beman), Chicago, 1901. The theory is not simple enough for the secondary school, so that there the work must be confined to the recognition of the common laws of operation with these numbers. The tendency at present is to eliminate from the secondary school all work with irrationals of a complicated nature, reserving this until the theory can be studied more fully in college. In particular, the extracting of the square root of a binomial surd, a subject of practical value before the invention of the decimal fraction, is now commonly omitted in this type of school, at least beyond the most elementary case.

D. E. S.

See also **ROOTS**; **INCOMMENSURABLE QUANTITIES**.

**IRRITABILITY.**—The disposition of organic substance to undergo certain marked physiological changes under the influence of incident forces which act as stimuli. All living substance is irritable in that it is capable of reacting, in some way, to stimuli. The term is primarily a physiological one, and it has no psychological implications. In other words, irritability may, for all that is known, exist in the absence of sensibility. Nerve and muscle cells are commonly said to be highly irritable because upon the application of certain forms of energy they undergo pronounced changes. The nerve cell, when acted upon, may give rise to a nervous impulse, the muscle cell may entirely change its form. These two kinds of cells are first thought of as possessing irritability, because their expressions of this property are more striking than those of most types of cell.

R. M. Y.

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**ISELIN, ISAAK** (1728–1782) — Swiss author and philanthropist. Born at Basel, he studied law at Gottingen, and after traveling for some years obtained an appointment at Basel as Secretary to the Council. He devoted himself almost immediately to public and political questions. His chief philosophical works were *Geschichte der Menschheit* (*History of Mankind*, 1764), and *Traume eines Menschenfreundes* (*Dreams of a Philanthropist*, 1776), in which from a viewpoint opposed to that of Rousseau the progress of man is the upward progress of reason to happiness and perfection. Iselin's main interests, however, seem, as with so many other Swiss leaders at this period, to have lain in education for the improvement of the nation and humanity. In 1760 he played an important part in organizing the *Helvetische Gesellschaft*, and in 1777 the *Gesellschaft der Guten und Gemeinnutzigen* (Society for the Public Welfare), which has continued to the present

In 1760 he was appointed on a commission to consider measures for the improvement of the Basel gymnasium. He had already offered suggestions in 1757 for the improvement of the university in *Unvorgreiflichen Gedanken über die Verbesserung des Baselschen hohen Schulen* (*Humble Thoughts on the Improvement of the Basel High Schools*.) In 1768 he wrote a collection of stories for children (*Sammlung den Nutzen und Vergnügen der Jugend gewidmet*). In the same year appeared *Über Erziehung* (*On Education*), in which there is a demand for an education to train men to the highest, noblest, and best, not through abstract ideas, but by pleasurable, interesting, and concrete methods. Such work was for the philosopher who thoroughly understands children. At this time Basedow's *Vorstellungen* came into his hands, and thenceforth Basedow had no warmer friend and supporter. Iselin secured subscriptions, brought the *Appeal* to the notice of the *Helvetische Gesellschaft*, and hoped that such a school would be established in Switzerland. In *Über die Erziehungsanstalten* (*On Educational Institutions*) the author makes a proposal for institutions in which different classes of society could be educated for life's work side by side for their mutual welfare. The education of girls is also insisted upon. Above all, Iselin seems to have welcomed the possibility of training teachers opened up by Basedow, and he assisted four Swiss students to proceed to Dessau for training. He continually kept the merits of the Philanthropinum and the movement connected with it before the public in *Ephemeriden der Menschheit oder Bibliothek der Sittenlehre und der Politik* (1776-1782).

How great was Iselin's service to Pestalozzi, it is impossible to estimate. After meeting with repeated failure in his attempt to secure the publication of *Leonard and Gertrude*, Pestalozzi turned to Iselin, who read through and corrected the *Ms.*, secured a publisher in Berlin, and arranged for a reasonable remuneration for the work.

The *Gesellschaft der Guten und Gemeinnutzigen*, of which Iselin was the moving spirit, devoted a great part of its labors to education; it offered prizes for attendance and drawing; distributed readers, taught special subjects such as singing, geometry, and needlework; encouraged gymnastics and opened a girls' school in 1812, founded libraries for children and adults, museums, a civic newspaper; conducted children's festivals; and apprenticed boys on leaving school.

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**ISIDORE OF SEVILLE, or ISIDORUS HISPALENSIS**—A Spanish bishop who flour-

ished in the late sixth and early seventh century. He was noted for his learning, eloquence, and ability, and was the author of numerous treatises. His importance educationally, however, depends upon his one work, the *Etymologiarum Libri XX* or *Origines*. This was an encyclopedic work covering all branches of knowledge which served throughout the Middle Ages as a textbook of higher learning and a source of general information. For his sources the author depended quite generally upon second-hand information, and was not very particular as to its character. Yet it was convenient and an authoritative church summary and as such exerted wide influence. The titles to the various books are as follows: (1) Grammar; (2) Rhetoric and Dialectic, (3) Arithmetic, Geometry, Music, and Astronomy; (4) Medicine, (5) Law and Chronology (history); (6) Ecclesiastical books and offices; (7) God, angels, and the orders of the faithful, (8) Church and the sect, (9) language; (10) Society and relationship; (11) Man and habits; (12) Animals; (13) The world and its parts; (14) The earth and its parts; (15) Buildings, fields, and their measures; (16) Stones and metals; (17) Agriculture, (18) War and games; (19) Ships, buildings, and garments; (20) Provisions, domestic and rustic instruments. F. W.

See ENCYCLOPEDIAS, LIBERAL ARTS, SEVEN, MIDDLE AGES, EDUCATION IN

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**ISOCRATES** (436-338 B.C.).—The Athenian orator and rhetorician played an important part in the educational history of the fourth century. Educated under the leading sophists, Prodicus, Protagoras, and Gorgias, he became a professional logographer or advocate, i.e. he wrote speeches for clients engaged in lawsuits. About 390 B.C. he opened a rhetoric school at his home near the Lukeion. In his speech, *Against the Sophists*, written c. 390 B.C., he attacks those who attract pupils by low fees and big promises of imparting absolute and universal knowledge and eloquence without regard to the natural ability of the pupil. He aimed to prepare for an active public life, and this preparation consisted in a study of philosophy or a training in the formation of correct judgments by practice in deliberation and debating. He took pupils from the ages of about fifteen to twenty-one and charged ten minæ (about \$200) for the course of three or four years. Students from all parts of the



Greek-speaking world flocked to him. He expected a previous knowledge of mathematics and sciences, and his own course consisted of essay writing and speeches on all manner of topics, practical, political, theological. Emphasis was laid on style, diction, and matter. Speeches written by himself or others, including those of pupils, were studied, and subjected to criticism and revision. By a wise selection of themes and by inculcating high standards, Isocrates claimed that his course in itself was an excellent training of character, for he did not hold that virtue was teachable. The success of his school was evidenced not only by his own great wealth, but by the number of his students who attained eminence in all walks of life, as rulers, statesmen, orators, lawyers, and historians. The truly educated man is distinguished by good taste, sound judgment, correct behavior, self-control, and modesty. Culture and polish were the ends of education, for, as he says, "Those whose soul is well trained to play its part in all these ways, those I call wise and perfect men, and declare to possess all the virtues; those I regard as truly educated." This ideal in almost identical terms is, of course, also characteristic of the Renaissance. Towards the close of his career (354 B.C.) his great wealth drew on him an attack from one of his many rivals whom he had so often criticized. In his defense, *Antidosis*, or *On the Exchange of Estates*, he sums up his career as a teacher and defends himself and rhetorical training. For the use of selected *Orations* of Isocrates in modern schools, see GREEK, STUDY OF.

See RHETORIC, HISTORY OF THE TEACHING OF, RHETORIC SCHOOLS.

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**ISOLATION** — A term used to express the opposite of correlation (*q.v.*), in instruction, or the method of teaching subjects as separated from one another. It is claimed that only by recognizing arithmetic, geography, history, etc., as independent studies, adequate and complete in themselves, can each subject attain its own due rights and realize its own appropriate end. The logical idea underlying this contention is that the various subjects represent something beside convenient distinctions carved out within a comprehensive unity; it assumes that there are just so many objectively important phases of reality, and that each subject (or group of subjects) stands for just one of these phases. Accordingly by isolation of each subject and then by coordination of the various independent subjects, the subject matter of instruction will be rendered both definite and harmoniously complete.

It may be replied that, philosophically speaking, both isolation and correlation represent stages in growth from the more direct and vital forms of experience to its logical formulation, that is, its organization for purposes of better intellectual control. Experience does not begin with a number of sharply marked off fields, or topics, either requiring to be made more distinct and definite in their separations, or else needing to be bound up together by various correlating devices. It begins with a vague, somewhat confused and fluctuating unity, whose parts flow readily into one another, these parts being marked off by various interests and purposes, rather than by objective or logical differences. Growth takes place by a movement toward differentiation, on one hand, and toward interrelation of discriminated parts on the other. Isolation thus represents a goal toward which instruction and learning are moving, not original divisions. The distinctive character of mathematics, as a subject on its own account having its own unique material and special method, follows after a term of study marking the attainment of a logical comprehension. Even then it is undesirable that differentiation should be carried to the point of isolation in its literal sense. For the purposes of all education save that of the specialist it is needful that the interdependence of each study with the other studies — their mutual applications to one another and to life — should be borne in mind. This requirement is met only when correlation and differentiation are used to supplement each other, instead of being treated as rivals. J. D.

See CORRELATION.

**ISRAELITES.** — See JEWISH EDUCATION.

**ITALIAN, STUDY OF.** — See MODERN LANGUAGES.

**ITALY, EDUCATION IN** — Italy is a parliamentary monarchy. Its area is 286,682 square kilometers, its population 34,688,653 (1911). The territory is divided into 69 *province* and over 8000 *comuni* (towns and villages). The affairs of a province are administered by a *Consiglio provinciale* (provincial council), elected by the people, and a *Deputazione provinciale* elected by the *Consiglio* from among its members. The affairs of a *comune* are likewise administered by a *Consiglio comunale*, elected by the people, a *Sindaco* (mayor), and a *Giunta comunale* (communal committee), elected by the *Consiglio* from among its members. A government officer, the *Prefetto*, supervises all local bodies. Provinces are for administrative purposes subdivided into *circondari* (circuits) or *distretti* (districts). The town in which the *Prefetto* resides and the *Consiglio provinciale* meets is called *Capoluogo di provincia*, and gives the name, as a rule, to the province. Likewise, the administrative

center of a *circondario*, or *distretto*, is called *Capoluogo* (chief town) *di circondario*, or *distretto*.

**HISTORICAL DEVELOPMENT.**—Italian education, as a part of Italian culture, is a direct outgrowth of Roman society and has its origin even in pre-Roman times. The consideration of these historical foundations of modern conditions is given under Roman Education. The Roman schools continued until well into the Middle Ages, and the discussions of education during the Middle Ages (*q v.*) applies particularly to Italy. So, too, the discussion of Monasticism and Education and the minor topics such as Abbey Schools, Bishops' Schools, etc., relate particularly to Italy. Universities took their rise in Italy, and the discussion of origins under this topic has special reference to Italy. Again, with the period of the Renaissance, the educational and cultural influences had their origin in Italy, and the survey of education during the Renaissance (*q v.*) forms but a chapter in the history of Italian education. The Teaching Orders (see JESUITS, etc.) furnished many schools after the Reformation. After the Council of Trent (1545) seminaries were established in many places, and, though primarily intended for the training of the clergy, laymen were also often instructed in them. The academies and private schools of both secondary and elementary type furnished a well-developed system of schools for Italy during the early centuries of the modern period. These were established by princes, by teachers, by cities, or by private endowment, or by ecclesiastical authority of various types. Some of these schools were very noted. In some instances there was an approach to a local system of schools. Venice, for instance, had public schools very early, and in 1551 it was ordered that each section of the city should maintain a grammar school. However numerous, these schools cannot be regarded as constituting a system of education, though provisions were made by some of the states to regulate the whole matter. One of the earliest is perhaps that of Victor Amedeus II, of Sardinia (1729). Education in the first half of the eighteenth century fell to a very low plane; in the second half there is the beginning of a revival. In Lombardy, then under the Austrian crown, were introduced the reforms of Maria Theresa and her successors. (See AUSTRIA.) After the invasion of the French at the end of the eighteenth century and at the beginning of the nineteenth, Italy passed under the rule of France, either directly, as Piedmont, Genoa, Rome; or indirectly, as the kingdoms of Naples and Italy, and laws were enacted following the French model. The fall of Napoleon brought back the old régime, and very little, if anything, was done to promote public education, though universities and many schools were state or municipal institutions more or less controlled by the clergy. The kingdom of Sardinia had a general statute pertaining to education

(1824); Lombardy and Venetia, under Austria, followed Austrian laws; other states had no general statutes.

**THE PRESENT SYSTEM OF EDUCATION.**—The fundamental law that regulates public instruction in Italy is the Casati act of Nov. 13, 1859. When promulgated, it applied only to the kingdom of Sardinia; that is, Sardinia, Piedmont, Liguria, and Savoy, and Lombardy; it has since been extended, with some changes, to other parts of the kingdom of Italy. The lack of another general act, however, has caused many parts of it to be applied more or less legally to the whole kingdom, and it has been the basis of most of the acts dealing with particular phases of education.

**Central Administration.**—At the head of the national system is the Minister of Public Instruction. He is a member of the cabinet and either a deputy or a senator. His control extends to all orders of public instruction, military and naval schools excepted, and to all officers charged with the inspection of public schools and higher institutions. The Minister decides upon all disputed questions, revises the decisions of his subordinates, and, by means of his officers or other persons designated by him for the purpose, supervises private schools and institutions of instruction and education. In the case of refusal to conform to the laws, he may order the schools to be closed, after consulting the Higher Council. Next in importance to the Minister is the Undersecretary of State for Public instruction, who takes charge of the affairs intrusted to him by the Minister, substitutes for him during his absence, and may represent him in the Chamber of Deputies and the Senate.

The highest body dealing with public instruction is the Higher Council (*Consiglio Superiore*). According to Act 496, of 1909, this Council consists of thirty-six members, chosen as follows: six senators elected by the Senate, six deputies elected by the Chamber (senators and deputies so elected must not be university professors), twelve members nominated by the Minister, and twelve designated by ordinary and extraordinary university professors. Members are selected or appointed for four years and cannot be reelected within two years from the close of their terms of service; half of the Council is renewed every two years. Before the passing of this act, there were only thirty-two members, none of whom were elected by Senate or Chamber. The change was bitterly opposed by many professors, who feared that senators and deputies would bring politics into the Council. The Minister is the chairman of the Council. A Vice-President is appointed by the King for two years. The Council meets regularly twice a year, in spring and fall, but the Minister may call an extra session at any time. The Council in committee of the whole at the request of the Minister prepares and examines all bills, by-

laws, and general provisions relating to the organization of schools, appointment of professors, etc. The Minister cannot dismiss or suspend a professor unless the Council concurs.

Within the Council there is a committee (*Giunta*) of fifteen members appointed by the Minister from the councilors. To this committee, which meets once a month and may be called together by the Minister or Vice-President at any time, all affairs pertaining to higher education not coming before the full council are referred. Affairs of special moment are first considered by a section of at least five members of the committee who submit their report to the full committee for a final discussion. A special section of the committee, created by an act of 1906, deals with matters pertaining to secondary education. This section is composed of four councilors, members of the committee (one being chairman of the committee of the section), appointed by the Minister; one director and two teachers of government secondary schools, who must have taught seven years, and one director or teacher of schools, recognized as equivalent to government schools, elected by the directors and teachers of those schools. Another special section of the committee, created by the act of June 4, 1911, deals with matters pertaining to primary education. This is composed of three members of the Higher Council appointed by the Minister, the director general of elementary education, a head master and a teacher of normal schools elected by all head masters and teachers, an inspector selected by the Minister, a director of primary education and two elementary teachers selected by all directors and teachers, and another member with a knowledge of education appointed by the Minister.

The Ministry of Public Instruction is also assisted by permanent committees which advise on particular subjects. Among these are a central committee for diffusion of education in southern Italy and Sardinia and Sicily (*Commissione centrale per la diffusione dell'istruzione elementare nel mezzogiorno e nelle isole*) and a committee to pass on all controversies relating to primary education (*Commissione consultiva per le controversie relative all'istruzione primaria*).

The Ministry of Public Instruction is divided into four bureaus (*Direzioni generali*),—elementary and normal education, secondary education, higher education, and fine arts respectively; and two independent divisions (*Divisioni*) with a total of 191 employees of higher grade, including 26 inspectors, 62 accountants, 128 minor clerks. All employees are subject to the general act 290 of June 25, 1908. They are appointed by competitive examination, and vacancies are filled by promotion, those of higher grades by examination. The chiefs of bureaus are chosen by the council of Ministers; they may also be persons not belonging to the administration.

The salary of the Minister is 25,000 lire, of the undersecretary 12,000, of chiefs of bureaus (*Direttori generali*) 10,000 lire. That of higher grade clerks and accountants varies from 2000 to 8000 lire, that of minor clerks from 1500 to 4000 lire (1 lire = 18 cents.)

*Local administration*—In each province there are: (a) A *Provveditore* who has charge of everything relating to public instruction in the province. The sixty-nine *Provveditori* have salaries varying from 5000 to 8000 lire. (b) A *Consiglio provinciale scolastico* (Provincial education council) of fifteen members including the *Provveditore*, who is the chairman, representatives of the *Consiglio provinciale*, of the *Consigli comunali*, of teachers, etc. The *Consiglio* has the general supervision of elementary schools and the direct administrations of schools for most of the *comuni* (see below). (c) A *Deputazione scolastica* (Education committee) of seven members including the *Provveditore*, who is the chairman. It prepares the budget and all affairs to be submitted to the *Consiglio*. (d) A *Delegazione governativa* (Governmental committee) which revises the accounts of the *Consiglio*. (e) A *Giunta provinciale per le scuole medie* (Provincial council for middle schools) which has the general supervision of secondary schools of the province.<sup>1</sup>

*Istituti tecnici and nautici*, and schools under the Ministry of Agriculture, Industry and Commerce are not under the *Giunta*, but each of them has a special supervisory committee, that of the former called *Giunta di vigilanza*. Universities and schools of university rank are independent of local authorities.

**Primary Schools.**—Under the Casati act all *comuni* had the direct administration of their schools, the state contributing to the expenses and having the general supervision. In this respect the act of June 4, 1911, has made radical changes. *Comuni capoluogo di provincia* and of a *circondario* or *distretto*, the last, if they have a population of more than 10,000, will retain the administration of their schools. The *capoluoghi di circondario* or *distretto* may within three years from the promulgation of the act waive the right to administer their schools. *Comuni* which by the census of 1911 have less than 25 per cent of illiterates, provided they have fulfilled all requirements of the laws relating to elementary education for the last five years, may retain the administration of their schools, but are not obliged to do so. Schools of other *comuni* will be administered by the *Consiglio provinciale scolastico*.

The Casati act provided for a full system of elementary education, though not compulsory. According to it elementary schools were divided into two grades, each completed in a term of two years, the child entering the first class at

<sup>1</sup> The *Deputazione*, *Delegazione*, and *Giunta* were created by the act of June 4, 1911. Formerly the *Consiglio provinciale*, differently composed, had supervision of primary and secondary education.

the age of six or seven. The course of study of the lower grade covered religious instruction, reading, writing, elements of arithmetic, Italian language, and elements of the metric system. That of the higher grade included, besides the subjects of the lower grade: composition, penmanship, accounting, elements of geography, the most important events of national history, the elements of physical and natural sciences, chiefly in their application to everyday life; also in the higher grade schools for boys the elements of geometry and geometrical drawing; in those for girls, needlework.

Compulsory education was established by the act of July 15, 1877, known as the Coppino act, which required all children to attend school from six to nine, or ten, if they did not pass the prescribed examination. By this act the subjects of instruction for the three compulsory years were elements of civics, reading, penmanship, the rudiments of the Italian language, arithmetic and the metric system. The omission of religious instruction excited much opposition, but without effect. The obligation placed by the earlier act upon *comuni*, having a population of over 4000 or possessing a secondary school, to maintain elementary schools of the higher grade, was not changed by the Coppino act.

At the time of the passage of the act of 1904 (Orlando act) there were: (a) *comuni* which had established the whole course of five classes either because obliged to do so, or voluntarily, (b) *comuni* which had established schools with four classes though not obliged to establish the fourth, (c) all other *comuni* having only the three classes of the lower grade. The act of 1904 changed nothing as to the *comuni* of division (c), but it required those of division (a) to establish within three years a sixth class, reducing the teaching hours to three daily in the fifth and sixth classes, and assigning both of them to one teacher. In these *comuni* the age limit was extended to the twelfth year unless the Minister recognized that the expense involved was too great. The act forbade *comuni* of division (b) to close any of the schools voluntarily opened; here compulsory education has been extended to all existing school classes. *Comuni* of divisions (a) and (b), which had voluntarily opened classes of the higher grade and charged a fee, have been authorized to maintain the fee, though attendance has been made compulsory.

The syllabus for the fifth and sixth classes covers: Italian language, Italian history of the nineteenth century, civics, geography, arithmetic, geometry, accounting, domestic economy, natural sciences and hygiene, penmanship and drawing, and, in schools for girls, needlework. Singing, manual training, agriculture, and other subjects may be added by the *comuni*. Pupils intending to enter secondary schools leave the elementary schools at the end of the fourth year, when they take a special examina-

tion called *maturità* examination at ten years of age, for which a fee of fifteen lire is charged; pupils who have followed the whole course of six classes may be admitted, under certain conditions, to the second class (year) of the *Scuola tecnica*.

The act of 1904 made more stringent provisions for enforcing compulsory school attendance and provided for the establishment of 3000 evening and Sunday schools for illiterate adults in those districts where the number of illiterates is highest. Special provisions for the diffusion of elementary education in the southern and central provinces were made by a later act of 1906.

The act of June 4, 1911, has gone much farther toward improving the conditions of elementary education; under its provisions the state assumes a larger part of the expenses. In each *comune* a *patronato scolastico* is established in order to further encourage attendance and efficiency by the distribution of free meals, clothes, establishments of libraries, etc.

*Teachers* — Teachers in *comuni*, which retain the administration of their schools, are appointed by the *Consiglio comunale* with the approval of the *Consiglio provinciale scolastico*. Those of other *comuni* are appointed by the *Consiglio provinciale scolastico*. Salaries in force from Jan. 1, 1912, have been fixed by the act of June 4, 1911, and range from 1200 to 1700 lire for teachers in graded schools, *i.e.* in larger *comuni*, for boys or boys and girls, and from 1050 to 1500 for teachers in graded schools for girls. For schools not graded, namely, in very small villages, salaries are 500 and 800 lire. Teachers in charge of two classes have an extra compensation of 300 lire. All teachers have four increases, equal to one tenth of their salary, once every six years. Some of the *comuni* pay considerably higher salaries. Rome pays from 1800 to 3100 lire, Milan from 1850 to 2900 for men and 2600 for women, Venice from 1700 to 2200 for men and 1400 to 1800 for women. Legally no one can be appointed as a teacher unless he has secured a diploma; but the appointment can and often does go temporarily to any one who, in the estimation of the *Provveditore*, is able to take charge of the class. The teacher is first appointed for a term of three years, if reappointed, he can be dismissed only for cause. No man can be appointed teacher under eighteen years of age, and no woman under seventeen years of age. All teachers receive a pension upon retirement, either from a special pension fund established for that purpose or from the *comuni*, if the *comuni* had provided a system of pensions before the pension fund was created. *Comuni* contribute to this fund five per cent of the salaries paid to their teachers. The teachers pay four per cent. The state also contributes.

To supervise elementary schools there are *direttori didattici* (school directors in the *comuni*,

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who have the administration of their schools; sub-inspectors (1000 in the whole country newly established by the act of June 4, 1911, at salaries from 2000 to 2400 lire, part of them replacing *direttori didattici* of smaller *comuni*), and over them inspectors (400 in number at salaries from 2500 to 4500). There are also ten central inspectors connected with the Ministry with salaries of 6000 and 7000 lire

*Cost of Education* — The expenses for elementary schools are borne by the *comuni* with contributions from the State. In 1899 the State paid nearly 4,000,000 lire, the provinces less than 400,000, and the *comuni* 64,000,000, making a total of 68,400,000 lire. This is less than three lire per capita while at the same time the expenses of Great Britain and the United States were nearly twelve lire and those of Germany over nine per capita. Under the Education Acts of 1886 and 1900, and more especially those of 1904 and 1906, the State has increased its share of the expenditure. It amounted to nearly fourteen million lire for the fiscal year 1906–1907, to nearly eighteen for 1907–1908, to twenty in 1908–1909, and to nearly twenty-four million in 1909–1910. The act of 1906, applying to southern and central Italy, Sicily, and Sardinia, provided for more than 18,000 new schools at an expenditure of more than 18,000,000 lire, of which above 11,000,000 will be contributed by the state and 7,000,000 by the *comuni*. Five years were allowed for carrying out the provisions of this act. The act of June 4, 1911, has further provided that within three years all rural schools shall be reorganized. The higher expenses caused by the increase of salary of teachers, and the establishment of new schools will fall upon the State. The Bank of Deposit and Loans will lend to the *comuni* 20,000,000 lire a year for twelve years and the State will pay the interest on this sum. It is estimated that the total expense of the State will rise from nearly 34,000,000 lire for the fiscal year 1910–1911 to nearly 74,000,000 lire for the fiscal year 1920–1921. The share of the expenses for the *comuni* whose schools will be administered by the *Consiglio* will be fixed at the highest figure of their expenses for schools for the years 1909 or 1910 and turned over to the *Consiglio*.

**Statistics** — Recent statistics cover only government schools and those recognized as equivalent to them. General statistics are not issued oftener than five-year periods. The last statistics covering all kinds of schools relate to the school year 1901–1902 for normal and *complementari* schools and special schools for girls; those for all other schools are much older. The most recent general statistics available are for 1907–1908.

Additional schools needed above number for 1907–1908, 27,000. State of schoolrooms (1907–1908): good, 21,028; poor, 20,233; unsatisfactory, 18,806; total, 60,067.

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### STATISTICS OF PUBLIC ELEMENTARY SCHOOLS

SCHOOL YEAR	SCHOOLS (i.e. grades)	TEACHERS	PUPILS
1871–1872	33,556	34,309	1,545,790
1877–1878	39,702	39,702	1,830,749
1882–1883	42,390	43,659	1,873,723
1887–1888	42,247	47,998	2,125,207
1892–1893	49,722	51,385	2,291,966
1901–1902	53,259	56,433	2,548,583
1907–1908	63,618	60,323	3,002,168

*Pupils.* — The total number of children from six to twelve years of age was 4,500,000 (estimated); obliged to attend school 3,949,141 (1907–1908); enrolled in public schools, 3,002,168, or 93 per cent of population.

### SCHOOL YEAR 1907–1908

GRADES	PUPILS ENROLLED	PUPILS WHO PASSED THE FINAL EXAMINATION
1st	1,260,317	633,378
2d	856,587	479,792
3d	607,317	310,846
4th	181,323	106,656
5th	77,875	52,751
6th	18,749	13,052
Total	3,002,168	1,596,475 or 58.90 per cent of pupils enrolled

### EXPENDITURE (LIRE)

Fiscal Year	State	COMUNI		Per cent of total expen- diture	Per cap- ita
		Calen- dar year	Total		
1903–1904	5,756,171	1899	66,350,966	14.18	2.07
1910–1911	26,791,116	1909	136,023,760	15.52	4.00

### EVENING AND SUNDAY SCHOOLS FOR ADULTS

Established under Acts of 1904 and 1906, 4783 (1907–1908)

ENROLLED		WHO TOOK THE EXAMINATION	WHO PASSED IT
Men	148,233	78,314	61,543
Women	34,140	19,689	16,174
Total	182,373	98,003	77,717

Private Schools (1907–1908) · schools, 3504; Grades, 11,904, schoolrooms, 6534; pupils, 148,081; principals, 2063; teachers, men, 1318; women, 4749; total, 6067

The number of private schools is about the same as reported for 1901-1903, the number of teachers has decreased. Kindergartens for 1907-1908<sup>1</sup> numbered 4967, teachers were 7393; pupils were 378,563

**Secondary Education — General Regulations.** — The secondary schools are regulated by the Casati act, but the full provisions of that measure, as regards the number, location, and support of the several classes of secondary schools, have never been realized. As a rule the buildings and equipments for the secondary schools are provided by the local authorities and the current expenditures by the state and local authorities, the proportion borne by the latter having been fixed by an act of 1904 and amending act of 1907, for the schools taken over by the state hereafter.

In the normal and *complementari* schools the salaries of teachers, the expenses for scientific and teaching material for the laboratories and for the library are paid by the state, the salaries of teachers in the elementary schools, the cost of the building, its care and janitors' salaries are paid by the *comuni*. Any one having the moral qualification may open a secondary school provided he gives notice to the *Provveditore* or the chief of the *Giunta* (Committee) of the *Istituto tecnico* of the province, if he wishes to open such a school, or to the Minister, if there is no *Istituto tecnico* in the province. Teachers must have diplomas. The students of private secondary schools must pass the government examinations to secure the recognition of their studies. *Comuni* provinces and other public corporations may establish secondary schools; such schools may under certain conditions be recognized as equivalent to government schools.

**Types of schools.** — The secondary schools are classified as follows —

(I) Classical schools and modern schools with Latin (a) *Ginnasio*—five years' course, (b) *Liceo*—three years

(II) Modern schools without Latin, and technical schools: (a) *Scuola tecnica* and *Scuola complementare*—three years, (b) *Istituto tecnico*—four years, and *Istituto nautico*—three years.

(III) Normal schools. (a) as II; (b) *Scuola normale*—three years, or (a) as I, (b) *Corso magistrale*—two years

*Ginnasio*, *scuola tecnica*, and *scuola complementare* are schools of the first grade, *Liceo*, *istituto tecnico*, *istituto nautico*, and *scuola normale*, of the second grade. In cities having *ginnasio* and *liceo* the two institutes are combined in one *liceo-ginnasio*. Candidates for admission to a secondary school must pass the *maturità* examination

The full classical course, it will be seen from

the above outline, covers eight years; the full modern course, seven years. Girls are admitted to all secondary schools on the same terms as boys, but the *scuola complementare* is exclusively for girls. The plan of studies for the *ginnasi* includes Italian, Latin, Greek, French, history, geography, mathematics, natural history; that of *licei*, philosophy, physics and chemistry and the subjects taught in the *ginnasi* with the exception of French. The plan of studies of the "modern" *ginnasi* established by act No 860 of July 21, 1911, includes Italian, Latin, French, German or English, geography and history, mathematics, natural history, drawing, and physical culture, that of the *licei* includes in addition political economy, philosophy, elements of civics, physics, chemistry, astronomy, and physical geography. These new schools will be established in those cities having more than one *liceo-ginnasio*, and only the fourth class of the *ginnasio* will be established for the school year 1911-1912, the fourth and fifth in 1912-1913 and so on. The studies of the *scuola tecnica* are Italian, history, the elements of civics, geography, French, mathematics, the elements of natural sciences, drawing, penmanship. A few schools have special courses comprising besides the above with slight changes, (a) agriculture, (b) accounts and English or German, (c) the elements of mechanics and technology. These new plans have been established recently (1899) and in a few schools only. The studies of the *scuola complementare* include Italian, geography, Italian history, the elements of mathematics and accounting, the elements of natural and physical science and hygiene, French, drawing, needlework, gymnastics. There are also numerous special schools for girls, mostly boarding schools, with plan of studies similar to those of *scuole complementari*.

Technical schools (*istituti tecnici*) are divided into sections (*sezioni*). The three most important are: (a) physico-mathematical section (*sezione fisico-matematica*), (b) surveying, building and agricultural section (*sezione di agrimensura*), (c) accounting and commerce section (*sezione di commercio e ragioneria*). A few *istituti* have also (d) agricultural section (*sezione di agronomia*), (e) industrial section (*sezione industriale*). The plan of studies for all sections includes Italian, history, geography, French, drawing, logic and ethics, natural history, physics and chemistry, and mathematics; the various subjects, however, do not cover the same ground for all sections. Additional subjects are, for section (a) higher branches of mathematics, and German or English; (b) agriculture, building and drawing, real estate and building law, surveying and drawing and descriptive geometry, (c) accounting; commercial, administrative, and civil law; political economy; finance and statistics, English or German. Sections (d) and (e) have special programs.

<sup>1</sup> Kindergartens are regarded as charitable institutions, and therefore are under the supervision of the Minister of the Interior, the State grants them subsidies from a special appropriation for that purpose

The Nautical Institutes are divided into three sections (a) engineering section, (b) nautical section, (c) shipbuilding section (for small crafts only). The plan of studies for all sections includes, though in different measure, Italian, history, mathematics, physics, mechanics, English. Also for section (a) applied mechanics, steam engines, drawing, materials of construction and fuels, engineers' duties, and ship practice; for section (b) navigation, seamanship, astronomical geography and nautical astronomy, steam engines, meteorology, commercial geography, maritime law and accounting, for section (c) applied mechanics, steam engines, naval construction and drawing, material of construction, theory of the ship, law.

Connected with the technical and nautical schools there are evening courses, and with the nautical schools also preparatory schools, and special courses at one of them (*Piano di Sorrento*) for foremen in shipyards.

The plan of studies for the normal school for boys includes pedagogy, ethics, Italian, history, geography, the elements of mathematics, accounting, physics, chemistry, natural history, and hygiene, drawing, penmanship, singing, agriculture, gymnastics, practice in elementary schools, and manual training. The normal schools for girls include all above subjects, except manual training and needlework, domestic economy, and practice in the kindergarten. Owing to the scarcity of men teachers special two years normal courses (*corsi magistrali*) have been established in towns having *ginnasi* only, by act of July 21, 1911. Boys and girls will be admitted if they have passed the *licenza* examination of the *ginnasio*. Not more than fifteen of such courses may be opened during 1911-1912, 1912-1913.

**Examinations** — Under the examination by-laws of 1904 all pupils as a rule undergo three examinations, written and oral or only oral, during the school year, in December, March, and June. Marks are given to each pupil by the teacher of each subject on general efficiency during the three months preceding each examination, and on all examination papers by the teacher of the subject and another teacher. The highest mark is ten and the pupil who averages six in the above examinations and seven for good behavior in all subjects is admitted to the next class (*i. e.* year of study); if he does not average six, he must present himself for examination in October. If he fails to pass, he must repeat the year of study and he must also do so, if he gets less than five marks for good behavior in more than one half of the number of subjects.

At the end of each school course the pupil must pass a special examination called *licenza* examination, unless he has obtained eight marks in the examinations during the last year. The *licenza* from the *ginnasio* is required to enter the *liceo*, that of the *scuola complementare* or

*scuola tecnica* to enter the *istituto tecnico* or *nautico* or the *scuola normale*. Admission to the *Istituto tecnico* is obtained also through special examination. A *licenza* certificate from a government or equivalent school is necessary to take the civil service examinations or to enter the universities or higher schools.

Pupils studying at private schools may take an examination to enter any class of the schools, except normal schools, or the *licenza*. If they wish to enter the second class of a school of the first grade, they must have passed the *maturità* examination at least one year before, if the third class, at least two years before, etc. If they wish to enter the second class of a school of the second grade, they must have passed the *licenza* examination of the corresponding school of the first grade one year before; if the third class, two years before, etc. Admission to the second or third year of the normal school cannot be obtained by any but regular pupils of a government school.

**Fees** — The fees to be paid by pupils of government, or equivalent schools, for the whole course including examination fees (part of which is reserved to the teachers), vary from 106 to 409 lire. Clever pupils, if in needy circumstances, are exempted from payment. Pupils who have studied privately pay higher examination fees.

**Teachers**. — No one can be appointed teacher in any government or equivalent schools or teach in any private school unless he has a degree granted from a university or school of the same standing, or a special diploma, which can be granted only after examination and for such subjects as are not taught in universities. These are modern languages (though there are some courses at a few universities), drawing, accounting, penmanship, and stenography. The status and compensation of teachers in government and equivalent schools are regulated by the two acts of April 8, 1906, nos. 142 and 144, which fixed the rules to be followed in appointing, dismissing, transferring from one place to another, censuring, etc., any teacher. The first appointment is for three years, after which it is made permanent, if the inspectors report favorably, if not, the appointment is extended for another year, when the teacher is definitely appointed or dismissed. During this probationary period the teacher (*professore*) is called extraordinary (*straordinario*), after the definite appointment, ordinary (*ordinario*). Not all places, however, are filled by teachers so appointed. In certain cases, when a teacher would have only a few hours a week, a temporary appointment is made. Such appointments are also made if a regular appointee cannot be found for the place, and in schools with a large number of pupils, when it is necessary to divide classes and the regular teacher cannot take charge of all. As a rule, a teacher is appointed for a single study or for two related subjects.

**Salaries.** -- The scale of salaries paid to teachers in secondary schools varies considerably with the subject taught. Here only the salaries paid to teachers of subjects which are definitely secondary are given. (a) All teachers of secondary schools of the first grade, with the exception of teachers of the fourth and fifth class (year) of the *ginnasi*, and teachers of drawing and penmanship in the normal schools for boys, and of drawing in the normal schools for girls, have salaries of 1800 lire if extraordinary, and from 2000 to 4800 if ordinary. (b) All other teachers of secondary schools of the second grade and those of the fourth and fifth class of the *ginnasi* have salaries of 2200 lire if extraordinary, and from 2500 to 5400 if ordinary.

All ordinary teachers have four increases in salary of 500 lire each, every five years. Then two increases, one tenth of the salary thus reached, each at six years interval. In this way they pass from the minimum to the maximum salaries, as given above. The four fixed increases, but not two consecutive ones, can be anticipated one year in case of exceptionally able teachers.

Teachers, like all the government employees, receive pensions on their retirement from service.

Teachers of class (a) have to teach from fifteen to eighteen hours, of class (b) from thirteen to fifteen hours, of the other classes a number of hours which varies from four to fifteen, according to the subjects. If they teach more, they receive extra pay. Extra pay, varying from sixty to one hundred and fifty lire a year, is also granted to those teachers who have charge of laboratories or have to correct exercises at home, etc. All receive part of the examination fees paid by the pupils.

Headmasters are appointed from teachers who have taught for thirteen years and from a list compiled by the *Giunta del Consiglio Superiore, sezione scuole medie*, in accordance with results of the inspections. They are appointed for a first period of five years during which they teach and receive extra compensation varying from 750 to 1000 lire a year. After the probationary period, they are permanently appointed and receive salaries not higher than 5750 lire for schools of the first grade, and 6500 for schools of the second grade, and they may be relieved from teaching.

Schools equivalent to government schools must pay the same salaries.

**Inspection.** -- A new body of inspectors for secondary schools was formed by Act 414 of June 27, 1909. For the purpose of this act the whole of the kingdom is divided into twenty-one districts. In September each year by order of the Minister, inspectors are assigned to each district; for certain subjects one inspector may be assigned to more than one district. The appointments are for a year and may be renewed for two following years, after which one

year must elapse before the appointment can be renewed.

Inspectors are chosen from among (a) Professors of universities and schools of the same rank, (b) *Provveditori*, (c) Heads of secondary schools situated in another district, (d) Ordinary teachers of the second grade of secondary schools having taught at least ten years and teaching in schools outside of the district for which they are appointed inspectors. *a* and *b* inspect second-grade secondary schools, and *c* and *d* first. Inspections are made according to need, but there is a regular inspection in each school for each subject once in five years. The purpose of the inspection is to ascertain whether the course of study has been followed and to report on textbooks and to superintend the discipline and the method of teaching; to make, according to the results of the inspection, the needed recommendations for the final appointment or dismissal, approval or censure of teachers, to give any information required by the Ministry concerning any teacher. At the end of each school year the inspectors of each district meet and compile a collective report in which are stated the conditions and needs of the schools.

At the Ministry there are ten inspectors for secondary schools; six are permanent and are appointed from among officers of classes (a), (b), and (c). Four are appointed yearly and reappointed for not more than five years. The central inspectors, besides special duties that may be assigned to them from time to time, compile the general program of inspections to be submitted to the Minister, coordinate the results of inspections; recommend to the Minister the needed changes on the basis of those results, propose to the Minister extraordinary inspections, general and particular inquiries and, if needed, carry them out; promote investigations relating to course of study and method of instruction; present to the Minister yearly a general report on secondary schools.

**Fine Arts and Music Schools.** -- Government fine arts and music schools are under the direction of the Minister of Public Instruction. They have not a uniform organization and vary in importance in every respect. The number of fine arts government schools was thirteen in 1901-1902 with 2433 pupils (2137 boys and 296 girls). The non-government schools were thirteen with 1625 pupils (1363 boys and 262 girls). The former had 167 teachers, the latter 65.

The government music schools were five in number with 952 pupils (353 boys and 419 girls), the non-government 51, with 4431 pupils (3408 boys and 1023 girls). The number of teachers in the former was 146, in the latter 395.

**Agricultural, Industrial, and Commercial Schools.** -- Notwithstanding article 1 of the Casati Act, which says all schools are under the Ministry of Public Instruction a great number of



schools have been established under the supervision of the Ministry of Agriculture, Industry, and Commerce. They are practical schools of agriculture, commerce etc.

The schools of agriculture are regulated under the act of June 6, 1885, No. 3141. They are established at the suggestion of local authority (*comuni*, province, etc.) which pay two fifths of the expenses besides providing an experimental farm, while the state pays three fifths. Each school is managed by a committee whose members are appointed partly by the government and partly by the local bodies sharing in the expenses. They are classified as either practical or special schools. The course of study of the practical schools covers three years, and includes Italian, history, geography, arithmetic, geometry, surveying, drawing, accounting, bookkeeping, penmanship, natural and physical sciences, agriculture and related industries. Some have a fourth year of practical studies.

To be admitted, boys must have passed the examination for admission to the fourth class (year) of the elementary schools, but though that examination is usually passed at the age of nine to ten, boys are not admitted to the agricultural schools until they are at least fourteen and not after they are seventeen. The boys may board on the school farm. The staff of each school includes, as a rule, a director, a vice-director, an elementary school teacher and an assistant, besides extraordinary teachers for special subjects.

Special schools of agriculture are of two grades. Those of the first grade are organized like the practical schools with this difference, that instead of agriculture in general, particular branches are offered, *i.e.* dairying at Reggio, horticulture at Florence, vine raising and wine making at four schools. The four of the second grade, all for vine raising and wine making, are in their plan of studies similar to sections of *istituti tecnici*. Boys are admitted if they have passed the final examination of a practical school or a special school of the first grade or of a *scuola tecnica*.

Commercial and industrial schools are governed by the by-laws of June 1, 1908, No. 187. They are established on the suggestion of local bodies (*comuni*, province, chambers of commerce, etc.), which share the expense, the Minister of Agriculture contributing within the limits of the total appropriation for that purpose. These schools are divided into: (a) industrial schools, *i.e.* manual training schools; (b) artistic-industrial schools; (c) commercial schools; (d) schools for girls.

There are two grades of each class corresponding to the first and second grade of the secondary schools. Their plan of studies varies greatly, ranging from schools of drawing with one teacher to a school fully equipped like the *scuola industriale* of Vicenza or like the *scuole medie di commercio*, which correspond in all

respects to a section of *istituto tecnico*. In the majority of these schools the teaching takes place on evenings and Sundays. The total number of these schools, which receive grants from the government, was 310, with more than 47,000 pupils in 1903-1904. The total expense for that year was more than 3,000,000 lire, of which about 700,000 was paid by the state and more than 800,000 by the *comuni*. The number of teachers was over 2000. There were 427 schools, which did not receive any grant from the government.

All these agricultural, commercial, and industrial schools are under the supervision of a special committee, the *Consiglio superiore dell'insegnamento, agrario, industriale e commerciale* which was established in 1907 by the amalgamation of two previously existing, one for agricultural and the other for commercial and industrial schools. There is also a body of inspectors, and the Minister may appoint other persons, whom he thinks suitable, for special inspections.

There are also three mining schools which rank as secondary schools of the second grade.

**Boarding Schools** — The schools referred to above are day schools. Boarding schools are for the most part private institutions. There are a few government institutions (those for boys called *convitti nazionali*), where pupils may board and follow the courses at the public secondary schools or the elementary schools.

**Reform.** — Ever since the promulgation of the Casati act the reform of the secondary schools has caused much discussion. Since then some changes have been introduced in the plan of studies by one Minister and changes in the opposite direction by another. Many bills have been introduced into Parliament for a general reform, but none has become a law.

In 1906 a Royal Commission was appointed to investigate the whole subject of secondary education. They have issued a report including a proposal for a new organization. The idea of a single secondary school for the first grade, which not long ago obtained, has been abandoned, and they propose for the first grade:

(a) A three years' *ginnasio* for those who intend to pass to the *liceo* and then to the universities, the plan of studies including Italian, French, history, geography, psychological education, elements of mathematics and natural sciences, drawing. Boys and girls will be admitted if they are ten years old and have passed the *maturità* examination. (b) A *scuola tecnica* preparing for the professional school of the second grade. Boys and girls will be admitted if they have passed the *maturità* examination. (c) A *scuola complementare* for those who do not intend to pass to schools of the second order. Admission to be gained after the sixth year of study in the elementary schools.

For the second grade they propose: (a) A *liceo* with a five-year course for those who intend to pass to the university. They propose

three different kinds of *liceo*: (1) classical *liceo* with Latin, Greek, and French; (2) modern *liceo* with Latin, French, and English or German; (3) scientific *liceo* without Latin, which would take the place of the physico-mathematical section of the *istituto tecnico* (b) Professional schools taking the place of the professional sections of the *istituto tecnico* and of the special schools of the second grade now under the Ministry of Agriculture.

**Higher Education.**—Higher education is given at the universities (*università*) and at other institutions the majority of which are designated as schools (*scuole*) or institutes (*istituti*). Some of these institutions are connected with universities, others are entirely independent. If under the control of the government, the universities are called *regie*; if under local bodies, *libere*. All universities are governed by the same laws and by-laws, the other institutions by special laws and by-laws.

The faculties, all of which are found in the largest universities, are: (1) law, (2) medicine and surgery, (3) mathematical, physical, and natural sciences, (4) belles-lettres and philosophy. In addition, there are schools in the following subjects: pharmacy, engineering, veterinary science, agriculture, commerce and social sciences, oriental languages, midwifery; and courses for notaries and attorneys, for secondary and elementary school teachers, and schools for women. All commercial schools, the agricultural schools at Milan, Portici, and Perugia, and the forestry school at Vallombrosa are under the Ministry of Agriculture, Industry, and Commerce; all other institutions are under the Ministry of Public Instruction.

The following is a list of institutions with the date of foundation, faculties, and number of students in 1910-1911.

**Maintenance** — The expenses in the various institutions are borne by the State, local bodies contributing in different ways. By act of 1862 the universities of Genoa, Parma, Modena, Siena, Macerata, Cagliari, Sassari, Messina, and Catania were made universities of the second rank. To have them raised to first rank local bodies agreed to pay to the State the difference involved in the salaries of teachers, and in a few cases to have the faculties completed. Local bodies of other cities contribute funds to establish schools either in connection with universities or as independent institutions. These contributions are of a permanent character. Other extraordinary payments have been made for new buildings or other extraordinary expenses. Free universities are supported entirely by local bodies, except Urbino, which receives a small subsidy from the State. The Institute of Social Sciences of Florence and the Commercial University of Milan are supported by private gifts.

To all other commercial schools, to the Poly-

technic School at Turin, the School of Naval Engineering at Genoa, the Higher Institute of Florence, and the Clinical Institute at Milan, the State contributes a fixed sum. All these institutions are administered by special boards in which local bodies are represented, but professors are appointed by royal decree or ministerial selection. The School for Oriental Languages at Naples has a patrimony of its own administered by the Minister of Public Instruction; also the Institute of Agriculture of Perugia.

The general by-laws regulating the universities and some of the other institutions are those of Aug 21, 1905, No 638.

**Administration** — For each university there are the following: (a) a principal (*Rettore*); (b) an academic council (*Consiglio accademico*); (c) a general assembly of professors (*Assemblea generale dei professori*). For each faculty: (a) a dean (*Preside*); (b) a council of professors (*Consiglio di facoltà*). Special schools have, as a rule, an organization like the faculties; the head, however, is usually called director (*Direttore*).

**Rector.** — The *Rettore* is chosen by the king from three ordinary professors nominated by the general assembly of professors; he is appointed annually and may be reappointed. In Naples he is elected by the professors from three ordinary professors selected from the various faculties in turn; the election has to be approved by the Minister. The *Rettore* is appointed for two years. He is the chairman of the academic council and the assembly of professors; represents the university on all occasions, confers degrees in the name of the king; communicates his decisions, those of the academic council, the faculties councils, the general assembly of professors and the Minister to all concerned; sees that all by-laws are adhered to, looks after the administration by means of the secretary of the university and other employees; inspects the university library and all institutions belonging to the university; regulates the discipline of professors, students, and employees; and compiles a yearly report to the Minister, and grants leave of absence.

**Councils.** — The academic council is composed of the following: (a) the *Rettore* in office, (b) the retiring *Rettore*; (c) the deans of the faculties; (d) the retiring deans; (e) the director of the schools connected with the university. Among other functions the council (a) grants scholarships and makes proposals for state scholarships; (b) gives its advice on changes relating to the university regulations or any subjects submitted by the *Rettore* or the Minister, (c) fixes the time schedule for classes; (d) grants dispensation from payment of fees; (e) decides upon the disposal of funds.

The general assembly of professors, both ordinary and extraordinary, gives its advice on reforms in universities, and nominates the three

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TOWN	DATE	INSTITUTION	FACULTIES	ENROLLMENT
Aquila . . . . .	1806	University School	courses for notaries, pharmacy and midwifery	39
Bari . . . . .	1806	(a) University School	as Aquila	85
Bologna (q v) . . . .	1886	(b) Higher Commercial School		130 (1906-1907)
	1088	R University	all, and schools of agriculture, and veterinary surgery	1520
	1877	Engineering School		166
Cagliari (q v) . . . .	1626	R University	law, medicine, sciences, <sup>1</sup> school of pharmacy	243
Camerino . . . . .	1727	Free University	law, medicine, <sup>1</sup> schools of pharmacy and veterinary surgery	406
Catania . . . . .	1434	R University	all, school of pharmacy	1048
Catanzaro . . . . .	1806	University School	as Aquila	21
Ferrara (q v) . . . . .	1391	Free University	law, medicine, <sup>1</sup> sciences, <sup>1</sup> school of pharmacy	490
Florence (q v) . . . .	1349	R Higher Institute	medicine, letters, and philosophy, sciences, <sup>1</sup> school of pharmacy	482
	1882	Higher Institute for Women		135
	1875	R Institute for Social Sciences		105 (1909-1910)
Genoa . . . . .	1243	R University	all, schools of pharmacy, and engineering <sup>1</sup>	1024
	1870	R School of Naval Engineering		130
	1884	Higher School of Commerce		119 (1905-1906)
Macerata . . . . .	1290	R University	law	435
Messina . . . . .	1549	R University	law only since earthquake	229
Milan . . . . .	1859	R School of Engineering		875
		R Faculty of Letters and Philosophy		86
		R School of Veterinary Surgery		50
	1870	R School of Agriculture		91 (1908-1909)
	1902	University of Commerce		99 (1908-1909)
	1905	Clinical Institutes		
Modena . . . . .	1678	R University	law, medicine, sciences, <sup>1</sup> schools of pharmacy, and veterinary surgery	522
	1224	R University	all, school of pharmacy	5340
Naples (q v) . . . . .	1810	R Engineering School		209
	1856	R School of Veterinary Surgery		131
	1727	R Institute of Oriental Languages		220
Padua (q v) . . . . .	1222	R University	all; schools of pharmacy, and engineering	1333
Palermo . . . . .	1805	R University	all, schools of pharmacy, and engineering	1265
Parma . . . . .	1512	R University	as Modena	435
Pavia . . . . .	1300	R University	all, schools of pharmacy, and engineering <sup>1</sup>	1137
Perugia . . . . .	1276	Free University	law, medicine, <sup>1</sup> schools of pharmacy and veterinary surgery	350
	1896	R Institute of Agriculture		73 (1908-1909)
Pisa . . . . .	1328	R University	all, schools of pharmacy, agriculture, and engineering <sup>1</sup>	956
	1810	R Higher Normal School		(included in above)
Portici . . . . .	1873	R Higher School of Agriculture		126 (1905-1906)
	1303	R University	all, school of pharmacy	2847
Rome (q v) . . . . .	1817	R School of Engineering		308
	1906	R Institute of Commerce		248 (1907-1908)
	1882	Higher Institute for Women		285
Sassari . . . . .	1677	R University	law, medicine, school of pharmacy	176
	1246	R University	as Sassari	244
Siena . . . . .	1404	R University	all, school of pharmacy	1898
Turin . . . . .	1906	R Engineering School		1236
	1796	R School of Veterinary Surgery		59
	1906	R School of Commerce		57 (1906-1907)
Urbino . . . . .	1671	Free University		1st year
Vallombrosa . . . . .	1869	R Institute of Forestry		312
Venice . . . . .	1868	R School of Commerce		31 (1908)
				173 (1905-1906)

The totals do not include students following the special course for elementary school teachers

<sup>1</sup> Incomplete.

professors whose names are to be submitted to the king for the appointment of the *Rettore*. For this latter purpose representatives of private professors take part, two for each faculty or school.

The dean represents the faculty on all occasions and is the chairman of its councils, acts as intermediary between the faculties and the rector; submits a yearly report from the faculty to the *Rettore* concerning the work and examinations, with his remarks. The dean is appointed for three years and may be re-appointed.

The council of ordinary and extraordinary professors of the faculty suggests to the students the order of studies to be pursued, co-ordinates the syllabi submitted by the professors, compiles the schedules for classes proposes new courses, designates the persons fitted to give such courses, and those who may temporarily fill vacant chairs, and proposes the means of permanently filling such vacancies. The council submits to the academic council proposals for changes in the regulations, and submits the names of three professors from whom the king will appoint the dean. The council meets once every two months and may meet extraordinarily when five professors demand it.

*Professors* — Professors are ordinary (*ordinari*), extraordinary with a permanent appointment (*straordinari stabili*), extraordinary (*straordinari*), *incaricati*, and private professors (*liberi docenti*). The appointments and transfers of ordinary and extraordinary professors are regulated by the acts of 1904 and 1907. The provisions of these acts apply to all Royal universities and to some of the schools, and are also followed in the main for the others, although their provisions do not apply to them.

The Minister has the right, according to the Casati act, to submit to the king the names of men of exceptional merits for appointment as ordinary professors. This, however, very seldom happens, and both ordinary and extraordinary professors are, as a rule, appointed by selection from applicants according to their qualifications, which are passed upon by a committee of professors. Ordinary professors are appointed by royal decree. An extraordinary professor is appointed for the first time by the Minister for one year, after which he is appointed for a second year and then for a third in consultation with the faculty. When he has been reappointed twice and has taught three successive years, he is made, by royal decree, a permanent extraordinary professor (*straordinario stabile*) after the advice of the higher council has been heard. In engineering schools extraordinary professors may be appointed by the Minister, regardless of the usual formalities. An extraordinary professor having a permanent position may be promoted to ordinary upon the favorable report of a com-

mittee appointed in the same way as those who pass upon the applicants for new positions.

*Incaricati* are appointed by the Minister on the suggestion of the faculty in the case of obligatory courses. For complementary courses the advice of the higher council is also taken. Ordinary and extraordinary professors, those who have been recognized fit to hold chairs as such, those who have occupied chairs, and private professors, may have a temporary appointment as *Incaricato*. Such an appointment lasts not more than one year, but may be renewed.

Besides official professors there are private teachers. To be permitted to teach, one must file an application with the Minister, stating what subjects and at what institutions he wishes to teach. He has to pass a special examination which consists of (a) a written dissertation on a subject chosen by the examining committee; (b) an oral examination upon that subject and on the science which he intends to teach; (c) a lesson. Applicants, however, who have given proofs of a thorough knowledge of the subject may be excused from the examination or from parts (a) and (b). Such applicants must have published at least one memoir on the subject they desire to teach.

The universities of Turin, Genoa, Sassari, and Cagliari have also *Dottori aggregati*, which correspond to the French *agrégés*.

*Salaries* — By an act of 1909 the salary of ordinary professors has been raised from a minimum of 5000 to a minimum of 7000 lire, with periodic increases of 750 lire every five years up to 10,000 lire, and that of extraordinary professors from a minimum of 3000 to 4500 lire with periodic increases for the *stabili* of 450 lire up to 7000. *Incaricati* receive a fee of 30 lire per lesson, if they are ordinary or extraordinary professors, they receive 2000 lire a year, if they are not official professors. This increase applies to all Royal universities and other institutions with the exceptions noted below. The same act fixed the salaries of professors of higher institutes for women at 5000 lire, if ordinary, with increases of 500 lire every five years up to 7000 lire, and at 3500, if extraordinary, with increases of 350 every five years up to 5000 lire. Salaries of professors at the university schools are lower.

The salaries of the professors of the Higher Schools of Commerce, of the School for Oriental Languages, and of the Institute of Forestry have not been changed and are as a rule 5000 lire, with periodical increases of 500 for ordinary, 3000 for extraordinary, and 1200 for *incaricati*.

The Casati act fixed the number of ordinary and extraordinary professors in each Faculty or school, but the act of 1909 has done away with such provision and fixed the total number of professors at Royal universities and other government institutions under the Ministry of Public Instruction, except institutes for women,

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oriental institutes, and university schools, at 861 ordinary professors and 215 ordinary professors of fundamental subjects and thirty-eight ordinary and twenty-seven extraordinary professors of complementary subjects. New chairs can be established in these institutions only by law, with the exception that those institutions which have a special administration to which the State contributes a fixed sum may change the number of ordinary and extraordinary professors provided no higher charge will result to the State. The number of ordinary and extraordinary professors at the other institutions is separately fixed at each of them. For the *incaricati* compensation a lump sum is appropriated.

A certain number of assistants are attached to universities and schools. The total attached to Royal universities and other government institutions under the Ministry of Public Instruction, except institutes for women, oriental institutes, and university schools, is 1054, and the salaries vary from 1500 to 2400 lire a year. To Royal observatories also are attached assistants, thirty in all, including the observatories of Milan, Naples, and Rome not attached to universities, their salaries varying from 2000 to 5700 lire.

**Fees** — Fees were considerably raised by an act of 1903. For the whole course they amount to 1275 lire for the faculty of medicine, 1185 for the faculty of law, 1150 for the engineering schools, 805 for the faculties of sciences and letters, from 950 to 510 for the school of pharmacy, 705 for the courses for notaries and attorneys, 500 for the schools of agriculture, and 510 for the school of veterinary surgery, 110 for the courses for secondary teachers (above faculty fees). Examination fees are included in the above totals and go to the examiners. The increase of revenue, due to the raising of the fees, is applied partly by the State, partly by the universities and schools to increase salaries of assistants, to establish scholarships, to grants for laboratories and libraries.

Those who wish to be authorized to teach privately at universities must pay a fee of 250 lire, and if they wish to transfer from one university to another, they must pay a fee of 100 lire.

Numerous scholarships are granted by the *comuni*, *province*, state and endowed institutions. Among others the State grants every year nine scholarships to be held abroad.

**Students.** — In order to matriculate as a regular student in a university it is necessary to have the diploma granted to those who have passed the final examination of a *liceo* (or have been excused from it) or, for the faculty of sciences and the schools, that of the physico-mathematical section of a technical institute. The diplomas of all sections of the technical institute admit to the schools of pharmacy, veterinary science, and agriculture. The diplo-

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mas of special (secondary) agricultural schools admit to the latter, those of the (secondary) professional schools of the second grade admit to the corresponding schools of university standing.

Besides regular students, there are *uditori* (auditors) who pursue certain courses but cannot become candidates for a degree. No condition is required to matriculate as *uditori*. All courses are open to the public.

No colleges in the English sense exist at any of the universities. There are, however, the *Collegio Ghislieri* at Pavia, where those students belonging to the Lombard provinces who gain scholarships board, and a boarding college annexed to the *Scuola normale superiore* of Pisa.

The school year begins in the middle of October and ends in July. Work begins early in November and ends about the 20th of June.

**Degrees** — The faculties of science and letters and the school of pharmacy under the 1906 regulations granted a preliminary degree called *licenza* after two years of study, which was required in order to enter the third year of study, but a recent decree has removed such requirement. After he has passed all special examinations, the student is admitted at the end of the course of study or at any time afterwards to take the examination for the doctor's degree. Such examination consists of (a) a written dissertation on a subject chosen by the student, (b) an oral discussion of the dissertation and of two out of three subjects chosen by him. A doctor's degree is required not only for the professions (physician, lawyer, teacher in secondary school, etc.) but also to enter the highest grade clerkships in the government service in all branches.

The length of the courses in the various faculties is as follows —

**Law** four years' course leading to the doctor's degree (*dottore in giurisprudenza*), also two special courses of two years each for notaries and attorneys.

**Medicine** six years' course leading to the degree of doctor of medicine and surgery. A two years' course for midwives is given at all faculties of medicine.

**Sciences** four years' courses leading to the degrees of doctor of pure mathematics, physics, chemistry, and natural sciences. The first two years are prerequisite for schools of engineering. Courses for secondary school teachers.

**Belles-Lettres and Philosophy** four years' course leading to the doctor of belles-lettres, and doctor of philosophy (for which courses in the sciences and experimental psychology are obligatory). Special two years' course for elementary school teachers.

**Pharmacy** four years' course leading to a diploma of pharmacy, five years' course leading to the degree of doctor of chemistry and pharmacy.

**Veterinary Science** four years' course leading to the doctor's degree (*dottore in zoovetina*).

**Agriculture** four years' course leading to the degree of doctor of agricultural sciences. Special teachers' diplomas are given to holders of this degree, on completing additional courses at Milan and Portici.

**Commerce** three or four years' courses leading to the doctor's degree in sciences applied to commerce. Courses for secondary school teachers.

**Engineering** three years beyond the two preparatory years in the faculty of sciences, or at the special school

The total number of students has grown from 22,515 in 1893-1894 to 27,302 in 1905-1906 or from about 72 per 100,000 inhabitants to over 81. In 1910-1911 the total number of regular students at all universities (Royal and Free) and all schools under the Ministry of Public Instruction (the institute for oriental languages excepted) was 26,372, that of students following only some courses 212. In 1909-1910 these institutions granted 2903 doctor's degrees, 485 engineering diplomas, 494 pharmacist diplomas, and 702 other minor diplomas.

**Higher Institutes for Women** — These institutions offer to those who have completed the course in normal schools special four years' courses, at the end of which the students are granted diplomas authorizing them to teach Italian or history and geography or pedagogy and ethics or foreign languages in all secondary schools for girls. The first two years are common to all and include algebra and geometry, physics, chemistry, natural history and hygiene, history of Italian literature, geography, political history, psychology, logic, and ethics, French language and literature, English or German language and literature, drawing. For the third and fourth year all pupils follow courses of history of Italian literature; political history, French language and literature; German or English language and literature; civics and political economy, history of art; drawing, and other special courses, according to the diploma they wish to take and practice in the subjects of the diplomas.

Besides the two government institutes at Rome and Florence there is a private one in Naples whose diplomas are recognized as equivalent to those of the former.

**Special Schools** — The old Chinese college established in 1727 was reorganized in 1888 into a School for Oriental Languages. A general course is now offered in the geography, religion, legislation, and commerce of oriental countries, and special courses in Turkish, Arabic, Chinese, Japanese, Persian, Amharic, Modern Greek, Albanese, English, Russian.

As will be seen, there is no provision for university teaching of theology, fine arts, and music. For the last two some courses at the secondary schools are of a higher grade, and the State offers some scholarships every year to be held at Rome for music, fine arts, and history of ancient and medieval art. At three engineering schools there are courses for architects, but with very few pupils, and studies more scientific than artistic. Bills introduced for the establishment of schools of architecture have failed. The faculties of Catholic theology were suppressed by act of 1873. Such teaching is now carried on at the seminaries, and, in Rome, at some other institutions. For Protestant theology there is a Waldensian school at Florence.

**Other Educational Institutions** — Not treated in the foregoing account are: (a)

*università popolari* (as they do not offer regular courses of study, but only university extension lectures); (b) military schools, under the Ministry of War (see MILITARY EDUCATION); (c) naval schools, under the Ministry of the Navy (see NAVAL EDUCATION); (d) school for officers in the customs service, under the Ministry of Finance, (e) postal-telegraph institute under the Ministry of Post and Telegraph; (f) school for medal artists (*scuola dell' arte della medaglia*), connected with the Mint; (g) reform schools (*risformatori*), under the Ministry of the Interior; (h) Italian schools abroad, under the Ministry of Foreign Affairs; (i) courses on agriculture (*cattedre ambulanti d'agricoltura*) and other courses connected with agricultural experiment stations under the Ministry of Agriculture, Industry, and Commerce; (j) the school for forest guards at Citaducale; (k) courses on paleography and diplomatics at state archives, under the Ministry of the Interior.

**Reform** — Many bills dealing with university reform have been introduced in Parliament, but as for secondary education none has passed. Only those dealing with appointment, transfer, and salary of professors have become acts. In 1912 two bills were presented to Parliament reorganizing the higher schools of commerce, professional schools under the Ministry of Agriculture, etc., and transferring the school of forestry at Vallombrosa, and amalgamating it with the Higher Institute at Florence. A F

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**IVES, ELI** (1779-1861) — Author of textbooks and medical writer, was graduated at Yale College in 1799. He was principal of the Hopkins Grammar School (q.v.) at New Haven, one of the organizers of the medical department of Yale College; professor at Yale (1813-1861), and the author of several textbooks and numerous papers on medical subjects.

W. S. M.

See YALE UNIVERSITY.

**JACKMAN, WILBUR SAMUEL** (1855-1907) — Leader in the nature study move-

ment (*q.v.*) and educational writer, was born at Mechanicstown, O. He graduated at the California (Pa.) State Normal School in 1877; studied two years at Alleghany College, and graduated at Harvard University in 1884. He was instructor of science in the Pittsburgh High School from 1884 to 1889, when he was engaged by Francis W. Parker (*q.v.*) to take charge of the science work in the Cook County (now Chicago) Normal School. Here he developed the lines of nature study teaching which became the general practice in elementary schools. In 1899, when the Chicago Institute was organized, he accepted the post of head of the science department, and when this was later merged into the School of Education of the University of Chicago, he became the professor of natural science. He was dean of the College of Education from 1901 to 1904, and principal of the University Elementary School from the latter date until his death. His published works include *Nature Study for Common Schools* (1891), *Number Work in Nature Study* (1893), *Nature Study Record* (1895), *Nature Study for Grammar Grades* (1898), and numerous papers on the place of nature study in education. He was also editor of the *Elementary School Teacher*. W. S. M.

See NATURE STUDY, PARKER, FRANCIS W.

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**JACKSON, ABNER** (1811-1874) — Fourth president of Hobart College, was graduated from Trinity (then Washington) College in 1837. He was tutor and professor at Trinity (1838-1858) and was president of Hobart College (1858-1867). Author of several papers on education. W. S. M.

**JACKSON COLLEGE FOR WOMEN** — See TUFTS COLLEGE

**JACKSON, CYRIL** (1746-1819) — Dean of Christ Church, Oxford, born in Yorkshire and educated at the Manchester Grammar School and at Westminster School under Dr. Markham (*q.v.*). He entered Christ Church, Oxford, in 1764, graduated B.A. in 1768. After acting as sub-preceptor to the sons of George III under Dr. Markham, he took holy orders. He became Canon of Christ Church in 1779 and Dean in 1783, in which position he attained great popularity with the students in spite of the strict enforcement of discipline. He attached importance to the college examinations and encouraged his students to compete for prizes and exhibitions. He assisted in framing the Public Examination Statute at Oxford which was put into practice in 1802, many Christ Church students took high rank in the

Oxford examinations. He resigned in 1809. Jackson was a man of great intellectual ability, was considered a good classical scholar, had a knowledge of mathematics, botany, and architecture, and became a Fellow of the Royal Society. Many of his students attained positions of eminence in politics, the chief among them being Sir Robert Peel.

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**JACKSON, EDWARD PAYSON** (1840-1905). — Author and teacher, born at Erzerum, Turkey; educated at Amherst College; master in the Boston Latin School (1877-1905), and author of several geographical works and numerous scientific articles and monographs. W. S. M.

**JACKSON, HERMAN MERILL** (1815-1868) — College president and educational author, was graduated from Wesleyan University in 1839. He was professor at St. Charles, Mo., College (1839-1842), Augusta College, Ky. (1842-1844), Ohio Wesleyan University (1844-1850), Dickinson College (1850-1860), and president of Dickinson College (1860-1868). He was author of Latin textbooks and essays on education. W. S. M.

**JACKSON, SHELDON** (1834-1909) — Missionary educator and organizer of schools in Alaska (*q.v.*), graduated at Union College in 1855 and at the Princeton Theological Seminary in 1858. He engaged in missionary work among the American Indians (1858-1864); served as principal of the Rochester Female Institute (1864-1869), was special agent of the government to select Indian children for the schools at Carlisle and Hampton (*q.v.*), and organized mission schools in the Northwest (1869-1877), organized the educational work of Alaska in 1877, and was superintendent of schools and general agent of education in Alaska (1877-1900). He published the *North Star* at Sitka (1887-1893); organized the Alaskan Society of Natural History and Ethnology (1887), and published numerous reports on education in Alaska. He inaugurated the reindeer service in Alaska in 1892. W. S. M.

See ALASKA, EDUCATION IN

**JACOBI, MARY PUTNAM** (1842-1906). — Educational writer and physician, received her professional education in the Philadelphia Woman's Medical College and the Ecole de Médecine of Paris. She was professor in the Woman's Medical College of New York and the New York Post-Graduate Medical School. She wrote *Studies in Primary Education*, *Adolescent Girls*, and numerous papers on educational and medical subjects. W. S. M.

**JACOTOT, JEAN JOSEPH** (1770-1840).

— A French mathematician and teacher, who originated a famous "universal" method in education. In his diversified career he was professor of Latin and Greek literature, subsequently of mathematics, and Roman law, entered the army, eventually rising to rank of captain of artillery; was a member of the Chamber of Deputies, later became lecturer on French language and literature at the University of Louvain, and director of the military school of Belgium. The extremely diversified character of his life and interests undoubtedly led to one of his educational fallacies that "all human beings are equally capable of learning." If this be sound, it forces one to the conclusion that everybody can be proficient in anything to which he turns his attention, in which case there is really little justification for believing in the selective function of the school. Jacotot's educational principles are set forth in paradoxical fashion in his *Enseignement universel* (Louvain, 1822). "Every man can teach, and even teach what he himself does not know." Jacotot's own success in teaching French to Flemish students at the University of Louvain, while he himself did not know a word of the language of his pupils, gave some color to his assertion. He did this by means of books printed in French and Flemish in parallel columns. The fact that his students learned though he did not teach them apparently supported another one of his contentions "One can instruct himself all alone." *Tout est dans tout* (All is in all) is probably the most familiar of all his paradoxes. The corollary, "Know one thing thoroughly and relate everything else to that," throws considerable light upon the earlier axiom. In other words, no bit of learning exists by itself, but bears a direct relation to a large number of related knowledge fields. In practical application of this axiom, Jacotot took Fénelon's *Télémaque* as a point of departure, requiring that six books of that classic be committed to memory by the pupil. Not only did this, with all the commentaries, immensely broaden the field of the pupil's knowledge, but furthermore the method of work necessary to assimilate this carried over very materially in attacking other problems. His universal method consisted of four steps: (1) learn something as closely related as possible to the subject in hand, but learn it so thoroughly that it will be constantly ready for use, (2) repeat that something unceasingly; (3) reflect upon that work done until it no longer rests upon the surface of the memory mass, so to speak, but until it has sunk down deep and has become a real part of the individual's mental stuff; (4) verify or test other facts, rules, generalizations, etc., and measure them all in terms of what you already know. Concrete applications of this method will be found in each of the authorities cited below. In spite of the vagarious character of his paradoxes, Jacotot's generaliza-

tions did contain some germs of truth, but stated in the sweeping form in which he expressed them, they had little practical value. This is particularly true of his notion that whatever became really assimilated was that which the individual had worked out for himself, and not what somebody had told him; and the very broad suggestion of the principle of correlation which is found in his "all in all" axiom. Nevertheless, Jacotot enjoys a far greater reputation in Germany than in his native country, and one which unquestionably overestimates his positive influence upon educational thought and educational practice. His chief works were: *Enseignement universel, Langue maternelle* (Louvain, 1822), *Musique, Dessin et Peinture* (Louvain, 1824); *Mathématiques* (Louvain, 1827); *Langues étrangères* (Louvain, 1828); *Droit et Philosophie panécastiques* (Paris, 1837). See also the *Journal de l'Émancipation intellectuel*, published by his two sons  
F. E. F.

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**JACQUES, JABEZ ROBERT** (1828-1892)

— College president, was graduated from Genesee College in 1854; instructor in academies in New York, 1854-1858; professor in Rochester Collegiate Institute, 1862-1865, and Illinois Wesleyan University, 1865-1875, president of Albert College, Canada, 1875-1885, and of Hedding College, Illinois, 1886-1892. Author of *Study of Classical Languages* and sermons on education  
W. S. M.

**JAHN, FRIEDRICH LUDWIG** (1778-

1852) — The father of German gymnastics, familiarly known to German gymnasts as *Turnvater Jahn*. He was born in Lanz, Prussia, the son of a country pastor. The first thirteen years of his life were spent at home, where he learned to read the Bible and studied history, geography, and the German language under the direction of his parents. He early manifested keen interest in outdoor life and all sorts of physical activities; he learned to ride and swim and was very fond of walking, climbing, jumping, and running. In 1791 Jahn entered the Gymnasium at Salzwedel, and in 1804 left to enter the Gymnasium zum Grauen Kloster in Berlin. His independent and restless spirit led him into frequent conflicts with teachers and fellow pupils. His university career was varied and stormy. He spent five years in Halle, one year at Greifswald, and brief



periods at Göttingen and Jena. In each of these universities he carried on strenuous campaigns of opposition against the student clubs or *Lansmannschaften*. In 1806 he joined the army and wandered through various German states until July, 1807, when the Treaty of Tilsit was signed.

The next two years were spent in literary work at Jena, and in 1809, Jahn went to Berlin where he taught history, German, and mathematics in the *Gymnasium zum Grauen Kloster*, the same school from which he had run away fifteen years before. He took the boys to the *Hasenheide*, on Wednesday and Saturday afternoons, and taught them games, running, jumping, and wrestling. The exercises were so popular with the boys that Jahn continued to teach them indoors during the winter months.

In the spring of 1811 Jahn established the first regular *Turnplatz* at the *Hasenheide*, and from this time on the terms *Turnkunst*, *turnen*, *Turnhalle* became familiar. This was the real beginning of his life's work, the founding of the great movement for popular gymnastics in Germany. An important feature of the activities was the singing of patriotic songs.

In 1813 Jahn responded to the first call for soldiers in the War of Liberation. He returned to Berlin after the war, and in 1817 received the honorary degree of Doctor of Philosophy from the universities of Jena and Kiel, in recognition of his services to the fatherland in time of need, his stimulating influence on the young, his power as a public speaker, and his efforts in behalf of the German language. As the result of his agitation in favor of German nationality, he was arrested in July, 1819, on suspicion of "secret and most treasonable association." From this time until 1840 Jahn was forbidden to live "in Berlin or within a radius of ten miles from the capital, or in any city containing a university or higher school for boys." This restriction was removed when Frederick William IV ascended to the throne, and Jahn was decorated with the Iron Cross. In his last address delivered about 1848, he closed with these words: "Germany united was the dream of my childhood, the morning glow of my youth, the sunshine of middle life, and it is now the evening star which beckons me to everlasting rest." His declining years were spent in poverty and obscurity, and he died at Freyburg, after a brief illness, Oct. 15, 1852.

*Turnvater* Jahn is still held in loyal and grateful remembrance, as the apostle of German unity and the man who gave to the German people a love for gymnastics. Monuments have been erected to him in Berlin, Lanz, Freyburg, and other places. Jahn's most important writings are the following:—

*Über die Beförderung des Patriotismus im Preussischen Reiche* (Halle, 1800); *Bereicherung des Hochdeutschen Sprachschatzes versucht im Gebiete der Sinneverwandtschaft, ein Nachtrag zu Adelung's und eine Nachlese zu*

*Eberhard's Wörterbuch* (Leipzig, 1806), *Deutsches Volksthum* (Lübeck, 1810), *Die Deutsche Turnkunst zur Einrichtung der Turnplätze, dargestellt von Friederich Ludwig Jahn und Ernst Eiselen.* (Berlin, 1816.) G. L. M.

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*Friedrich Ludwig Jahn Sein Leben und Wirken* (Stuttgart, 1881)

LEONARD, F. E. Friedrich Ludwig Jahn and the Development of Popular Gymnastics in Germany *Am Phys Educ Rev*, Vol V, pp 1-18, and Vol X, pp 1-19

SCHULTHEISS, F. G. *Friedrich Ludwig Jahn Sein Leben und seine Bedeutung* (Berlin, 1894)

**JAMAICA, EDUCATION IN.**—Jamaica was seized by the English in 1655, and their possession of the island and the attached Turks and Caicos islands was confirmed by the treaty of Madrid in 1670. The administration is committed to a resident governor appointed by the crown, and a legislative council which is partly formed by election. The population is estimated at 862,000, of whom the blacks constitute 56 per cent and mixed races 18 per cent. The moral and intellectual condition of the people early excited missionary interest, it was not, however, until the nineteenth century that systematic efforts were made for their improvement by religious societies and philanthropists. Between 1820 and 1834 forty schools were established for the instruction of slaves and seven for free people. In the latter year slavery was abolished in the island, and in the following year (1835) Government allowed £50,000 to be used in building school-houses. Soon after, the Mico bequest of £1000 which was made 100 years before and had increased in the interim to £110,000, became available for the education of the former slaves. Under the double stimulus of government and private funds, schools for the people multiplied for a time, but the interest declined and for thirty years little progress was made. In 1865 the cause was revived and several measures were adopted by the Legislature, looking to the improvement of the schools. Competitive examinations were ordered for schoolmasters, and in 1867 the grant-in-aid system was introduced after the English plan, and thus the existing elementary schools were brought under a measure of government supervision. Several endowed schools, following the model of the English endowed or grammar school, had also been established for the children of the privileged or ruling class in Jamaica, and in 1879 a special commission was appointed to inquire into the condition of this class of school and to make recommendations for their further conduct. A few years later, 1885, a commission of inquiry was appointed for the entire system of elementary education and as a result, chiefly,

of the investigations of that body, a new organization of the work was effected.

In accordance with the recommendations of the commission, the legislative council in 1892 created a central board advisory to the Education Department in respect to elementary education, authorized the levy of a local school tax, and provided for a special grant in lieu of fees for schools remitting the same. The legal age for school attendance was fixed at six to fourteen years of age, and the governor was authorized to enact compulsory attendance laws at his discretion. A second commission appointed in 1898 made a very thorough investigation of the entire educational system, and their recommendations as regards elementary schools, as far as practicable, were embodied in the code of regulations issued by the Education Department in 1900.

The schools are either public, *i.e.* supported and managed by the government, or voluntary (chiefly under denominational management). Both classes of schools share on the same terms in the grant which is distributed on the basis of the results of the annual examinations and the inspector's report as to the general condition of the school, together with the number and qualifications of the teachers. There is no color line in the public schools, but separate schools are allowed where required. White children are generally sent to private schools or are instructed at home by tutors.

For the latest year reported (1909-1910) the number of elementary schools was 693, with an enrollment of 89,902 pupils and an average attendance of 57,849, or 64 per cent of the enrollment. The government grant for the schools amounted to £47,399 (\$228,359) equivalent to \$3.94 per capita of average attendance. The obligatory program for the elementary schools includes besides the three elementary branches, elementary science as related to agriculture and handicraft. Optional branches for which grants are allowed are Scripture lessons, geography and history, English language, geometric drawing, and singing. Special grants are allowed for drawing and needlework. The government bears part of the expenditure for five industrial schools in which provision is made for orphan or abandoned children. The three training colleges for women were attended by sixty-one students and the single training college for men, by sixty-eight students.

For secondary education there are two schools aided by the government, enrolling in 1910 a total of 133 pupils, and several unassisted, endowed schools. These schools all prepare students for the Cambridge Local Examinations, Senior, Junior, and Preliminary, which are held at seven centers in the Island. University College, founded in 1888 as an extension of the Jamaica High School, prepares students for the London University examinations. A Rhodes scholarship of the

value of \$1500, tenable for three years, is assigned to Jamaica.

Two noteworthy evidences of progress are dwelt upon in the recent official reports; *viz.* the multiplication of school gardens, and the excellent condition of the schools in Kingston, the capital city. The number of schools to which school gardens are attached is 361, with an attendance of 24,000 children of an age to benefit by the practical training thus afforded. The sum of \$2500 was appropriated in aid of this work in 1910, and four prizes ranging in value from \$5 to \$20 offered for competition in each of the schools. A special course in agriculture is given at Kingston for the benefit of teachers. Provision has been made at seven centers for advanced manual training, and it is proposed to establish at Kingston a school of technology. The system of elementary education with its special extensions is under the general supervision of the Superintending Inspector, who is assisted by a corps of inspectors, one for each of the seven school districts. The majority of these officials are graduates of English universities. The most urgent need of the system is provision for adequate salaries and a more certain tenure for the teachers.

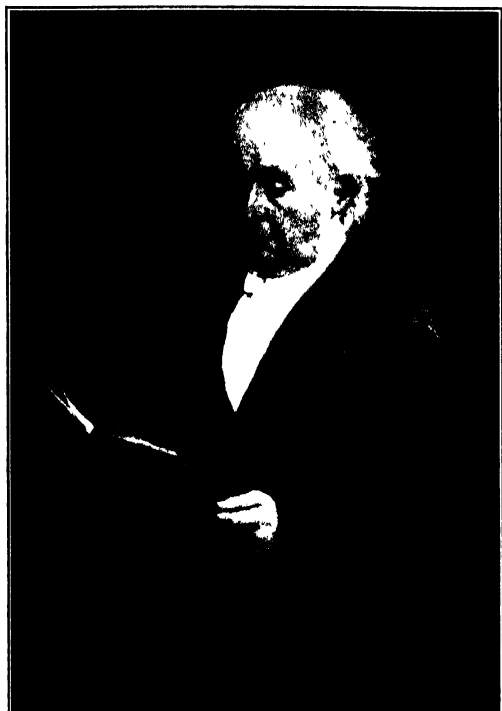
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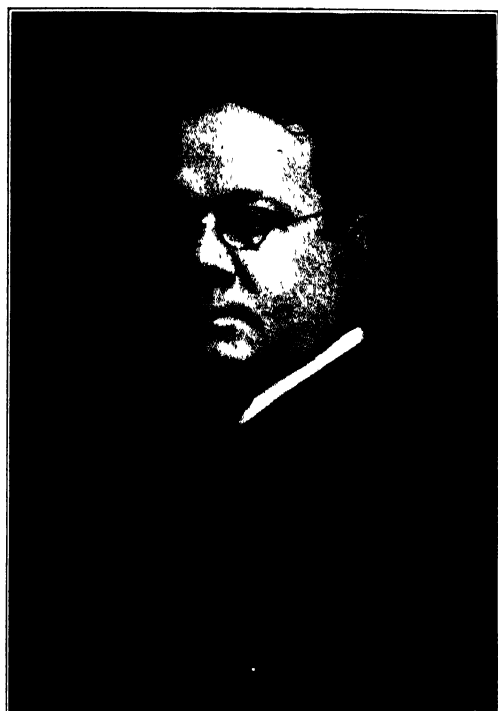
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- Jamaica *Report of the Commission of Education in Jamaica, 1898*
- Annual Reports of the Education Department and the Board of Education*

**JAMES, WILLIAM** (1842-1910.) — Probably the most eminent American philosopher and psychologist, was the son of a theologian. The account of his training and of the development of his career and influence as teacher and author, as psychologist and philosopher, is one of the most romantic known to biography. Owing in part to the foreign residence of his father, and in part to his own varied interests, his higher education extended over a period of ten years. It included a year at the University of Geneva, one year as a student of art under Hunt at Newport, two years in the Lawrence Scientific School, devoted mostly to anatomy and chemistry, two years in the Medical School of Harvard University, a year in Brazil with Agassiz, the naturalist, one year in Berlin, pursuing physiology, and finally a return to Harvard, for further work in zoology, where he received the M.D. degree in 1869.

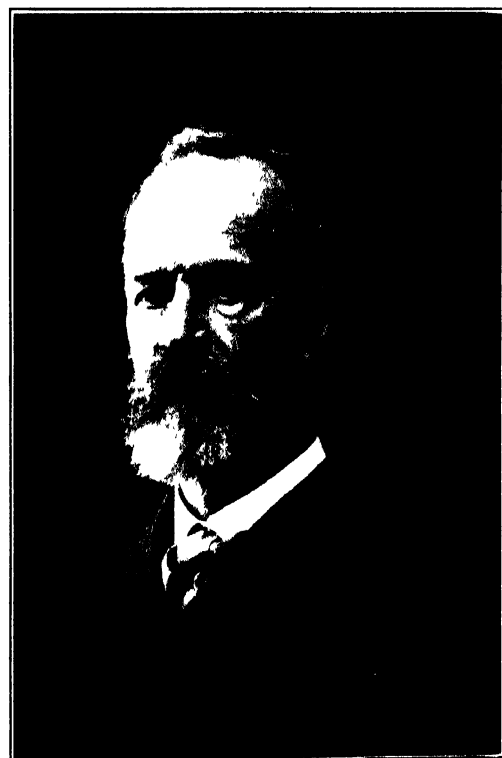
During thirty-five years he was a teacher in this university. After giving instruction in physiology and anatomy seven years, he transferred his work to philosophy for nine years, followed by a nearly equal period as a teacher of psychology. The last decade of active teaching found him again a professor of philosophy. He was brilliant, influential, ever ready to help young minds "find them-



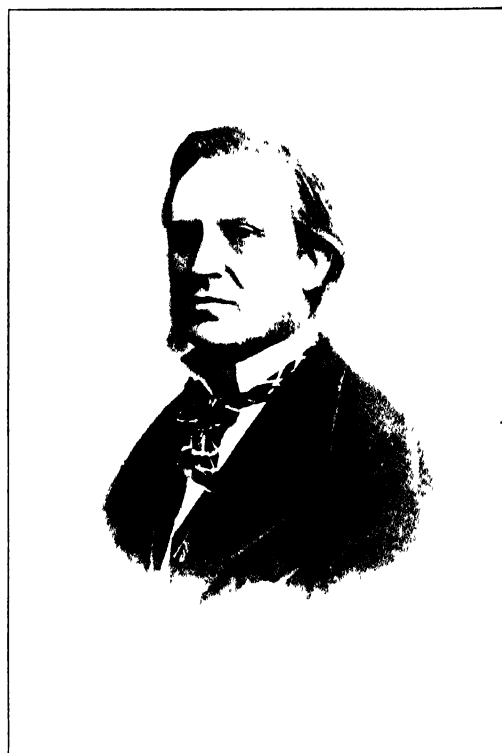
Benjamin Jowett (1817-1893) See p. 570



William R. Harper (1856-1906). See p. 218



William James (1842-1910) See p. 516



Simon S. Laurie (1829-1909) See p. 653

A GROUP OF MODERN UNIVERSITY EDUCATORS.



selves." He was also a lecturer at Columbia and Oxford Universities. He was one of the founders of the *Psychological Review*, and of the American Psychological Association, of which he was twice president.

A gifted and prolific writer in the fields of psychology, philosophy, and education, he frequently contributed to periodicals and published half a score of books. Among these are: *The Varieties of Religious Experience*, *The Will to Believe*, *Pragmatism*, *A Pluralistic Universe*, and *The Nature of Truth*. His greatest and most influential work, *The Principles of Psychology*, appeared in 1890, and soon became a classic in an unusually literal sense of the word. With the repeated reprintings, and the translations of several of his books into foreign languages, as French, German, Italian, Japanese, Spanish, or Russian, and the extension of his fame, he was signally honored with degrees by seven foreign and American universities, and with membership in the national academies of science in America, Denmark, England, Germany, Italy, and Russia. As a personality, his was a gentle and universal character, marked no less by its modesty and simplicity.

The chief work of James consisted in a reconstruction of psychology by resetting its problems and by exploring old as well as new fields in search of data for their solution. By his rare mastery of English and his keen sense of the concrete in experience he turned the abstract difficulties in the human subjects into vital interests for the public as well as for students in general. He elaborated no closed system of psychology, and organized no school of psychologists. Working with the new and strong tide of the theory of evolution, he respected past achievements as well, bringing together and rendering mutually helpful varied materials from the associational, experimental, pathological, and physiological developments in the science. His characteristic contributions consisted in showing consciousness to be a process, this use of the cerebralistic hypothesis, his explanation of habit, his appeal to instinct, a new theory of emotion (shared with Lange), and the typical analysis of special processes, such as the feeling of relation, self, reasoning, and will.

In his philosophy James made his approach to problems through his psychology, the former being in many respects a direct application of the latter. His devotion to truth in all its apparent forms and his abhorrence of the abstractions of the past led him into anti-intellectualism and empiricism. He stimulated new interest in speculation in terms of behavior and expediency, and actively fostered current pragmatism. "We are acquainted with a thing as soon as we have learned how to behave toward it." His philosophical efforts centered on the nature of man's mind, the knowledge which it fashions, and the basis of religious ex-

perience, and encouraged an optimistic attitude toward the experience and the world which man is creating.

Educational theory and practice, particularly in America, are greatly indebted to James. The rising Herbartian movement was met by his contributions derived from a more enlivening, yet less systematic, psychology. What is being done with children in schools to-day, by way of letting the order of subjects and the methods of teaching follow the lead of the native activities and interests, is in part an outcome of his influence. His conception of education and his views of the work of the teacher appeared in the widely read *Talks to Teachers on Psychology and to Students on Life's Ideals*. "Education is the organization of acquired habits of conduct and tendencies to behavior." "The great thing in all education is to make the nervous system our ally instead of our enemy." "No amount of culture would seem capable of modifying a man's general retentiveness." By directing attention to the value of instincts as the equipment for education, by emphasizing the importance of the formation of habits, and by the serious doubt he threw around the doctrine of formal discipline, he fostered a descriptive study of the data of teaching and hastened the coming of experimental pedagogy. E. F. B.

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**JAMES-LANGE THEORY** — See EMOTIONS.

**JAMES MILLIKIN UNIVERSITY, DECATUR, ILL.** — Founded in 1901 by the amalgamation of Lincoln College, Lincoln, and the Decatur College and Industrial School. The institution which is coeducational is under the supervision of the Synods of Indiana, Illinois, and Iowa of the Presbyterian Church. The University includes a preparatory school and the college, which gives courses in liberal arts, engineering, fine arts, domestic economy, music, commerce and finance, pedagogy, and library science. The entrance requirements are fifteen units. The degrees of A B and B S are conferred. The faculty consists of sixty-four members.

**JAMESTOWN COLLEGE, JAMESTOWN, NORTH DAKOTA.** — A coeducational institution which was organized in 1883, and gave instruction until the spring of 1893, when instruction was suspended. In 1909 the college was reopened with an enrollment of 102 students.

The enrollment in 1912 was 190. The college is under the auspices of the Presbyterian Church. The plant consists of five buildings, and a campus of 107 acres. There is a permanent endowment of \$200,000. It is the only college now operating in the state west of Fargo and Grand Forks, a territory of 140,000 square miles. Courses are offered leading to the degrees of A. B. and B. S., courses in music, in expression, in domestic science, in commercial subjects, and in secondary subjects, as well as regular college courses. Fifteen units in high school are required to enter the college. There is a faculty of sixteen members.

#### JANES, LEWIS GEORGE (1844-1901)

-- Educational writer and lecturer, received his school training at the Providence High School and Brown University. He was instructor in Adelphi Academy, president of the Brooklyn Ethical Association, and director of the Greenacre, Me., Summer School of Comparative Religion. Author of *Evolution of Morals*, (1889), *Scope and Principles of Evolution Philosophy* (1890), *Life as a Fine Art* (1891), *Cosmic Philosophy as Related to Ethics* (1895), *Social Ideals and Social Progress* (1899), and of numerous papers on educational, social, and religious subjects.

W. S. M.

**JANITOR, SCHOOL** -- An official who takes care of a school building, e. g. sweeps and cleans it, looks after the heating of the building, makes minor repairs, and renders such miscellaneous service to the principal and teachers as may be required. The position is one of importance, and it is capable of becoming much more so than it is as yet, except in a few favored places. Too often the position of janitor in our city schools is filled by rewarding political service, and not infrequently a relatively poor janitor is safe from dismissal, because he is supported by those whom the superintendent of schools does not think it wise to antagonize. It not infrequently happens, too, as a result of this political basis of selection, that the janitor of a school building receives a larger yearly salary than the teachers who teach in it. With some form of civil service tests, and with appointment and dismissal by the business manager for the Board of Education instead of by the Board itself, the position can be made one of much importance in the management of a school system.

E. P. C.

See ARCHITECTURE, SCHOOL; BUSINESS MANAGER; CITY SCHOOL ADMINISTRATION; CLEANLINESS OF SCHOOLROOM, ETC.

**JANSEN, CORNELIUS** -- See PORT ROYALISTS.

**JANSENISM AND EDUCATION.** -- See PORT ROYALISTS.

**JANUA LINGUARUM.** -- "The gates of

languages" -- a popular name for an introductory text in the classical languages especially during the seventeenth century when Comenius' text by that title became famous. The title had been used previous to Comenius by Habrecht, Batæus, and possibly by others. See COMENIUS, JOHN AMOS.

#### JAPAN, EDUCATION IN. -- Historical --

The present educational system of Japan dates from 1872, when the first education code under the new régime was published. In 1868 took place the great event called *The Restoration of Meiji*, Meiji being the name of the new era then inaugurated. Up to that time, for some seven hundred years, the whole administrative power of the empire had been in the hands of the military class, the head of which under the title of *Sei-I-Tai-Shôgun* (*generalissimo for subjugation of barbarians*) was *de facto* ruler of the country, under him, there were military lords, each having an almost autonomous power in his own territory. In 1868 the *Shôgun* gave up his power into the hands of the Emperor, and in 1871, the feudal system was finally abolished. The military class lost its monopoly of civil and military services and all classes were made equal before the law. The first education code of 1872 established equality of all classes in educational matters and the principle of compulsory education. The preamble to the code says: "It is intended that henceforth universally without any distinction of class or sex, in a village there shall be no house without learning (education), and in a house no individual without learning. Fathers and elder brothers must take note of this intention, and, bringing up their children or younger brothers (or sisters) with warm feeling of love, must not fail to let them acquire learning. As for higher learning, that depends upon the capacity of individuals, but it shall be regarded as a neglect of duty on the part of fathers or elder brothers, should they fail to send young children to primary schools at least without distinction of sex." But before entering upon the description of the present system initiated by the new code, it will not be without interest to touch briefly upon the education in the old feudal days before the new era, for it was chiefly men educated under the old régime, who have been leaders in the evolution of modern Japan.

With the introduction of the Chinese civilization in the seventh and eighth centuries, learning began to be cultivated, and in accordance with provisions of the education section of the famous *Taihô* code issued in 701 A.D. a university was established in the capital for study of classics (or philosophy and history), law, literature, music, calligraphy, and mathematics, all except law being exclusively Chinese; a school was also established in every province: only the children of higher officials were, however, admitted either into the university or to

provincial schools. With the rise of the military class and the establishment of feudalism, those fell into decay, and for centuries the only places where people could obtain any teaching were Buddhist temples, even sons of great military chiefs receiving their education there, if at all. It was only towards the end of the seventeenth century, when the country began to enjoy continued order and tranquillity under the Shōgunate of the Tokugawa family, that any regular provisions were made for education. Even then it was chiefly confined to sons of *samurai* or military men, and it was not till some hundred years later that schools began to be established in any number for common people. In fact, higher learning was limited to the *samurai* class, while of the others, including farmers, artisans, and merchants (to name them in the order of the social scale of the time), the large mass was entirely without any education or with only the elements of reading, writing, and arithmetic; while the number of those who acquired any literary culture was small indeed. The education of *samurai* in those days consisted in the study of Chinese classics and of training in military arts, they were taught in schools established by each feudal lord for his retainers, while those who showed any special ability, either in literary studies or military arts, were allowed or sometimes ordered to proceed to study further with noted masters throughout the country. There was an academy in Vedo (now Tokyo), the seat of the Shōgun's government, where noted professors gave lectures on Chinese classics, there were also private academies kept by masters, to which scholars flocked, attracted by their fame. Other studies were also cultivated to a certain extent such as Japanese literature (in contradistinction to the Chinese), mathematics, medicine, etc., and, notably towards the latter part of this period, the Occidental learning through the study of the Dutch language. It is a mistake to suppose that we began to study Western arts and sciences only within the last fifty years, — after the coming of Commodore Perry, there were earnest students, though few, who under great difficulties read such foreign books as were brought into Japan by the Dutch and in several cases translated them into Japanese or sometimes Chinese, which was the language of the learned at the time.

Under the new régime, which began in 1868, education was encouraged from the very beginning. The academy of foreign languages, which had been in existence before, was reopened and enlarged, developing in the course of some ten years into the University of Tokyo, while many new schools were opened. Students were sent abroad; foreign teachers were engaged, among others being an American normal school teacher, who was placed in charge of the newly opened normal school and taught the method of class teaching in primary schools; under his direction were

compiled schoolbooks and wall charts entirely after the American model. This school was opened in June, 1872, and in September of the same year the new education code was promulgated, which introduced an entirely new system of education after the Occidental model. The provisions of the new code were too ambitious to be carried out completely at the time. Moreover, they had been copied too closely after a foreign model and some of them were found to be unsuitable for the country. During the forty years which have elapsed since that time, many and great changes have been made; but the fundamental principle enunciated, that everybody without distinction of class or sex shall receive primary education at least and that equal opportunities shall be given to all to receive higher education according to their ability, has always been maintained.

**Present System — General Outline** — Education is regarded as one of the most important functions of the state and is placed entirely under the state control, there is a Minister of Education who is a member of the cabinet and is in charge of all administrative matters connected with education. It is to be observed that the educational system of Japan is not determined by laws which have to pass through the two houses of the Imperial Diet and to be sanctioned by the Emperor, but more important matters connected with the educational system are regulated by imperial ordinances, which are issued by the Emperor on the recommendation of the cabinet after being submitted to the Privy Council. These are also submitted by the minister previous to their proposal by him in the cabinet to the High Educational Council, an advisory body composed of presidents of imperial universities, of heads of different colleges and schools, of certain coopted members, of members representing the Departments of the Interior, of Agriculture and Commerce, of Army, and of Navy, and of members specially appointed for their educational experience and knowledge. There are imperial ordinances relating to primary (or elementary) schools, middle schools, girls' high schools, normal schools, higher schools, special colleges, technical schools, imperial universities, private schools, etc.

**General** — Let us begin with a brief outline of the whole educational system as determined by those ordinances. At the base of the whole system is the primary school. Below this, there is the kindergarten, which, however, can scarcely be said to form a part of the national educational system. The primary course is divided into ordinary and higher. The ordinary primary course extends over six years and is compulsory for all children who have completed their sixth year. After finishing the ordinary primary course, a child may go on to the higher primary school with a course extending over two or three years. Supplementary courses may be provided for

children who at any stage after the completion of six years' compulsory education cannot proceed further with regular education. In primary schools, boys and girls are usually taught together in the same schools and often in the same classes, especially in the ordinary primary, there being but little difference either in the matter or manner of teaching. But beyond the primary, the education of boys and girls becomes distinct both as regards schools and subjects. After six years of the ordinary primary course, a boy who proposes to pursue higher education will, instead of going on to the higher primary, enter a middle school. A middle school has a course of five years to which may be appended a supplementary course of one year. After passing through the middle school, a boy intending to pursue the university course enters a higher school, having a course or rather courses of three years, preparatory to different colleges or faculties of the imperial universities. This would correspond approximately to the first two years of the college course of American universities. After finishing three years of the higher school course when he is between twenty and twenty-one years of age, supposing him to have passed through all the stages without any interruption, he enters one of the colleges or faculties of the imperial universities, having an undergraduate course of three or four years, after which he may pursue further study as a postgraduate student. Instead, however, of proceeding to the imperial universities, a boy may, after he has finished the middle school, enter at once a special college or a technical special college. This college must be distinguished from the college of an imperial university and is more like an American college in its standard and scope.

It should be mentioned that in all cases the graduation from one school or college is a qualification for entrance into the next higher stage, but in recent years the demand for higher education has increased at such a rate that, notwithstanding the very great and rapid expansion of educational resources (see tables at the end), at almost every stage a competitive examination has to be held for admission, the number of candidates for admission being from twice, thrice, to even in some cases as large as ten times the number of those that can be admitted. After leaving a middle school, a boy may also enter a higher normal school for the training of secondary school teachers, or one of the military and naval schools or the navigation school for training of officers of the merchant marine, etc. After two years of higher primary school (or after two years of middle school) a boy may enter a technical school, *i.e.* a school for the teaching of industrial arts (manufactures, engineering, technical arts), agriculture, commerce, navigation, etc. The length of a course in these schools is generally three years, so that a boy will finish his

education on this line at about the same age as the boy who has taken a middle school course will have finished his. There are technical schools of even lower grade than this, to which boys are admitted after finishing the ordinary primary school. There are also technical supplementary schools for those who have finished the ordinary or higher primary course.

A girl's education runs on a similar line as far as it goes. Thus after finishing the ordinary primary school, instead of going on to the higher primary, she may enter a girls' high school. The usual length of the course in a girls' high school is four years but may be five years; a supplementary course of two years may be added. In the girls' high school attached to the female higher normal school in Tokyo, the course is five years, with a supplementary "special" course of three years. There is no provision made either by the central or local government for girls desiring to receive a higher education than the supplementary courses of girls' high schools, except female higher normal schools for the training of female secondary school-teachers; but several colleges have been established by private individuals. Besides high schools, there are also technical schools of various grades, just as for boys.

Normal schools for the training of both male and female teachers of primary schools form a separate class by themselves. Their graduates are eligible for admission into the higher normal schools already mentioned equally with the graduates of middle schools and girls' high schools.

There are thus several grades of schools and colleges; first, primary schools with kindergartens and some other schools of the same grade, including some technical schools; next, secondary schools, including middle schools, girls' high schools, technical schools, and normal schools; above them are special colleges for law, medicine, science, literature, fine arts, etc., and technical special colleges for technology, engineering, agriculture and forestry, commerce, etc., besides higher normal schools and higher schools preparatory to the imperial universities; and lastly come the imperial universities with their colleges of law, medicine, science, literature, engineering, and agriculture.

**Moral Instruction** — The object of the primary education is defined in the first article of the Imperial Ordinance on Primary Schools as follows: "Primary schools are designed to give children the rudiments of moral education and of civic education, together with such general knowledge and skill as are necessary for life, while due attention is paid to their bodily development." From which it will be seen that great stress is laid on moral instruction; and this is the case, not only in primary schools, but in schools and colleges of all grades and kinds. It is a national tradition that the primary object of education is moral training.





University of Tokyo



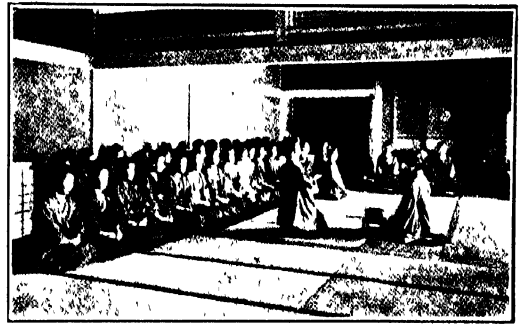
Handwork



Class Room Recitation



Gymnastics.



Training in Etiquette (Tea Ceremony.)



Thus in the old feudal days Chinese classics and philosophy were studied by young *samurai*, not so much for literary purposes as for moral training and intellectual culture. They were thereby taught their responsibility as members of the ruling class, and how to discharge this responsibility; there they read of deeds of great and wise men; by such means, through precepts and examples, a spirit of loyalty to their lords and filial piety to their parents, of reverence for the Imperial House and veneration for their ancestors was inculcated. For the lower classes of people conditions were similar, only in a lesser degree, textbooks for popular instruction in reading and writing were chiefly moral lessons. Thus, there was no necessity for special moral instruction in those days; but under the new system with the introduction of so many different subjects, it was found necessary to devote a certain number of hours specially to moral instruction. But here arose a difficulty as to what should be made the basis of the moral teaching. It seemed impossible to return to the old Chinese philosophical teaching, Buddhism (*q'u*) had been discarded as the national religion, some, while not themselves believing in Christianity, nevertheless thought it might be adopted as the basis of our ethical teaching, there was even some wild talk of a new religion, we seemed to have cut loose from our old moorings and to be drifting, no one could say whither. People seemed to have forgotten that in our old tradition of devotion to the Imperial House and reverence for ancestors, of loyalty and filial piety, we had a most valuable inheritance which has always explicitly or implicitly formed the basis of our moral teaching, even in the days of ascendancy of the Chinese influence. But this was now formulated in the memorable Imperial Rescript issued in 1890 by the Emperor. It runs as follows —

#### IMPERIAL RESCRIPT ON EDUCATION

Know ye, Our subjects

Our Imperial Ancestors have founded Our Empire on a basis broad and everlasting, and have deeply and firmly implanted virtue. Our subjects ever united in loyalty and filial piety have from generation to generation illustrated the beauty thereof. This is the glory of the fundamental character of Our Empire, and herein also lies the source of Our Education. Ye, Our Subjects, be filial to your parents, affectionate to your brothers and sisters, as husbands and wives be harmonious, as friends true, bear yourselves in modesty and moderation, extend your benevolence to all, pursue learning and cultivate arts, and thereby develop intellectual faculties and perfect moral powers, furthermore, advance public good and promote common interests, always respect the Constitution and observe the laws, should emergency arise, offer yourself courageously to the State, and thus guard and maintain the prosperity of Our Imperial Throne coeval with heaven and earth. So shall ye not only be Our good and faithful subjects, but render illustrious the best traditions of your forefathers.

The Way here set forth is indeed the teaching bequeathed by Our Imperial Ancestors, to be observed alike by Their Descendants and the subjects, infallible for all ages and true in all places. It is Our wish to lay

it to heart in all reverence, in common with you, Our subjects, that we may all attain to the same virtue.

The 30th day of the 10th month of the 23rd year of Meiji (October 30th, 1890)

Imperial Sign Manual. Imperial Seal

Such is the Rescript that now forms the basis of our moral education; it will be observed that the two cardinal virtues are loyalty, which with us is identical with patriotism, and filial piety, meaning thereby, not filial piety to our immediate parents only, but to our ancestors for generations. The precepts given are nothing new but "teaching bequeathed by the Imperial Ancestors," and the Emperor calls upon us to join with him in observing those precepts by appealing to our loyalty and filial piety. The message that the Rescript conveys to us cannot be properly understood without the knowledge of the peculiar relation between the Imperial House and the people, and of the spirit of reverence for ancestors, in fact it may be said that the most important object of our moral education consists in so imbuing our children with the spirit of the Rescript that it forms a part of our national life.

A copy of the Rescript is distributed from the Department of Education to every school in the Empire, those under government control being actually signed by the Emperor. To foster the spirit of loyalty, portraits of the Emperor and the Empress are distributed from the imperial household to every government and public schools above the grade of higher primary inclusive, and to some private schools. These are brought out on all public occasions and school functions, at which also the reading of the Rescript always plays an important part.

Two hours a week are given in primary schools to lessons in morals. The following directions as to these lessons are given in the regulations —

The teaching of morals must be based on the Imperial Rescript on education, and its aim should be to cultivate the moral nature of children and to guide them in practice of virtues.

In the ordinary primary course, easy precepts appropriate for practice concerning such virtues as filial piety and obedience to elders, affection and friendship, frugality and industry, modesty, courage, etc., should be given, and then some of the duties towards the State and society, with a view to elevate their moral character, strengthen their will, increase their spirit of enterprise, make them value public virtues, and foster the spirit of loyalty and patriotism.

In the higher primary course, the above must be further extended and training given made still more solid.

In the teaching of girls, special stress must be laid on the virtues of chastity and modesty.

Encouragement and admonition should be given by means of wise sayings and proverbs and by tales of good deeds, so that children may lay them to heart.

At present textbooks compiled on these lines by a special commission, appointed in the Department of Education for the purpose, are in use in all the schools.

Similarly for moral lessons in middle schools, to which an hour a week must be given, the following directions are given:—

The teaching of morals must be based on the precepts of the Imperial Rescript. Its object is to foster the growth of moral ideas and sentiments, and to give boys the culture and character necessary for men of middle and higher social standing, and to encourage and promote the practice of virtues. The teaching should begin with an explanation of the essential points of morals in connection with daily life by means of good words or maxims and examples of good deeds, to be followed by a little more systematic exposition of the duties to self, to family, to society, and to the State. Elements of Ethics may also be taught.

For girls' high schools, where two hours a week are devoted to moral lessons, almost the same directions are given, but here in addition lessons must be given in manners, under which are included, not only personal conduct, but various social observances. In other schools, at least an hour a week is given to moral lessons, always based on the Imperial Rescript and on similar lines, but adapted to the age and future position and occupation of pupils; thus, for instance, in commercial schools great stress is laid on various phases of commercial morality.

**Physical Education and School Hygiene.** — As seen in the article above quoted, defining the object of the primary education, a great deal of attention is paid to the physical development of children. In the old feudal days, sons of *samurais* spent a large portion of their time in practising military arts, such as fencing, archery, riding, use of spears, *jūjutsu*, etc., which of course was an excellent physical training, as for children of other classes, their plays and games and even work in open air with but little school teaching kept them healthy and strong, while it was deemed unwomanly for girls, especially in the middle and higher classes, to take any kind of active exercises. Hence when the new education was first introduced, no need of physical education as such was considered, and while boys and girls, young men and women were subjected to much harder mental work than before, they had scarcely any physical exercise. The consequences soon made themselves apparent on the physique of educated youths, and weak sight and pale consumptive features came to be regarded as characteristic of students. Such a state of things could not be allowed to go on; a teacher of gymnastics was engaged from America, who trained teachers of gymnastics, and by this means a system of gymnastics after the German model was introduced into all the schools. Various modifications have since been made in the method of teaching very young children in primary schools are now taught plays and games, while older boys in primary and all higher schools practice military gymnastics and drill in addition to common gymnastics. In girls' schools, square dances are taught as exercises, and the Swedish system of gymnastics has been introduced to some extent. Besides systematic teaching in gymnastics, foreign games and sports have been introduced: baseball is now a very popular

game, and there are lawn tennis courts in almost every school, while boating and athletic sports have their votaries. At the same time old military arts have been revived as physical exercise, especially fencing and *jūjutsu*, which in some schools are made almost compulsory, and, in a less degree, archery. Schools of every grade have their annual or semi-annual school excursions (*q.v.*), which, while undertaken primarily for the purpose of instruction in geography, history and science, afford a great deal of training in long-distance walking and marching, hill climbing, etc.

Medical examination of school children is made by medical officers in April of every year under the following heads. (1) height, (2) weight, (3) circumference round the chest, (4) the spine (scoliosis and kyphosis, *q.v.*), (5) general constitution, whether strong, medium, or weak, (6) eyesight; (7) diseases of the eye, (8) hearing, (9) diseases of the ear, (10) teeth, (11) diseases in general, especially scrofula, insufficient nourishment, anæmia, *kakke* or *beri-beri*, consumption, megrim, epistaxis, neurasthenia, and chronic diseases. The results of the examination of over one million school children are sent to the Department of Education, where they are collated and examined. It is too early to draw any definite conclusions from these statistics, but there seems to be no doubt that there has been a very remarkable improvement in the physique of our young men and women.

**Primary Schools** — Parents and guardians are under obligation to send children to school, from the beginning of the first school year (April 1) after they have completed their sixth year until they have finished the ordinary primary course, unless they are specially exempted by the mayor or headman of the district on account of mental or bodily infirmities or extreme poverty or for some other valid reason. Hence, an obligation is also laid on the community to establish and maintain a sufficient number of primary schools to accommodate children within its jurisdiction, tuition being, of course, free, the community may be a city, a town, a village, or a union or a division of the same, as the case may be. Special permission must be obtained from the mayor or headman to pursue education at home or at any other school than that established by the community, as a matter of fact, this happens very seldom except in Tokyo, so that practically all children in Japan receive their primary education in common schools without any social distinction. In Tokyo the upper classes are beginning to complain that by sending their children to the same schools as those of the lower classes they suffer in their manners and speech, and also in their intellectual progress, and a few private schools for children of the rich have been started within recent years.

**Curriculum.** — The subjects taught in primary schools are, besides morals and gymnastics al-

ready mentioned, language (reading, writing, and composition), arithmetic, geography, and Japanese history, science (or nature study), drawing, singing, sewing (for girls only), and manual work, making all together from twenty-one to thirty hours a week. It should, however, be mentioned that an hour means usually a forty-five minutes' lesson (or even less), followed by fifteen minutes' play. In higher primary schools the subjects are mostly a continuation of the same, except that elements of agriculture or commercial knowledge and the English language are usually added. As to language, Japanese children are very much handicapped by the fact that they have to learn a large number, some 1500, of Chinese characters in common use in Japan. In arithmetic, almost all our weights and measures being in decimal system, it is not necessary to introduce fractions very early, in fact not until the last, or sixth year, of the ordinary primary. Sewing forms a very important subject for girls, not only in primary schools, but throughout their school course.

**Teachers** — Primary school teachers must have certificates or licenses, which are granted to graduates of normal schools and of certain other prescribed schools and to those who have passed the examination held annually in each prefecture, the standard of which is the same as for graduation from normal schools. The normal schools are maintained by the prefectures for the training of primary school teachers and have a four years' course, and, in some cases, a preparatory course of one year. The qualifications for entrance into the preparatory course are that candidates shall be of good moral character and sound constitution and shall have finished two years of the higher primary course. The last, or fourth year, of the normal school course is largely devoted to practice in teaching in the primary school attached to every normal school. A graduate of a middle school or a girls' high school may enter a normal school for one year, during which he or she studies the theory and practice of pedagogy, and becomes qualified as a primary school teacher. It will be seen from the above that the qualifications for primary school teachers are not very high; yet so great has been the educational expansion that the supply of teachers has not kept pace with the demand, and many not properly qualified teachers have to be employed. It may be remarked that this is the case not only in primary education, but in every grade and kind of education in Japan. The salaries of teachers, from university professors to primary school teachers, are very inadequate; this, no doubt, is one of the reasons why the supply of teachers is not sufficient to meet the demand. More than half of the primary school teachers have salaries ranging between 15 and 24 yen (\$7.50 to \$12) a month, which, even allowing for the low rate of living in Japan, is very inadequate; the highest salary for a university professor is about 4000 yen

(\$2000). All teachers in government or public schools and colleges are entitled to a pension equal to one fourth the amount of their salary at the time of retirement, if they retire after fifteen years of service, and to "additional  $\frac{1}{10}$ th the amount of their salary for every year exceeding fifteen."

**Middle and Higher Schools.** — *Curriculum* — The subjects taught in middle schools are morals, the (Japanese) language, and Chinese literature, a foreign language (one of the three, English, French, and German), history, geography, mathematics, natural sciences, physics and chemistry, law and economics, drawing, singing, and gymnastics, of which law and economics and singing may be omitted. None of those call for special remark, except "the language and Chinese literature." One who is not acquainted with our language may well wonder why Japanese language and Chinese literature should be coupled as one subject in this way, but the fact is that with the introduction of Chinese civilization we not only adopted Chinese literature almost as our own and introduced very many Chinese words into our own language, but even adopted Chinese characters into our writing, so that at present ordinary Japanese literature is written or printed with Chinese characters, amongst which our own are interspersed. It would take too long to explain this anomalous state so as to be intelligible to a foreign public, but it is a very great handicap indeed, not only for our boys and girls, who have to learn three or four thousand Chinese characters, but also for the general public, for it prevents the use of typewriters, linotypes, and similar instruments based on the use of a limited number of characters.

**Teachers** — Teachers in secondary schools are required to have a certificate, granted by the Department of Education to the graduates of higher normal schools and of certain other institutions, as for instance colleges of science and of literature of the Imperial universities, and to those who have passed examinations held annually by the department for the purpose. As already stated, however, a large number of teachers without certificates have to be employed for want of certificated teachers. The tables appended below will show that there has been a steady improvement in this respect.

**Higher Schools** — The question of secondary schools is a very difficult problem in every country, even in Germany, which may be said to be a leading authority in every educational question, this problem seems to be still a matter of discussion. In Japan the problem presents serious difficulties. The present middle school course is not sufficient as a preparation for Imperial universities, not only because the standard in the universities is high, but also because to pursue higher studies of this standard in Japan at present requires a knowledge of two or at least one of the occidental languages, so

entirely different in their structure and nature from the Japanese language, and presenting corresponding difficulties to Japanese students, far greater than French or German to an American. This chasm between middle schools and universities is bridged over at present by "higher" schools, having three different courses of three years preparatory to different colleges of the universities. Thus the normal age of a student when he is ready to enter an Imperial university is above twenty, it will be seen that the higher school courses correspond both in their standard and the normal age of students somewhat to the first two years of the college course of American universities. There are at present eight higher schools, capable of admitting about 2000 new pupils annually, and as there are between 7000 and 8000 applicants for admission (graduates of middle schools and thereby duly qualified), higher schools and consequently universities obtain a number of tolerably select students. At the same time, however, the voice of discontent of the nonadmitted is loud, and, indeed, it is a great problem what to do with them, many of them enter private, so-called universities, of which mention will be made later.

At a session of the High Educational Council, held in the spring of 1910, it was decided that higher schools should be replaced by higher middle schools having two courses of two years and a term, not simply preparatory to the universities, but giving a higher general liberal education, one of the courses being literary and the other scientific, it is thought that the graduates will be qualified to enter Imperial universities at the same time that they receive general liberal culture. Permission will be given to prefectures and private individuals to open higher middle schools, and several will no doubt be established within a few years, so that the present state of congestion at the entrance of higher schools will be avoided. This decision in a modified form was approved by the late minister of education; the only question is whether in two years and a term, instead of three years, as heretofore, students will be so prepared as to satisfy university authorities.

**Imperial Universities** — These institutions are established and maintained by the central government. There are at present four, one in Tokyo (f. 1868) and one in Kyoto (f. 1897), one in the Northwest and one in Kyūshū in course of organization. Each university consists of several colleges or faculties, six in Tokyo, viz. colleges of law, medicine, engineering, literature, science, and agriculture, and four in Kyoto, viz. colleges of law, medicine, literature, and science and engineering; the Northwestern University has at present colleges of science and of agriculture; and the Kyūshū University those of medicine and engineering. Those colleges are like professional schools of American universities, except those of science and literature,

which would correspond approximately to the last two years of the American college course and a little more. In each college, there are prescribed courses, which may be taken up by students in Tokyo, in the college of law, there are courses of four years in law proper, politics, political economy, and commerce; in the college of medicine, besides a course of four years in medicine, there is a course of three years in pharmacy; in the college of engineering, there are courses of three years in civil engineering, mechanical engineering, naval architecture, technology of arms, electrical engineering, architecture, applied chemistry, technology of explosives, mining, and metallurgy, in the college of literature, courses of three years in philosophy, history, and literature, each of them being subdivided into several branches, such for instance as Japanese, Chinese, English, French, and German literatures at the last, in the college of science, courses of three years in mathematics, astronomy, theoretical and experimental physics, chemistry, zoology, botany, geology, and mineralogy; in the college of agriculture, courses also of three years in agriculture, agricultural chemistry, forestry, and veterinary medicine. In Kyoto there are similar courses. A hospital is attached to the college of medicine for the purpose of clinical instruction. After graduation, students may remain in the university as postgraduate students. Tuition fees, inclusive of everything, amount to 50 yen (\$25). The enrollment at Tokyo in 1909-1910 was 5649, at Kyoto 1424.

**Special Colleges.** — Under the nomenclature of special colleges are classed institutions for the instruction of special subjects, other than the Imperial universities, whose entrance qualification is graduation from middle schools or girls' high schools, or higher. There are special colleges for law, medicine, literature, languages, sciences, arts, music, etc. There are five colleges of medicine maintained by the central government and several established by the local government or private individuals; these medical colleges all have a course of four years, but their standard is necessarily lower than that of the Imperial universities, students not being so well prepared, especially in foreign languages. Many of the private institutions teaching law, literature, and theology (Buddhist or Christian), and styling themselves universities, are officially classed under this head, among these, the most noted are the Kei-O-Gijuku founded by the famous educationalist Fukuzawa, and Waseda Daigaku founded by Count Okuma, with faculties of law and literature, and the Joshi Daigaku (Women's University). Some of them have a large number of students, but most of them are suffering from want of funds; for, with very few exceptions, they have scarcely any endowment, nor can they charge high tuition fees. Among other special colleges may be mentioned Foreign Languages School, Academy of Fine Arts, and Academy of

Music, all in Tokyo and maintained by the central government. There are, besides those, technical special colleges, of which, however, I shall speak under the next head. The College of Navigation, for the training of officers of merchant marine under the Department of Communications, and the College of Fisheries and Marine Products, under the Department of Agriculture and Commerce, also fall under this category.

**Technical Schools** — A great deal of attention has been paid to technical education, more especially within the last fifteen years, and a large number of new technical schools has been recently brought into existence, and old ones have been enlarged both in scope and accommodation. By technical education is meant education in engineering and technology, industrial arts; agriculture in all its branches, including sericulture and veterinary medicine, forestry, fisheries and marine products, navigation, and commerce. There are several grades of schools, leaving out the engineering and agricultural colleges of the Imperial universities, there are immediately below them technical special colleges, admitting graduates of middle schools and having a course of three or four years, below these are technical schools of two classes, *A* and *B*. Schools of class *A* are of about the same standing as middle schools, admitting boys or girls who have finished two years of the higher primary, or under certain conditions two years of a middle school or a girls' high school, they have generally a course of three years, sometimes four, and their graduates are under certain conditions admitted to technical special colleges. Schools of class *B* admit boys or girls who have finished the ordinary primary, and usually have a course of three years. In addition to these there are technical supplementary schools for giving general and elementary technical knowledge to those who cannot enter regular schools, they are mostly night schools.

Technical special colleges are mostly government institutions, among which are the engineering or technological colleges of Tokyo, Osaka, Kyoto, Nagoya, Kumamoto, Sendai, Yamagata and Akita, the commercial colleges of Tokyo, Kobe, and Yamaguchi, Nagasaki and Otaru, and the agricultural college of Morioka. There are several institutions attached to these, to train teachers for technical schools of class *A*, want of good teachers being a great hindrance to their establishment, which is greatly encouraged by the government. A sum of 350,000 yen (\$175,000) was voted by the Diet as subsidy for the encouragement of technical education for the year 1908, this sum being distributed to the schools and colleges established by the local governments.

**Female Education.** — In the old feudal days a girl's education generally stopped at an elementary stage, even for daughters of *samu-*

*rai*. They were taught to read and write, and to sew, while those of richer classes were also taught many accomplishments, such as music and dancing, *chanoyu* (tea ceremony), flower arrangement, etc. There were some, especially among the *samurai* class, who received much higher literary culture, but they were only a small minority. Under the new régime, female education received great encouragement. The preamble to the first education code already quoted is emphatic on the point that no distinction shall be made as to sex at least in primary education. A girls' school was opened in 1871 with an American teacher to teach English, in the following year a female normal school was opened by the Empress herself, an event without precedent in the history of Japan. But notwithstanding the encouragement given to the female education by the government, it is only quite recently that people in general have begun to recognize its importance. In 1873, a year after the promulgation of the code, out of a total of 1,145,800 attending primary schools, 77 per cent were boys and only 23 per cent girls, in 1883 the total had increased to 3,238,000, but the ratio of boys to girls was 68 to 32, statistics for 1893 show no great advance either in the total number (3,338,000) or in the ratio of boys to girls (66 to 34), but in 1908 the total had increased to 5,996,000, showing an enormous stride made in primary education since the China War of 1893-1894, and the ratio of boys to girls shows the same satisfactory progress, being 57 to 43. In secondary education, the same thing is to be observed, in 1883 there were only 7 girls' high schools with 350 pupils, besides a few schools of about the same standing but not quite satisfying the requirements of a high school, in 1893 the number had increased to 28 with 3020 pupils. The official report for 1908 gives 159 schools with 46,580 pupils, and the number seems to be increasing at the rate of more than 20 a year.

The course in a girls' high school is mostly four years, the subjects taught are morals, the (Japanese) language, a foreign language, history, geography, mathematics, science, drawing, household matters, sewing, music, and gymnastics. The standard is not quite as high as in middle schools. The foreign language may be either French or English, actually there is no school, except the "Peacocks School," where French is taught. A general supplementary course of two or three years may be added for those who, having finished the regular course, desire to receive a further education, these correspond somewhat to the college courses, but they are not very largely attended, girls staying at home to learn sewing and housekeeping with their mothers, or receiving private lessons in music, *chanoyu*, and other accomplishments.

A girl who has finished the girls' high school

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may enter a female normal school for two years and become qualified as a primary teacher, or she may enter one of the two higher female normal schools and pass a four years' course, when she becomes qualified as a secondary teacher. There are also a few private colleges where girls may receive education in literature, languages, etc. There is at present no means by which a girl may enter one of the Imperial universities. There are also technical schools for girls of different grades as for boys, although not so many; subjects taught in them are sewing, household matters, embroidery, artificial flower making, sericulture, filature, etc.

**Statistics** — The statistics which are appended here to give some idea of the extent and progress of education in Japan are compiled from materials given in the Reports of the Department of Education, mostly from that for the year 1908–1909.

### GENERAL VIEW OF SCHOOLS AND COLLEGES

	NO OF SCHOOLS	NO OF TEACHERS	NO OF PUPILS
Primary schools . . . . .	26,386	134,337	5,996,139
Blind and deaf-muteschools	40	221	1,802
Normal schools . . . . .	75	1,307	21,618
Higher normal schools . . .	2	120	980
Female higher normal schools	1	45	365
Temporary training school (for secondary school teachers) . . . . .	2	18	56
Middle schools . . . . .	296	5,719	115,038
Girls' high schools . . . . .	159	2,395	46,582
Higher schools . . . . .	8	303	5,435
Imperial universities . . . .	3	553	7,517
Special colleges . . . . .	54	1,765	37,432
Technical special colleges . .	13	475	6,114
Technical schools of classes A and B . . . . .	403	3,627	56,573
Technical supplementary schools . . . . .	4,751	2,049	192,331
Technical school teachers' training schools . . . . .	3		151
Schools not classed . . . . .	2,180	7,944	148,971
Total . . . . .	34,376	160,878	6,627,104

### PERCENTAGE OF SCHOOL ATTENDANCE

	1893	1900	1902	1904	1906	1908
Boys . . . . .	74.8	90.6	95.8	97.2	98.2	98.7
Girls . . . . .	40.6	71.9	87.0	91.5	94.8	96.9
Average . . . . .	58.7	81.7	91.6	94.4	96.3	97.8

### MIDDLE SCHOOLS

NUMBER OF	1896	1900	1904	1908
Schools . . . . .	99	193	253	288
Teachers with certificates . . . . .	1,005	2,137	2,934	4,222
Teachers without certificates . . . . .	692	1,568	1,830	1,385
Foreign teachers . . . . .	12	21	53	67
Pupils . . . . .	40,577	77,994	100,853	114,395
Graduates . . . . .	1,798	7,747	14,216	14,950

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### GIRLS' HIGH SCHOOLS

NUMBER OF	1896	1900	1904	1908
Schools . . . . .	18	51	94	158
Teachers with certificates, men . . . . .	42	76	279	704
Teachers with certificates, women . . . . .	68	178	521	857
Teachers without certificates, men . . . . .	68	144	235	260
Teachers without certificates, women . . . . .	40	241	403	545
Foreign teachers, men . . . . .	—	—	1	1
Foreign teachers, women . . . . .	—	—	3	5
Pupils . . . . .	3,798	11,078	28,191	46,229
Graduates . . . . .	417	2,469	6,825	10,191

### TECHNICAL SCHOOLS

NUMBER OF	SCHOOLS	PUPILS	GRADUATES
Technological schools of class A . . . . .	32	4,577	1,056
Apprentices school (class B) . . . . .	81	6,799	1,709
Agricultural schools of class A . . . . .	77	12,595	3,459
Agricultural schools of class B . . . . .	103	8,257	2,143
Fisheries and marine products schools . . . . .	14	1,084	215
Commercial schools of class A . . . . .	60	18,247	2,648
Commercial schools of class B . . . . .	18	2,810	774
Navigation schools of class A . . . . .	12	2,027	202
Supplementary schools . . . . .			
Technological . . . . .	251	14,395	4,083
Agricultural . . . . .	4,185	159,092	33,325
Fisheries and marine products . . . . .	97	3,757	872
Commercial . . . . .	215	14,582	3,712
Navigation . . . . .	2	47	8
Grand total for 1908 . . . . .	5,147	248,269	54,206
Grand total for 1904 . . . . .	1,942	110,609	20,523
Grand total for 1900 . . . . .	285	25,725	4,655
Grand total for 1896 . . . . .	59	7,604	1,168

N B Slight discrepancies in the above tables are due to various facts, as, for example, in one table a branch school is counted independently and in the other not, and so on, they are not such as are significant D K

**Korea, Education in.** — Korea (Morning Splendor), since 1910 part of the Empire of Japan, is a peninsula covering with its archipelago 85,000 square miles, with a population of 12,934,282, in 11 provinces, 317 districts and 4362 villages. Roughly speaking, it consists of an eastern mountain ridge fronting precipitously the nearly tideless sea of Japan, and a long western slope which faces China and a sea containing many islands and with tides rising over thirty feet. Thus, in history and geography, Korea has had her back to Japan and her face to China, the former being in her traditions the land of savages and pirates, the latter the sun and sum of all power and culture. In popular legend the founder of Korean civilization is Kija (Ki-tsze), ancestor of Confucius, who in 1122 B.C., with five thousand followers settled east of the Yalu river. Critical scholarship, however, knows nothing of Kija's presence within the limits of modern Korea. As with the Japanese, the Korean historiographers, when, nearly two thousand years later, first practicing their art, followed in imitation and rivalry their only model, the Chinese, carrying back antiquity as far as possible and ascribing their national beginnings to a great name and looming personality. The foundations of all early Korean historiography,



like the Japanese, lie in the annals of China, whence writing was derived. Among the tribes of the peninsula, three states (A.D. 9-960) arose, in the north, east, and west, into which Chinese letters and culture filtered, but it was the entrance of Buddhism, 384 A.D., which, destined to a thousand years of activity, opened the literary, artistic, educational, and intellectual history of Korea. The state predominant in the Middle Ages was Silla (Shinra), whence students traveled to China in ships guided by the mariner's compass, and returning greatly extended the knowledge of Chinese ethics, letters, and philosophy. From A.D. 960 to 1392, under the name of Korai (whence Korea), the peninsular peoples were united and became for the first time a nation, uniform in language, law, religion, and social customs. After several centuries of clash and rivalry between the two systems, Confucianism won the day over Buddhism, at the fall of the old Korai dynasty and the establishment of that ruling from 1392 to 1910, since which time the Chinese system has been the monopoly of the privileged classes, scholars, and office holders. Korean Buddhism, exiled, in its outward manifestations at least, to the mountain monasteries, and held to mainly by the women of the common people, had not those doctrinal developments so noteworthy in Japan. The basis of all education was the Chinese classics.

The method was for the schoolmaster to have, squatting before him, a dozen or more boy pupils, who first committed to memory, through the eye and ear -- usually bawling out the sounds at the top of their voices -- the characters in order of their composition in the text, and then to "back the book" and recite. Then, by analysis and syntax, reading was made thorough. After that came comment and explanation. The brush-pen was in constant use for both ordinary and rapid writing, and calligraphy was greatly prized. Except some slight knowledge of (Chinese) history and arithmetic, this curriculum comprised the average educated man's training, though a minority went on farther, in reading and mastery of the world of Chinese lore -- poetry, philosophy, commentary, and discussion, -- or excelled in mastery of the brush-pen in calligraphy. Thousands of Koreans can write and decipher numerous ideographs, who cannot read books. In the native newspapers of to-day, read by many of the common people and women, the Chinese logograms are plentifully used, but require no knowledge of Chinese syntax. the mixed script, native and Chinese, being read in the same way as we read our Arabic numerals, terms in Latin letters, and words of Greek origin, as familiar parts of speech. Korea's greatest scholar, Chul-chong in the Silla era, or eighth century, invented or adapted from selected Chinese characters the Nido, or syllabary, which admirably expresses vernacular sounds. Later on, a true phonetic

alphabet, based on the organs of speech and one of the finest of the world, of eleven vowels and fourteen consonants, made of straight lines and circles, called En-mun, was invented by a Korean statesman. The two systems exist side by side. The letters, being associated in all their possible combinations into syllables, 199 in all, are learned, without analysis or separation, by children by rote. In this popular script personal letters are written, and the novels read by women and young people are printed. Being so very easy to learn, and because made the vehicle of the vulgar fiction, the En-mun was despised by scholars. For centuries it lay virtually unused by the learned, until the advent of the missionaries, who to their delight found ready to hand the apparatus of education and evangelism, of which they at once made liberal use. Three or four styles of language still prevail, as in Japan. (1) pure Chinese, (2) Chinese vocabulary set in native syntax, (3) popular book style, vernacular but refined, (4) epistolary style.

The end and aim of all formal education in old Korea was political office. Society had but two classes, the yang-ban (civil and military), office seekers and holders, and the masses or commoners, given up to ignorance and superstition, there being virtually no middle class. The whole outlook on the universe and the world of aims and ideas were changed with the coming of the missionaries in 1885, the first being Horace N. Allen, who, in 1885, founded a hospital under royal patronage. He was soon followed by other physicians, and the natives were given valuable training in the laws of cause and effect. The first teacher and educator was Henry G. Appenzeller, who in 1885 opened a school and began the teaching of the English language and sciences. His school in 1886 was noticed by the king himself, who gave it the name of Hall for the Rearing of Useful Men. About the same time Mrs. W. B. Seranton opened a school for Korean girls, both being soon housed in brick buildings. A government medical school was started by Dr. Horace G. Underwood, Dr. J. W. Heron, and Dr. H. N. Allen, and two American lady physicians served the Queen. Three American teachers, requested by the Korean government, Messrs. Gilmore, Bunker, and Hulbert, arrived in July, 1886, and opened an English language school. From this time forward the native language was seriously studied by foreign scholars, and many writers visited the country and by their writings made Korea better known. Schools for the study of German and French, and other English language schools were established by Europeans. The results of the Chino-Japanese war of 1904-1905 completely altered the intellectual attitude of the Koreans toward China, and they turned to the missionaries for light. As early as 1906, under the energetic administration of Prince Ito, the Japanese themselves, having had already over a generation

of experience, established modern common schools and reorganized the normal, high, and foreign language schools in Seoul. So far the system is a model, rather than an advanced development. As a rule, the number of native teachers compared with Japanese is as two to one. To encourage female education, a girls' high school was established in 1908 to serve as a model, while girls in separate classes were admitted to the public schools. In 1909 the regulations for establishing industrial schools and increasing the curriculum of agriculture, commerce, and industry in the higher schools already in operation, were issued. In December, 1909, 512 Korean, 163 Japanese, and four foreign teachers (679) were serving in 134 schools maintained or appointed by the government, in which were 811 female and 15,445 male students, the usual number in a class being sixty. Only the limitations of finance and the lack of skilled teachers prevent rapid growth. In new places the school established is meant to serve as a model, \$82,700 for all schools were estimated in the budget for 1909. In the normal schools manual training was made compulsory, the classes to number fifty each. Increase of public interest is shown in the 2250 applications made to enter the Seoul Normal School, 194 passing the examination successfully, the number of students in 1908 being 140, and 212 in 1909. For high schools the regulations of 1909 shorten the period of study from four to three years, according to local conditions. The number of applicants far exceeds those who pass the entrance examinations. In 1909 25 teachers taught 269 students, and there were 35 graduates. In the girls' high school, in which 7 teachers taught 151 girls, sewing is compulsory and artificial flower making, optional. In the foreign language school in December, 1909, Japanese, English, French, German, and Chinese were taught. Of 1130 applicants, 307 passed, 38 teachers taught 443 pupils, and the graduates numbered 106. To the old Chinese Classical School modern historical and scientific subjects were added. In the Law School 19 instructors had 138 students under them. In 1909 the seven industrial schools, classified as agricultural, commercial, technical, and supplementary industrial, in which most of the practical branches of learning are taught — the foundries, farms, experimental stations, forestry schools being equipped according to the best science — had 42 teachers and 306 pupils. Of private, which include missionary, schools, by December, 1909, 2180 had received government recognition, and of those duly inspected or instructed, there are two high, two industrial, 1353 miscellaneous, and 829 missionary schools, or 2187 in all. Textbooks must be supervised or approved by the government, and are lent to the pupils, to be gradually paid for. In 1909 202,936 books were sold and 159,314 lent, the number being nearly six times that of 1908. By competitive examination, fifty-two students

were selected and sent to Japan for higher study.

Translation of the Bible into Korean printed with mixed script or En-mun, and its rapid distribution by energetic Bible societies, following upon widespread propaganda and revivals (which have resulted in a total Christian population of 250,000), marked not only with fervor, but with habitual study of the Scriptures, compelled many to learn the alphabet to master a sacred library so rich in substance and novelty, have constituted a national school of intelligence and culture. This is especially noticeable in Seoul and Ping Yang.

In spite of the handicap to education which the hereditary hatred of Koreans to their conquerors, the survival of sedition, the prevalence of early marriages the brides being usually older than the grooms — the age — old prejudice against manual labor by the intellectual classes, education promises to be universally appreciated the Koreans having an innate love of letters and respect for scholarship. W. E. G.

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**JASSY, UNIVERSITY OF.** — See ROUMANIA, EDUCATION IN.

**JAVA, EDUCATION IN.** — See NETHERLANDS, COLONIES OF, EDUCATION IN THE.

**JEALOUSY** — A complex emotion which always involves some feeling of self-consciousness on the part of the jealous individual. The rights or desires of the jealous individual are in some way felt to be invaded, whereupon the individual is aroused to anger and the tendency to assert his own rights, either real or fancied. McDougall (*Social Psychology*, p. 138) reduces the emotion of jealousy to the fundamental instinct of possession or ownership, and holds that the earlier forms of jealousy which appear in animals and young children are primarily forms of anger or fear. The emotion has also been described by Ribot (*Psychology of Emotions*), who quoted with approval Descartes' definition "Jealousy is a kind of fear related to the desire we have of keeping some possession."

Whatever may be said of the psychological character of this emotion, it is a matter of common experience that it is one of the earliest forms of social experience. Certainly the consciousness which is involved need not be of any very elaborate type. The child becomes aware of his own desires and possessions by the fact that some one else arouses in him the anger which follows upon the invasion of his rights and possessions. Jealousy may, therefore, be regarded as the first emotional expression of the growing feeling of self-importance.

As in the case of the other emotions, so in the experience of jealousy, there is no very clear intellectual apprehension of the relations that are involved. As soon as one comes to recognize clearly his rights and those of others, the tendency is for the emotion to give away, and for a fuller form of intellectual experience to arise. C. H. J.

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**JEANES, ANNA T, FOUNDATION.** — An organization consisting of a board of trustees formed in 1908 for the purpose of admin-

istering the sum of \$1,000,000 left by Miss Anna T. Jeanes of Philadelphia for improving negro rural education. The aim of the board is to encourage and cooperate with established educational authorities without attempting to relieve them of the burden of responsibility. Thus the foundation steps in to point the way. At present its work lies in three directions: (1) the appointment of teachers to introduce and supervise industrial education (Hemico plan), (2) the appointment of teachers to do extension work among a number of schools and to act as supervisor, (3) the appointment of a county agent to improve the homes and the schools and to create a public sentiment for better schools, he also acts as a supervisor of schools. President Dr. James H. Dillard of Tulane University is general agent of the Foundation.

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**JEBB, JOHN** (1736-1786). — Theologian, doctor, and university reformer, born at Cashel, Ireland; studied at Trinity College, Dublin, and Peterhouse, Cambridge, where he graduated B. A. in 1757, being second wrangler. He took holy orders in 1762, and continued at Cambridge as lecturer in mathematics and Greek Testament. In the history of Cambridge University (*qv*) he played a noteworthy part as the originator of a plan for examinations. In 1773 he brought forward a scheme for an annual examination in May of all undergraduates, including noblemen and fellow commoners. The subjects of examination were to be "the law of nature and of nations, chronology, history, classics, mathematics, metaphysics, and philosophy, natural and moral." These examinations were to be "preparatory to the more important Examination for the Bachelor's Degree." (See his *Remarks upon the present Mode of Education in the University of Cambridge . . . a Proposal for its Improvement*.) The scheme was rejected and a syndicate appointed to consider the scheme reported unfavorably. In 1774, however, he secured the appointment of a committee, "to draw up a plan for the improvement of the academic course of the university." A scheme for examinations was proposed by the committee, approved by the Caput, but lost by one vote in the Senate. The question called forth several pamphlets against Jebb, to which his wife Ann, who wrote frequently under the name of "Priscilla," replied. In 1771 he had taken an active part in promoting the petition to abrogate the rule requiring subscription of the Thirty-nine Articles on admission to the B. A. degree. In 1775 he resigned his clerical functions on conscientious grounds, and in 1776 he left Cambridge and took up medicine which he practiced in London. In

1779 he was elected a Fellow of the Royal Society. He was a friend of Priestley (*q.v.*), who dedicated to him his *Doctrine of Philosophic Necessity* (1777). In politics he supported the movement for Parliamentary reform and universal suffrage.

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**JEFFERSON, THOMAS** (1743–1826) — Third President of the United States, “author of the Declaration of Independence, of the statute of religious freedom, and father of the University of Virginia,” according to the inscription on his tomb at Monticello, which he prepared before his death. He was graduated from the College of William and Mary in 1762, studied law, and was admitted to the bar in 1767. Two years later he became a member of the Virginia House of Burgesses. He took an active interest in scientific agriculture, and after numerous experiments he succeeded in domesticating many European shrubs and trees in Virginia. As a member of the Virginia legislature he secured the passage in 1776 of the statute of religious freedom, which abolished the connection between Church and State.

In 1779 he introduced into the assembly of Virginia a measure that contemplated the establishment of a state school system that should meet the needs of all the children. His measure provided for the division of each county of Virginia into hundreds, and the erection of suitable schoolhouses and the maintenance of schools by the hundred settlers. His measure was democratic in that it provided free schools for all classes, and it was in advance of the time in making the same provision for the education of girls that was made for the boys. Secondary schools were also contemplated in his scheme, in the organization of which three or more counties were to cooperate; and at the head of the entire system was to be the college. Thus the three great branches of education were to be unified, and through an ingenious system based upon the survival of the fittest, the brightest pupils in the elementary schools of the hundreds would pass on to the county secondary schools, and the brightest pupils in the secondary schools would ultimately reach the college. The college, which represented the choicest products of democracy, was to furnish the state with its leaders. Talent, he maintained, was always latent in the common people, and the scheme that he proposed aimed to bring the highest education within the reach of the poorest boy in Virginia. The measure did not become a law, but Jefferson never ceased to believe in its reasonableness.

He was subsequently sent to France to join Franklin and Adams in negotiating commercial treaties, and during his five years' European residence he studied with care the educational systems of the Old World, and by means of correspondence kept the American colleges advised with reference to educational movements, appliances, and publications. He wrote to President Washington from Geneva concerning the feasibility of removing bodily to Virginia the entire teaching staff of the Swiss university.

After nearly forty-five years of public life, Jefferson retired from the presidency of the United States in 1809 and devoted the remaining fifteen years of his life to education. The public school system, which he had advocated as a member of the Virginia assembly nearly a half century before, was taken up with fresh vigor, and the correspondence on the subject with Joseph C. Cabell, a member of the state legislature interested in educational matters, covers 528 pages. In one of these letters he says: “A system of general instruction which shall reach every description of our citizens, from the richest to the poorest, as it was the earliest, so will it be the latest, of all the public concerns in which I shall permit myself to take an interest.”

For nine years he labored earnestly with the legislature to secure the enactment of measures that would bring about a system of state education, such as he had proposed during the American Revolution, but the bills introduced by Cabell and other friends were successively defeated by one or the other branches of the Virginia legislature. Finally, in 1818, a bill was passed making an annual appropriation of \$15,000 for the maintenance of a university “wherein all the branches of useful sciences were to be taught,” with a special grant for the purchase of a site and the construction of buildings. Commissioners — including Jefferson, James Madison, and Joseph C. Cabell — were appointed by the governor, in 1819, to carry out the provisions of the law. Jefferson was selected rector, and “henceforth until his death in 1826,” remarks the late Professor Herbert B. Adams, “he was the directing and shaping power in the upbuilding of the University of Virginia. From his original and sovereign interest in university education, and from his residence in immediate proximity to the university, the other visitors were well content to leave to him practically the entire management of affairs. Not only did he evolve the entire system of education there introduced, but he actually devised every feature of construction and administration. He drew plans, made estimates and contracts, busied himself about bricks and mortar, and superintended the whole process of building.” (See VIRGINIA, UNIVERSITY OF; COLLEGE, AMERICAN.)

Jefferson's views on university organization

included: (1) the abolition of a prescribed curriculum and the adoption of an elective system, and (2) the reduction of discipline to a minimum, "avoiding too much government, by requiring no useless observances, none which shall merely multiply occasions for dissatisfaction, disobedience, and revolt." The purpose of a state university, as he saw it, was (1) to form the statesmen, legislators, and judges, on whom public prosperity and individual happiness depend; (2) to expound the principles and structure of government, the laws which regulate the intercourse of nations, those formed municipally for our own government, and a sound spirit of legislation, (3) to harmonize and promote the interests of agriculture, manufactures, and commerce, and by well-informed views of political economy to give a free scope to the public industry, (4) to develop the reasoning faculties of our youth, enlarge their minds, cultivate their morals, and instill in them the precepts of virtue and order, and (5) to enlighten them with mathematical and physical sciences, which advance the arts, and administer to the health, the subsistence, and comforts of human life. W. S. M.

See FRENCH INFLUENCE IN AMERICAN EDUCATION

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**JENA, UNIVERSITY OF**—This university, which is under the joint control of the Grand Duchy of Saxe-Weimar, Eisenach, and the three Saxon duchies, owes its origin to a *Gymnasium* founded as a Lutheran seat of learning by the Elector John Frederick the Magnanimous in 1548. The institution was raised to the rank of a university by an imperial decree dated August 15, 1577, but the new university did not open its doors until February 2 of the following year. The dominant faculty for two centuries was that of theology, which at first reflected pronounced orthodox tendencies in contradistinction to the more liberal tendencies that flourished at the University of Wittenberg, but later became a center of rationalism. The halcyon days of the university fell between 1620 and 1720, when large numbers of students were attracted to its halls. Toward the close of the eighteenth century, Jena began to play a distinguished rôle in the field of philosophy, becoming a center for the dissemination of the theories of Kant, among its prominent teachers at this time being Fichte, Schelling, and Hegel. These were the days—the closing years of the eighteenth and the opening years of the nineteenth

century—when the Duke Karl August reigned in Saxe-Weimar. Goethe came to his court in 1775 and Schiller some years later, and the former took an active interest in the affairs of the university, while the latter taught history there for a brief space, all health compelling him to resign his chair. The activity displayed by Jena in the field of philosophy has been continued to the present day, Rudolf Eucken being at present head of the department. Jena is one of the few German universities at which emphasis has been placed upon the study of pedagogy, and the institution enjoys a well-deserved reputation in this field, the pedagogical seminar, in connection with which a practice school is maintained, being the first to have been established at a German university (1843). (See EDUCATION, ACADEMIC STUDY OF.) The political economy seminar, founded about the middle of the last century, was also the first of its kind. Among well-known former professors of the university may be mentioned H. Hettner in Germanic, Georg Ebers in Oriental, and August Schleicher in Indo-Germanic philology, J. G. Droysen in history, and Bruno Hildebrand in political economy. More recently Jena has come into prominence largely through the teachings of Ernst Haeckel, who has filled the chair of zoology since 1865. Another field in which the university has won, and is still winning, much renown is that of physics and mechanics, more especially optics, a considerable fund for equipment and research in this and related lines having become available through the generous gifts of Carl Zeiss, the optical manufacturer of Jena. The theory of the microscope was first developed in the mechanical laboratory of the University of Jena by Professor Abbe, and the optical laboratory of the institution is to-day the leading one of its kind in existence. The university also maintains an agricultural school, in contradistinction to the custom prevailing in Germany of making provision for this subject in separate seats of learning, the Jena school being the continuation of a private agricultural institute founded in 1826 by F. G. Schulze as the first agricultural academy. The university possesses a Germanic museum, a valuable collection of Oriental coins, as well as excellent geological, mineralogical, and zoological collections. Among the medical institutes may be mentioned one for hygiene and one for psychiatry. The nucleus of the library is the collection transferred from Wittenberg to Jena after the surrender of the former town in 1548 and presented to the university at the time of its foundation ten years later. It contains almost 1000 Mss., about 100,000 dissertations, and over 200,000 volumes. A group of new and up-to-date buildings was erected between 1905 and 1908. The annual expenditures of the institution amount to approximately \$160,000. In addition to the endowment provided by Carl Zeiss, which is

available for various purposes in addition to those mentioned above, other funds have been supplied by private individuals — until quite recently a rather rare phenomenon in German higher education, among which may be mentioned the fund donated by Paul von Ritter for research in the field of phylogenetic zoology. In 1815 there was established at Jena the first of a series of democratic student societies known as the *Burschenschaften* (*qv*), which later played an important part in the political affairs of the nation, Prussians being forbidden to attend the university from 1819 to 1825. (See *Die Gründung der deutschen Burschenschaft in Jena*, Jena, 1883.) In point of winter attendance Jena ranks fourteenth among the German universities, although at one time it was one of the most frequented. In the winter semester of 1911–1912 it attracted 1831 students, of whom 93 were auditors. As at so many other German universities, more than half of the matriculated students were registered in the faculty of philosophy (1010), medicine enrolling 356, law 302, and theology (Protestant) 70. A well-attended summer school, which attracts students from all parts of the world, is also conducted. The teaching staff consisted of 101 professors and 20 docents. R T JR

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## JEROME, SAINT (HIERONYMUS) —

Early Latin Father, born at Stridon in Pannonia, about 340, died at Bethlehem, 420. About the year 360 he went to Rome, where he was baptized. Thence he went to the famous school of Trier, where he made his theological studies. After spending some time at Aquileia, he went in 373 to Antioch, and there he was ordained priest. In 381 he was at Constantinople, and in 382 he returned to Rome. There for three years he enjoyed the friendship and patronage of Pope Damasus. After the death of the pope in 384, he set out for Antioch, Alexandria, and Bethlehem. He reached the last named place in 386 and there he remained until his death in 420. His *Letter to Læta*, on the education of her daughter Paula is an important document in the history of early Christian education. Jerome advises that a teacher be selected who is of approved manner of life, of discreet age, and equipped with learning. The pupil, he says, should be given wooden or ivory letters and be taught their names. She should be encouraged both by healthy emulation and by games and amusements. She should not neglect the study of Holy Writ, but, beginning with the Psalter, should read the Proverbs, the Book of Job,

and the Gospels. As to dress and manners, she should never lose sight of the fact that she is consecrated to God. Her religious education is all important, and the mother is charged in conscience with the duty of supervising the child's education from day to day. Similar advice is given in the *Letter to Gaudentius* on the education of Pacatula. It should be remembered that the severity of life prescribed by Jerome is justified in his estimation by the wickedness of the pagan world from the contamination of which he strives to save the young Christian maiden. W. T.

See MONASTICISM AND EDUCATION.

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1889)

## JERSEY, EDUCATION IN THE ISLE

OF — The first grammar schools date from the year 1496, when King Henry VII, by letters patent dated Nov. 15 confirmed the establishment and endowment of the free grammar schools of St Magloire (now St Mauncher) in the parish of St Saviour's, and St Anastace in the parish of St Peter's for the teaching of grammar and the 'other lesser liberal sciences'. The appointment was in the hands of the dean and clergy of the island, and this was confirmed by a decision of the Privy Council in 1693, when the right of appointment was claimed by Charles de Carteret, Seigneur of Trinity. Scholars from this school passed to the University of Saumur, and this practice led to the separation of the Church in Jersey from the Church in England. Despite the fact that in 1499 the Channel Islands were transferred by Pope Alexander VI to the diocese of Winchester, the Bishop of Coutances exercised ecclesiastical jurisdiction as late as 1550. By that date the Reformation had taken its effect in Jersey, but the connection with Saumur made it follow the line of the French and Scottish Calvinists, with the result that the Presbyterian organization was introduced and a synod held on June 28, 1554. In 1619, however, the episcopal order was restored, and a code of canons for the Channel Islands received the royal assent on June 30, 1623. Canons forty and forty-one provided that there should be a schoolmaster in every parish to teach the children "à lire, écrire, prier Dieu, répondre au Catechisme; les diront aux bonnes Mœurs, les conduiront au Presche, et Prières Publiques, les y faisant comporter comme ils appartient." These schools had long existed; and were officially recognized by these canons. In the meantime efforts had been made to bring Jersey into connection with Oxford and Cambridge, and Laurens Bandains founded scholarships for the purpose, having failed in Queen Eliza-

beth's reign to found a university college in Jersey. In 1637 the Archbishop of Canterbury founded at Oxford three fellowships for the Channel Islands, and a little later the Bishop of Winchester (Morley) founded five scholarships for the islands at Pembroke College, Oxford. Thus Saumur was abandoned, and the last English link with France broken. The Jersey elementary schools were in the eighteenth century better than those in England, and most people in the island could read and write. In 1836 the National Society began to make grants to Jersey schools, and elementary education followed the normal English lines. By a *Règlement* of Aug 9, 1872, when the Privy Council grants ceased, a system of education similar to that established in England by the Act of 1870 came into force

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**Reference : —**

MONTMORENCY J E G DE *State Intervention in English Education* (Cambridge, 1902)

**JESUITS, EDUCATIONAL WORK OF: OR EDUCATIONAL WORK OF THE SOCIETY OF JESUS** — The Society, or Company, of Jesus, was founded by the Spanish nobleman Ignatius of Loyola. The name "Jesuits" was given the members of the Society of Jesus by the opponents of the order, and occurs as early as 1544. According to an English educationist, "since the Revival of Learning no body of men has displayed so important a part in education as the Jesuits" (Quick).

**Ignatius of Loyola** — Ignatius, or, as he was originally called, Imigo (after a Spanish saint Eneco), was born at the castle of Loyola, in Guipuscoa, one of the Basque provinces of Spain. The year of his birth is most probably 1491. Brought up in the house of a high official of Ferdinand and Isabella, the ambitious youth took service in the army, and in 1521, while among the defenders of Pampeluna against the French, was seriously wounded by a cannon ball. During the slow recovery the reading of the lives of Christ and the saints wrought a great change in the hitherto extravagant officer. Determined to abandon his worldly life, he retired to Manresa, where he spent some time in the practice of ascetical austerities, solitary prayer, and meditation on religious things. The inner experiences of this period of spiritual formation grew into the *Book of Exercises*. Through this little manual of practical asceticism Ignatius becomes one of the foremost religious educators of modern times, and in our own days continues to influence the spiritual training of hundreds of thousands of Catholics annually, in the so-called "retreats" and "missions." The "Spiritual Exercises" contained the germ of the future Society of Jesus. In 1523 Ignatius went to the Holy Land to devote himself there to a life of piety and labors for the conversion of the Moslems. Obligated to depart from

Jerusalem, he recognized the necessity of further studies, in order to be of greater help to others. At Barcelona he learned Latin among little boys, then went to the universities of Alcalá and Salamanca, 1526-1527, and finally to Paris, then the greatest center of learning in Christendom, where he studied philosophy and theology, 1528-1535. Although he took a creditable degree (M.A.), his distinction was less than that of the scholar than of the guide and ruler of men and of the skillful organizer. A band of able and devoted students had gathered around Ignatius at Paris (Faber, Navier, Laynez, Salmeron, Bobadilla, Rodriguez), and in 1534 at Montmartre, Paris, they took vows of poverty and chastity, besides the vow of going to the Holy Land and there leading a life in close imitation of the life of Christ. When they later found it impossible to embark for Palestine, they offered their services to the Pope. In 1539 they determined to form a compact religious order, and the outline of a constitution was approved by Pope Paul III in the following year. Ignatius was elected the first General of the order, and governed it till his death in 1556. He was canonized in 1622. The story of the life of St. Ignatius, especially the patience with which, in advanced age, he devoted eleven years to study, the careful deliberations and frequent consultations with others on important matters, are sufficient proof that he was not a mere "religious enthusiast," or a "visionary" (Macaulay). His work shows that he was a genius in the practical order, a man of "powerful gifts of intellect and an unusual practical foresight" (Littledale). But the most prominent characteristic of Ignatius was a burning zeal for the spread of Christianity and the religious and moral betterment of his fellow-men. Toward this end he directed his foundation, the Society of Jesus.

**The Society of Jesus** — The official title of the order is "Society of Jesus", but the name "Jesuits" was gradually adopted by its members and friends. Ignatius himself had used the Spanish word "Compañia," which might be translated "Regiment of Jesus." This term suggests the former military life and spirit of the founder and the active part which the order was to play in the service of the Church militant. It is, however, an erroneous opinion, held by many Protestants and some Catholics, that the Society was founded with the avowed intention of opposing Protestantism. Neither the papal letters of approbation nor the Constitutions of the order mention this as the object of the new foundation. In fact, when Ignatius began to think of devoting himself to the service of the Church, he had probably not as much as heard the names of the Protestant Reformers. His early plan was rather the conversion of Mohammedans, an idea which, a few decades after the final triumph of the Christians over the Moors in Spain, must have strongly appealed to the ardent and chivalrous Spaniard. It is a

remarkable coincidence that the name *Societas Jesu* had been borne by a military order approved and recommended by Pius II in 1459, the purpose of which was to fight against the Turks and aid in spreading the Christian faith. The early Jesuits were sent by Ignatius first to pagan lands or to Catholic countries, to Protestant countries only at the special request of the Pope, and to Germany, the cradle land of the Reformation, at the urgent solicitation of the imperial ambassador. From the very beginning of the order, the missionary labors of Jesuits among the pagans of India, Japan, China, Canada, Central and South America, were at least as important as their activity in Christian countries. As the object of the Society was the propagation and strengthening of the Catholic faith, it is evident that the Jesuits endeavored to counteract the spread of Protestantism. They became the main instruments of the Counter-Reformation, which may rightly be styled the Catholic Reformation; the reconquest of southern and western Germany and Austria for the Church, and the preservation of the Catholic faith in France and other countries were chiefly due to their exertions.

**Organization of the Society** — The object and spirit of the Society of Jesus are to be sought in the "Spiritual Exercises," which are the training school of the religious life of the Jesuits, and the Constitutions, which contain the laws of the order. The so-called *Monita Secreta*, or *Secret Instructions*, are spurious, and a libel on the order, composed by one Zahorowski, who had been dismissed from the order; this work has been styled a lampoon, an ingenious forgery, etc., by writers not friendly to the Society, as Dollinger, Reusch, Huber, Harnack, Littledale, and others. The Society has no secret doctrines, nor any teaching which is different from that held by the Catholic Church in general. The order is divided into provinces, which comprise the colleges and other houses within certain countries or districts. Several provinces form an assistancy, arranged according to nationalities, or geographical proximity; there are, at present, five assistancies: Italy (with five provinces), Germany (provinces: Germany, Austria, Hungary, Galicia, Belgium, Netherlands), France (with four provinces), Spain (provinces: Aragon, Castile, Toledo, Portugal, Mexico), England (provinces: England, Ireland, Maryland-New-York, Missouri, New Orleans, California, Canada). The superior of a province is called provincial, the head of a college rector, both provincials and rectors are appointed, for a number of years, by the head of the whole Society, the General. The General is elected for life by the General Congregation, which is the legislative assembly of the order, and alone can add to the Constitutions, change or abrogate them. This General Congregation consists of the General (or

after his death his Vicar), the Assistants (chosen by the previous Congregation, one from each assistancy), the provincials, and two special deputies, elected by each Province. The Congregation may even depose a General, for grave reasons, although such a step was never necessitated in the history of the order. Although the General possesses full administrative power, he is not an absolute ruler, the Assistants form his council, and the monarchical character of the government is tempered by various constitutional restrictions. The members of the order are divided into different classes or grades: the Professed Fathers, who, besides the three vows of religion, have made a fourth, of special obedience to the Pope in regard to undertaking foreign missions, the Formed Coadjutors, either spiritual, *i.e.* priests who have taken the final three vows of religion, or temporal coadjutors, *i.e.* lay brothers, engaged in domestic duties, the Scholastics, who after their first religious vows are engaged in studying or teaching, lastly, the novices, who devote themselves for two years chiefly to exercises of religion before taking their first vows. The Jesuit priests are admitted to the last vows only after a long course of studies and religious tests, the profession is granted only after from seventeen to twenty years of life in the Society. Before the suppression of the Society in 1773, the number of Jesuits had exceeded 22,000, in 1910 there were 16,293, of these 7848 were priests, 4385 scholastics, 4060 lay brothers. There is no class of lay affiliates, neither male nor female. The Jesuits are not monks, like the Benedictines, nor friars, like the Franciscans and Dominicans, but "Regular Clerics," or "Clerks Regular." St Ignatius introduced several innovations, deviations from the life of the older religious orders. Thus there was no common choir, no distinctive religious habit, no prescribed austerities; a special vow was taken not to accept any ecclesiastical dignities, except at the peremptory bidding of the Pope. All these features were intended to free the Society from whatever might be an obstacle in the way of active work.

**Object and Special Work of the Order** — The object for which the Society was instituted is expressed in the first papal approbation of the Institute in these words: "The progress of souls in good life and knowledge of religion; the propagation of faith by public preaching, the Spiritual Exercises and works of charity, and particularly the instruction of youth and ignorant persons in the Christian religion." This object is expressed in the Motto of the Society: *Omnia ad Majorem Dei Gloriam* (abbreviated O.A.M.D.G.), *i.e.* "All for the greater glory of God." Jesuit writers frequently designate the work of the Society as "apostolic," and this briefly expresses its character. In the occupations of the Society there is great variety, in fact, a universality, which



embraces all activities which can further the glory of God and the betterment of men.

**The Ratio Studiorum** — From the beginning education occupied a very prominent place among the activities of the order. Frequent mention is made in official documents of "teaching catechism to children and the ignorant, lecturing on philosophy and theology in the universities, and instructing youth in the grammar schools and colleges." In fact, education so largely prevails in the activity of the Society that it can be called in a special sense a teaching, or school, order. Of the ten parts of the Constitutions the fourth treats of studies, it is the longest of all, and its clear and practical arrangement is worthy of admiration. Successive General Congregations emphasized the importance of educational work, calling it a "special and characteristic work of the Society," "one of the most desirable and beneficial occupations." In the final vows the Jesuit promises to have "a particular concern for the education of boys." During the lifetime of St. Ignatius, colleges were founded in Italy (Messina, Palermo, Naples, the Roman and German Colleges), Spain (Gandia, Salamanca, Alcalá, Valladolid), Portugal (Lisbon), France (Billom), and the German Empire (Vienna, Ingolstadt). Others were established soon after the death of St. Ignatius, as Cologne, Munich, Prague, Innsbruck, Douay, Bruges, Liège, Antwerp, etc. With the increase of the number of colleges the want of a uniform and detailed system of education was felt more and more. Plans of study were drawn up in different places, but they were merely private works. During the generalate of Claudius Aquaviva (1581-1615), the educational methods of the Society received a definite shape. In order to ensure a certain universality and uniformity (which were needed because men were often sent from one country to another), and at the same time to profit by the educational experiences of different countries, six able schoolmen were selected from different provinces and nationalities (France, Spain, Portugal, Austria, Germany, and Italy) and called to Rome, 1584. For a year these men studied pedagogical works, examined regulations of the most famous colleges and universities, and considered the suggestions submitted by prominent Jesuit educators. In 1586 the report drawn up by this committee was sent to the provinces to be examined by at least five experienced men in every province. The observations and criticisms obtained in this manner were utilized in the drawing up of a second plan, which, after careful revision, was printed in 1591. For some years the practical working of this plan was watched, and in 1599 appeared the *Ratio atque Institutio Studiorum Societatis Jesu*, usually quoted as *Ratio Studiorum*. It was the result of careful and most painstaking labor, from the manner in which it was drawn up it is evident that it was the work

of the whole Society rather than of any individual.

*Sources of the Ratio Studiorum.* — The statement frequently made that the *Ratio* was modeled on the educational theories of the Spanish humanist Vives (*qv*), and the plan of studies of Johannes Sturm (*qv*), of Strassburg, needs considerable modification. Educational treatises and regulations were extensively consulted by the men who drew up the *Ratio, Studiorum*, and among the numerous documents examined was also Sturm's famous plan of studies. But Sturm acknowledges his indebtedness to the humanistic schools of the Netherlands, especially the celebrated school of the Brethren of the Common Life (*qv*) at Liège, of which he had been a pupil. Some of the ablest early Jesuits were natives of the Netherlands, or had studied in the schools of that country, which were among the best in Europe at that time. It is natural to think that these schools were the chief model for the literary course of the *Ratio* as well as of other systems and plans. In fact, several features common to the *Ratio* and Protestant schools were found in Liège and other humanistic schools, of the Netherlands. The method of teaching philosophy, the sciences, and theology was essentially an adaptation of the system prevailing in the University of Paris, where Ignatius and his first companions had studied. Still, as is clear from the description of the origin of the *Ratio*, the chief source was the collective experience of Jesuit teachers in various colleges and countries.

*Later Modifications.* — Until the time of the suppression of the Society (1773), the *Ratio Studiorum* remained, in all its essential features, the authoritative plan of studies in the schools of the Society. This does not mean that there was absolute uniformity in all colleges. The Constitutions and the *Ratio* repeatedly declare that, according to special needs and circumstances, changes may be introduced. In some countries the teaching of the vernacular language and the systematic study of history and geography were added to the original classical curriculum. Certain kinds of punishment, competition, and reward, popular in southern countries, were allowed to be abandoned in northern countries. The need of a more thorough reform was felt after the restoration of the Society (in 1814), as it was evident that the changed conditions of intellectual life demanded more radical modifications of the curriculum. Under the General Father Roothaan, the revised *Ratio Studiorum* was published in 1832. Nothing was changed in the fundamental principles, nor in the general mode of teaching, but innovations were made chiefly in regard to branches of study. Latin and Greek remained the principal subjects, but henceforth more time and care were to be devoted to the mother tongue and its literature, to history, mathematics, and the natural

sciences. For the teaching of physics and chemistry separate regulations were made, which are indicative of the broad and progressive attitude of the revision. "The theoretical treatment is to be supplemented by experiments, and as these sciences make daily progress, it is the duty of the professors to acquaint themselves with the latest discoveries, and to advance in their lectures as the sciences progress." Since 1832 the non-classical branches have been emphasized more and more, non-classical schools have been declared to be in accord with the work of the Society as well as classical institutions. In modern Jesuit colleges physics, chemistry, astronomy, geology, biology, physiology, and other branches are taught according to the established principles and methods of modern science. In the words of the present General of the Society (F. X. Wernz), "As the early Jesuits did not invent new methods of teaching, but adopted the best methods of their age, so will the Jesuits now employ the best methods of our own time." Undoubtedly, the Jesuits were always conservative and did not immediately adopt every educational experiment; nor were the changes which seemed necessary introduced with the same readiness and celerity everywhere. In some countries (as in Austria), the Jesuits adopted the system prevailing in the state institutions, nearly everywhere the Jesuit colleges adapted themselves, in a considerable degree, to the national schools and the prevailing educational currents. The last General Congregation of the Society (1906) gave official recognition to this tendency by the following important decree: "Under the present conditions a new revision of the *Ratio Studiorum* is not to be attempted. Not even the *Ratio* of Father Roothaan can be satisfactorily carried out, on account of the special needs of different countries. For this reason the provincial superiors, after consultation with their advisers and the most approved teachers, should devise plans of studies for their provinces, and for the various districts in which the same conditions prevail." There is, accordingly, no longer a uniform *Ratio Studiorum* in force, as far as subject matter and arrangement of studies are concerned.

*Contents of the Ratio Studiorum* — Theoretical discussions on the educational value of different branches and similar topics were contained in the trial *Ratio* of 1586, but were absent from the final *Ratio* of 1599. The latter document was rather a code of laws, a body of practical rules drawn up by practical teachers, a collection of regulations for the officials and teachers. I. Rules for the provincial superior; for the rector (president) in whose hands is the government of the whole college; for the prefect of studies, the chief assistant of the rector, entrusted with the direct supervision of the classes and everything connected with instruction; another assistant

of the rector, the prefect of discipline, responsible for all that concerns order and discipline. II. Rules for the professors of theology: Scripture, Hebrew, dogmatics, moral theology, ecclesiastical history, Canon Law. III. Rules for the professors of philosophy, mathematics, physics, and other natural sciences. IV. Rules for the teachers of the *Studia Inferiora*, the lower department, devoted chiefly to literary studies. Originally there were five classes in this department, later frequently six: the three (or four) "Grammar Classes," corresponding with a classical High School, then the class of Humanities (Freshman) and the class of Rhetoric (Sophomore). Latin and Greek were the main branches in this department; other subjects, as history, geography, antiquities, were taught, under the name of "accessories," in connection with the classics. In the course of the seventeenth and eighteenth centuries history and geography began to be taught as separate branches in many provinces, and graded textbooks — usually six small volumes — were used extensively in France and Germany. Treatises on the method of teaching history and geography were in the hands of teachers in the beginning of the eighteenth century. Foreign languages were taught early in various places, e.g. French and Italian at Dillingen since 1655. Mathematics and natural sciences were considered as belonging to the department of "Arts," and were taught in the course of philosophy, since the revision of the *Ratio* in 1832, also in the lower department. In 1843 the curriculum of the college of Fribourg in Switzerland, one of the model colleges of the Society, contained the following subjects in the lower department (high school): Religion, Latin, Greek; French, German (one obligatory), history and geography (in all classes), arithmetic, algebra, geometry; in the higher (college) department, besides philosophy physics, chemistry, astronomy, botany, zoology, mineralogy; plane and spherical trigonometry, higher algebra, analytical geometry, differential and integral calculus, philosophy of history, and an advanced course in literature. In addition to these obligatory courses, Hebrew, Italian, English, and Spanish were offered as electives. This is an instructive example of local adaptation and modification, which shows how misleading it would be to take the text of the *Ratio* as an absolute indication of what was actually taught.

Philosophy was regarded as the desirable crowning of general training for all, and an important preparation for strictly professional studies. The system followed in philosophy and theology was the scholastic, or rather "neo-scholastic," i.e. scholasticism as developed by the Post-Reformation Catholic teachers, particularly the great representatives of the Society: Suarez, Vasquez, Molina, etc. The old *Ratio* had prescribed Aristotle as the

chief guide and standard author in philosophy, "except where his teaching is contrary to the Christian faith, or the commonly accepted doctrine of the [Catholic] Schools." The revised *Ratio* no longer mentions Aristotle as guide, although his philosophy continued to be followed largely in logic and metaphysics. In theology St. Thomas Aquinas (*q v*), was "the proper Master, but not so as if no deviation from his teaching were permitted on any point," particularly in regard to questions treated more fully by later authors.

The *Ratio* does not contain any provisions for elementary education. The cause of this omission is not, as has been imagined, contempt for this branch of educational activity, much less opposition to popular instruction, but the practical impossibility of entering that vast field. The Constitutions and General Congregations declare elementary education to be "a laudable work of charity, which the Society might undertake if it had a sufficient number of men." As there was often a dearth of men even for college work, and as the whole training of the Jesuits fitted them better for higher education, it would be unreasonable to blame them for thus limiting their work. In places, however, where elementary education was much neglected, especially in mission fields, the Jesuits frequently devoted themselves to this work, employing chiefly able lay brothers as teachers.

**Character of Jesuit Education** — The following features may be mentioned as most characteristic of Jesuit education. First, it was a system, well thought out and well worked out, and that at a time when in most schools there was little system, although the Jesuits had largely borrowed from other men and institutions, they had done so intelligently, above all, they had unified and systematized educational principles and methods in a manner never done before. The many practical rules laid down for the different classes and teachers, the careful supervision, the close unity and centralization, could ensure efficiency even in the case of teachers of moderate talent, while to teachers of more than ordinary ability sufficient scope was left for the display of their special aptitudes. Provisions were made for systematic professional training of the teachers, as early as 1565 the second General Congregation urged the establishment of a special pedagogical "seminary" in every province. Literary, philosophical, and scientific training, although given not simultaneously, but successively, formed a fair combination, which avoided the one-sidedness of pure scholasticism, and the still greater one-sidedness of humanism, or of later purely scientific education. At a time when barbarous punishments were common in schools, the discipline of the Jesuit colleges was comparatively mild; corporal punishment was inflicted rarely and only under rigid precautions. Playing was encouraged,

and general attention paid to the physical welfare of the students. The teachers were urged to take an interest in all the concerns of the individual student, and much was expected from personal contact between teacher and pupil. All teaching was to be gratuitous, fees were not admitted until, in later times, the spoliations of Jesuit property and the absence of sufficient endowments necessitated the acceptance of tuition money. From its beginning the Society took a warm interest in needy talented students, and in many places founded and supported boarding houses (*convictus*) for them. The most important aim of education, the one emphasized for all grades, and in the rules for all superiors and teachers, is the moral and religious training. To this end were directed the teaching of catechism, the practice of receiving the Sacraments of Penance and Communion, the pious associations of students, called "Sodalities", even the classics were to become "Heralds of Christ," by being interpreted in the light of Christian revelation. The determination to safeguard Christian faith and morality explains the rigid exclusion of books inimical to revealed truth, and the careful expurgation of all obscene and vulgar passages from the pagan writers used as textbooks. In this there was a radical and intentional reaction against the paganizing tendencies found in such humanists as Valla, Poggio, Beccadelli, etc., and in many Renaissance schools. The educational ideal of the Jesuits was like that of the Brethren of the Common Life (*q v*), namely, piety adorned with learning, or culture on the basis of religion (*pietas literata*).

**Intellectual Scope and Methods of Teaching** — The intellectual aim of the literary course was that common to all humanistic schools, it has been well expressed in the two words "learning" (classical) and "eloquence" (*sapientia et eloquentia*). This meant the acquaintance with the thoughts of the classics, mastery of the Latin language, and the acquisition of a good Latin style. During the sixteenth and seventeenth centuries Latin remained to a great extent the medium of political and scholarly intercourse, hence it was of considerable practical use, and Protestant and Catholic schools alike aimed at imparting the mastery of it. This practical use, however, was not the only object sought in teaching the classics. In 1669 a French Jesuit educator wrote "Besides literary accomplishments gained from the study of the classical languages, there are other advantages, especially an exquisite power and facility of reasoning." Here we have an early expression of what now is called the theory of mental training, or formal discipline. This aspect of classical teaching was, naturally, more emphasized by Jesuits and other educators after the directly practical use of Latin could no longer be urged.

The means of acquiring a knowledge of the

classical languages was a carefully planned system of coordinate exercises: the "prelection," memory lessons, repetitions (daily, weekly, monthly, annual), compositions, disputations, contests, and examinations. The typical form of Jesuit teaching, the "prelection," is minutely described in the *Ratio*. It means "lecturing" in the higher faculties, its equivalent, *Vorlesung*, is at present used in German for the lectures in universities. In the lower grades it means "explanation," and is applied to the translation and interpretation of authors as well as to the explanation of the precepts of grammar, poetry, rhetoric, and style. One part of the prelection is called "erudition," which means the explanation of various details contained in the text: historical, geographical, archaeological, biographical, political, ethical, and religious. In the philosophical course the frequent disputations constitute the most important exercise. An inheritance of the medieval universities, they were retained for a long time also in Protestant institutions. In fact, the intellectual aims and practical methods were nearly the same in Protestant and Jesuit schools, the chief difference is found in the greater systematization and centralization of the Jesuit system. In both Protestant and Catholic colleges of former centuries the school drama was an important feature, in Jesuit colleges it was cultivated to a remarkable degree for the purpose of training in speaking and acting, and even more for religious edification and moral elevation. Not a few of the numerous Jesuit productions possessed more than ordinary dramatic value.

**Criticism** -- Few systems of education have been the subject of such conflicting valuation as that of the Jesuits. Many have praised it enthusiastically -- some even extravagantly; -- others, especially in recent times, have severely censured it. That extremes in this, as in other matters, are to be avoided is evident. The Society itself did not consider its educational system absolutely perfect, as is clear from the frequent inquiries about its working, from repeated requests for suggestions concerning improvements, and most of all, from the various revisions and gradual transformation of the system. Leading historians of the order (e.g. Duhr, *Geschichte der Jesuiten*, I, p. 259), admit that, especially in the old *Ratio*, there were defects, as the relative neglect of history, geography, and other branches, which were taught only as "accessories" to the classics. How this defect, common to all schools of former centuries, was gradually remedied has been mentioned before. Again, the old curriculum was, undoubtedly, too purely literary, too prominently classical, and neglected subjects which were rightly insisted on by the later "realistic" educators. Nor can it be denied that the humanistic conception of the importance of "eloquence and style" was exaggerated and one-sided, and was open to the charge

of excessive "formalism." Much, however, of current criticism of Jesuit education is due to misunderstandings. The very terminology of the *Ratio Studiorum* has led some into serious errors. Certain regulations, meant for the "Scholastics," i.e. members of the Society engaged in studies, have been interpreted as applying to other students. Many critics forget that educational principles and practices, established in the sixteenth and seventeenth centuries, should not be judged according to twentieth-century standards. There would be much force in such criticism, if all the older practices had been retained in the Jesuit colleges of our own days. Such seems, indeed, to be the conviction of some critics, as when it is asserted that "the *Ratio Studiorum* devised by Aquaviva is still obligatory in the colleges of the Society" (*Encyclopedia Britannica*, 11th ed., Vol. XV, p. 342). How little this accords with actual conditions is clear from what has been said on the modifications of the educational system of the Jesuits. Many secondary features of the *Ratio*, as the colloquial use of Latin, certain means of fostering emulation, the employment of boy monitors, have long ago been abolished in most places. A great deal might be said in defense of certain much censured features, e.g. emulation. "An excess was, perhaps, not always avoided; but it should be remembered that some emulation is indispensable in the schools" (Paulsen, *Geschichte des gel. Unterrichts*, Vol. I, p. 341).

In more recent years the Jesuit system has been censured for maintaining prescribed courses instead of a broad electivism, for retaining the classics and upholding the theory of mental discipline. These charges need not be discussed here, as they do not concern Jesuit colleges alone, the controversies on these points are not yet closed, but in the case of some, notably the question of electivism, there is a reaction toward the view defended by the Jesuits. Dr. Elmer E. Brown has well observed that in many of these controversies "the Jesuit side is the side of many who are not Jesuits" (*Educational Review*, December, 1904). The most common and most serious charge against Jesuit education is that it suppresses "originality and independence of mind." In reply, the Jesuits can point to the variety of scholarship found in their own midst, as well as to the great number of pupils who achieved distinction in most varied spheres of life: poets like Calderon, Torquato Tasso, Molière, Goldoni, orators like Bossuet, jurists like Pothier, the greatest French jurist before the Revolution, scientists and historians like Galileo, Cassini, Réaumur, Buffon, Lalande, Descartes, Muratori, Ducange. Father Porée, Voltaire's teacher, saw many of his pupils -- it is said nineteen -- elected members of the French Academy. It would be absurd to claim all the greatness of these men for the system under which they were brought up. Some Jesuit

pupils, as Voltaire and Lamarck, became famous for opinions which they had not been taught by their Jesuit masters. But this last fact seems to prove all the more conclusively that their originality was not crushed by the system. If, however, by "independence of mind" is understood unrestrained liberty of thought in religious matters, it must be admitted that the *Ratio Studiorum* and the whole Institute of the Society are uncompromisingly opposed to it, and that the Jesuits always endeavored to suppress it. For they are bound by their profession and fully determined to uphold, defend, and propagate revealed religion, as taught and interpreted by the Catholic Church. In this they do not differ from other religious orders, nor from any consistent Catholics.

#### Jesuit Schools before the Suppression —

For some time the Jesuits possessed almost the monopoly of higher education in various Catholic countries. On the eve of the suppression the Society had 669 colleges and a number of other institutions of higher learning, or, in round numbers, about 700 higher schools. Some of the colleges had more than 2000 students each, it is impossible to give an exact average, but 300 seems to be very low. Accordingly the 700 institutions would have numbered over 200,000 students, from which it follows that the educational influence of the Jesuits in those days was extraordinary. In Latin America alone there were 90 colleges, in the north was the flourishing college of Quebec (since 1635), and a report of 1711 states that there "grammar, the humanities, rhetoric, mathematics, philosophy, and theology are taught, perhaps with greater regularity, exactness, and fruit than in many colleges in France." Owing to the Penal Laws, which were especially severe and explicit in regard to the Jesuits, it was impossible for them to have schools with a full college curriculum in the English colonies. Still, they attempted to open higher schools when and where opportunity offered. Thus they had a classical school in New York for some time under the Catholic Governor Dongan, about 1684. In Maryland a school under their direction is mentioned at Newtown about 1640, and in 1677 a "school of humanities" was established, a Latin school of a preparatory character. In the midst of government opposition, legal penalties, and the hostility of part of the Protestant population, the Jesuits continued their educational activity in that colony for a long time. Before the middle of the eighteenth century their school was at Bohemia, Md. Georgetown (D.C.), which was opened after the War of the Revolution, may be regarded as a successor to Bohemia. Elementary schools were maintained in the Jesuit missions of South and North America. In the mission schools of Lower California, and especially of Paraguay, besides reading and writing, also music was taught and manual

training given. In Canada the Jesuits had established "Seminaries," i.e. elementary schools for European and Indian children, and they called religious women from France for the education of girls. After 1740 elementary schools were opened in various Catholic settlements, chiefly German, in Pennsylvania, of which the Jesuits had charge. "Tracing things to their commencement and their cause, we must attribute to the Jesuits, more than to any other single influence, the establishment of the Catholic school system, such as it exists to-day." It is principally to the Jesuit schools in Maryland and Pennsylvania that we owe the development of the Catholic parochial school system in the United States" (Burns, *The Catholic School System in the United States* pp. 89, 164).

#### Jesuit Schools in Modern Times —

The expulsion of the Jesuits from France, Portugal, and Spain through the absolutist Bourbon courts, and the suppression of the order by Clement XIV (1773) at one stroke annihilated the vast educational organization of the Jesuits in all parts of the world, with the exception of Prussia and Russia, where their schools were maintained by the express orders of two free-thinking rulers, Frederick the Great and Catherine II, because, as these sovereigns declared, the Jesuits were the best teachers available for their Catholic subjects. The suppression meant to the Jesuits the total loss of their colleges, libraries, observatories, and all property. After the restoration (1814) the order struggled into existence under very unfavorable conditions. There was hardly a year during the nineteenth century that the Jesuits were not harassed in one country or other, or even driven into exile. It is evident that such persecutions were most detrimental to educational activity, and they were the principal cause which prevented the Jesuits from obtaining results similar to those of former centuries. Still, the number of colleges has increased considerably, especially in English-speaking countries. At present the Jesuit colleges all over the world number about 225. In North America there are in Canada the colleges of Montreal (two) and St. Boniface (Manitoba), in the United States forty-one colleges, with over 16,000 students. Recently several American colleges have expanded into universities, with medical and law faculties, as Georgetown (D.C.), Fordham (N.Y.), St. Louis, and Omaha. In foreign countries the most prominent Jesuit schools are the Gregorian University in Rome (successor to the old Roman College, which, with its observatory, precious library, and *Museo Kircheriano*, was secularized by the Italian government), Stonyhurst (q.v.), Beaumont, Liverpool, Mount St. Mary's, Stamford Hill, Wimbledon (England); Clongowes, Dublin (2), Mungret, Limerick (Ireland), Sydney (2), Melbourne (2), (Australia); Grahamstown (South Africa), several institutions in Belgium;

Innsbruck (university), Feldkirch, Kalksburg (Austria), Kaloesa (Hungary); the university in Beyrut (Syria); Bombay, Calcutta, Trichinopoly (India); Manila (Philippines), Zi-ka-wei (China). In mission countries numerous elementary schools are under the direction of the Jesuits.

The following is a list of Jesuit colleges and schools in the United States.—

New York			
St Francis Xavier	New York City	1847	
Fordham University . .	New York City	1841	
Loyola School . . . .	New York City	1900	
Brooklyn College . . .	Brooklyn	1909	
Canisius College . . . .	Buffalo	1870	
Novitiate of St Andrew .	Poughkeepsie	1903	
Massachusetts			
Boston College . . . .	Boston	1864	
Holy Cross College . . .	Worcester	1843	
New Jersey			
St Peter's College . . .	Jersey City	1878	
Pennsylvania			
St Joseph's College . . .	Philadelphia	1851	
Maryland			
Loyola College . . . . .	Baltimore	1852	
Woodstock College . . .	Woodstock	1869	
District of Columbia			
Georgetown University . .	Washington	1780	
Gonzaga College . . . . .	Washington	1821	
Missouri			
St Louis University . . .	St Louis	1818	
St Stanislaus Seminary . .	Florissant	1823	
Ohio			
St Xavier College . . . .	Cincinnati	1831	
St Ignatius' College . . .	Cleveland	1886	
St John's College . . . .	Toledo	1898	
Michigan			
University of Detroit . . .	Detroit	1877	
Illinois			
Loyola University . . . .	Chicago	1870	
Wisconsin			
Marquette University . . .	Milwaukee	1864	
Sacred Heart College . . .	Prairie du Chien	1880	
Nebraska			
Creighton University . . .	Omaha	1879	
Kansas			
St Mary's College . . . .	St Mary's	1848	
California			
St Ignatius' College . . . .	San Francisco	1855	
Santa Clara College . . . .	Santa Clara	1851	
Los Angeles College . . .	Los Angeles	1911	
Sacred Heart Novitiate . .	Los Gatos		
Washington			
Gonzaga College . . . . .	Spokane	1887	
Seattle College . . . . .	Seattle	1892	
Louisiana			
College of the Immaculate			
Conception . . . . .	New Orleans	1847	
Loyola College . . . . .	New Orleans	1910	
St Charles College . . . .	Grand Coteau	1838	
St John's College . . . . .	Shreveport		
Alabama			
Spring Hill College . . . .	Spring Hill	1830	
Florida			
College of the Sacred Heart	Tampa	1899	
Georgia			
Sacred Heart College . . . .	Augusta	1900	
St Stanislaus College . . .	Macon	1887	
(formerly Pio Nono College)		1871	
Texas			
St. Mary's University . . .	Galveston	1854	
Colorado			
College of the Sacred Heart	Denver	1876	

**Literary and Scientific Activity.**—In connection with the educational work of the Jesuits brief mention must be made of their literary and scientific work, because it was largely done by college professors and is an indication of

their scholarly interests and attainments. The *Bibliothèque de la Compagnie de Jésus*, published by Sommervogel (1890–1909), contains in ten folio volumes the names of over 15,000 Jesuit writers and several times as many titles of works composed by them. Many of these treat of ascetical and theological subjects, and may here be left out of consideration, except the catechetical works of about 400 Jesuits, which, in numerous languages and editions, were a powerful means of religious instruction of youth. In particular, the catechisms of Peter Canisius and Bellarmine, were for centuries in almost universal use throughout the Catholic world; in recent times the catechisms of Father Deharbe obtained an immense circulation, not only in Europe, but also in America. A great number of the works composed by Jesuits deal with literary and scientific subjects. It is but natural to assume that in so vast a number there are many productions of not more than ordinary quality, but a respectable portion are of more than common, even of exceptional value. Not a few Jesuit writers have gained great distinction in various fields of scholarly activity, as some of their bitterest enemies are compelled to acknowledge. "In mathematics and natural sciences there are among the Jesuits writers who stand in the first rank" (Huber, *Der Jesuitenorden*, p. 418). And long before D'Alembert had written in a violent attack on the order "Let us add—for we must be just—that the Jesuits have successfully cultivated eloquence, history, archaeology, geometry, and literature. There is scarcely a class of writers in which they have no representatives of the first rank." Only a few names can be mentioned here: Beschi, Ricci, Prémare, Gaubil (oriental philology), Hervás (comparative philology), Tiraboschi (literary history), Petavius (chronology), Hardouin (history), the Bollandists (history and criticism), Kircher (various branches of learning), Clavius (mathematics and calendar reform), Saccheri (non-Euclidean geometry), Riccioli, Scheiner, Grimaldi, Boscovich (mathematics, astronomy, optics, physics), Secchi (physical astronomy and meteorology). Some of these men made important discoveries and through their researches have contributed to the advancement of science. With a considerable number of Jesuit colleges observatories were connected. According to Montucla, at the time of the dispersion of the Jesuits, 130 observatories existed all over the world. Of these thirty-two, *i.e.* one fourth, were directed by the Jesuits. At the present day, more than twenty Jesuit colleges possess observatories, astronomical, magnetic, meteorological, or seismological. Great services have been rendered to science and navigation especially by the meteorological observatories of Belén (Havana) and Manila.

**Summary**—Jesuit colleges and Jesuit education stand for a great deal more than mere

classical culture. There is reason to think that opposition to the religious principles of the Jesuits has prevented many critics from forming a correct appreciation of the educational work of the order. It should certainly be possible to separate clearly considerations of religious tenets from questions of educational methods and efficiency. This has been done by men like Bacon, Grotius, Ranke, and others, who spoke with admiration of the zeal and success of Jesuit educators. Of recent writers, who had judged with independence and fairness, it will suffice to mention Professor Paulsen, one of the greatest historians of education. "No one can doubt," he writes in his classic work on higher education, "that the *Ratio Studiorum* was worked out with extraordinary care and with much intelligence. Nor do I doubt that the order through its schools has effectually furthered the spread of intellectual culture, especially classical learning, in Catholic lands. The Jesuits were certainly the most learned and most zealous teachers that could then be had in Catholic countries. And that they were not unskilled teachers has been proved by their success" (*Gesch. des gel. Unt.* Vol. I, p. 423). In his last work the same writer adds: "The success of the order was brilliant, almost overwhelming, in two generations it had become 'the order of professors' in the Catholic world. One must, undoubtedly, assume that this success was, on the whole, gained through positive achievements" (*Das deutsche Bildungswesen*, 1906, p. 52). A system which produced such results must, from the beginning, have contained features of unquestionable merit. It embodied, says another writer, "much educational wisdom and experience, practical skill, and a pedagogical insight which never swerves from the main purpose" (Fleischmann). It contained much that is of permanent value in education.

R. S.

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**JESUS AS A TEACHER** — See NEW TESTAMENT, PEDAGOGY OF THE

**JEWELL, FREDERICK SCHWARTZ** (1821-1903) — Educational writer and institute lecturer, studied at Yale College and was graduated from the Auburn Theological Seminary in 1849. He was principal of secondary schools in New York and Pennsylvania (1849-1854), instructor in the State Normal School at Albany (1854-1868), institute instructor for the department of public instruction in New York state (1869-1878), and professor in Racine College (1884-1889). He was author of textbooks on grammar and civics and of numerous essays on education. W. S. M.

**JEWETT, MILO P.** (1808–1882). — First president of Vassar College, was graduated from Dartmouth College in 1828 and the Andover Theological Seminary in 1833. He was professor in Marietta College (1834–1838); principal of the Judson Female Institute at Marion, Ala. (1838–1855); principal of the College Hill Seminary at Poughkeepsie (1855–1862), and president of Vassar College (1862–1864). His publications include *Education in Europe* (1863) and *Academies* (1875).

W. S. M

See VASSAR COLLEGE

### JEWISH EDUCATION — Ancient Period

— The Jews, long before any other nation of antiquity, formulated an educational ideal and expressed the aim of education in terms of character formation, based on religious and ethical principles. The product of a sound education was to be a God-fearing man (Deut. x, 12; Prov i, 7), for "the fear of the Lord is the beginning of wisdom." The Jews did not, as the Greeks, create God in the shape and with the qualities of man, but man was created in the image of God, and his ideal was to be found in God. Unlike their neighbors, even the most civilized, the Jews did not practice the exposure of children, for none was so unfit that it could not learn God. Indeed, the reward for true observance of faith was increase of progeny, "happy is the man that hath his quiver full of them" (Ps cxxvii, 5). Schools as such were unknown in Biblical times, because it was felt that the education of children was the business of the family. It was the duty of the parents to act as interpreters to their children of the annual festivals and the religious rites and ceremonies, all of which served as object lessons in the history of their ancestors and as practical religious and moral training (See, especially, Exod xii, 26, 27; xiii, 8, 14; Deut. iv, 9, 10, xxxii, 46, etc.) More particularly was it the duty of fathers to hand down the national traditions (Deut. iv, 19, vi, 6; Ps. xlv, 1; lxxviii, 3–6), and to explain local landmarks (Josh iv, 6, 21). But it is clear that the mother also had an important educational function (Prov. i, 8, vi, 20). That the welfare of the State depends on the well-being of the family was also recognized (Fifth Commandment). Reading and writing (Deut. vi, 9; xxvii, 8, Josh xviii, 9, Judges viii, 14; Job xxxi, 35, etc.), and sufficient arithmetic to calculate dates of festivals and everyday needs were included in the curriculum. History and songs formed part of the life of the nation. With the Jews, as with the Greeks, life was education, though the content was different. How strongly rooted the religious ideal of education was among the Jews may be gathered from the fact that, in spite of the material greatness and wide intercourse with the world, a worldly culture did not arise. Typical of the literature

of this period (c. 1000 B.C.) is the Book of Proverbs, the whole of which may be read as the expression of the educational ideals of the time, with its emphasis on the importance of both the father and the mother in the education of the child, with its stress on habit ("Train up a child," etc. xxii, 6); on the value of reproof as a mode of guidance (x, 17, xii, 1), on the importance of discipline and the rod of correction (xxii, 15, xxiii, 14; xxix, 15, etc.); and with its description of the virtuous woman (xxxii). The so-called "schools of the prophets," reputed to have been established by Samuel, were probably nothing more than associations of kindred spirits interested in the same work.

Under the influence of Ezra and Nehemiah the sacred writings acquired a new value and became an object of definite study. From this time on the Jews were the people of the Book. "The sacred writings became the spelling book, the community a school, religion an affair of teaching and learning" (Welhausen). A new class of instructors (*Sopherim* or Scribes) arose, as opposed to the Levites or official interpreters. The synagogues at a later date became places of instruction and discussion (cf. Philo, and Matth xxi, 23, Luke ii, 46, etc.) Ezra is credited, but on little authority, with the establishment of a school system. In the second century B.C. Hellenistic influence made itself strongly felt among the Jews. Greek customs and a gymnasium were introduced into Jerusalem (1 Macc i, 14, 2 Macc iv, 9, 12). This, indeed, is the first reference to physical exercise, although young men over twenty were expected to bear arms (Numbers i, 3, xxvi, 2; and later 2 Chron xxv, 5). The sages recommended the study of Greek and even the translation of the *Torah* into that language, because "only by Greek can it be adequately rendered." Furthermore, Greek was taught to girls as an accomplishment, although as a rule girls were only trained in household work and the duties of motherhood. It is not necessary here to do more than refer to the intellectual influence of the Hellenized Jews, for example, in Antioch and Alexandria, where Greek was more familiar than Hebrew, or to the merging of Greek and Hebrew philosophy and early Christian doctrine into the school of Neoplatonism. Nor was this contact with the world around a very late development, Theophrastus speaks of the Jews as a race of philosophers (*φιλόσοφοι τὸ γένος ὄντες*).

That the education of children was almost wholly domestic has already been mentioned. But the problem of the education of orphans had to be faced, and about 70 B.C. an educational system was established by Simon ben Shetach in Jerusalem, with compulsory attendance. The details of this law cannot be traced, but it seems highly probable that the education of orphan children of sixteen years of age was



intended. A century later, however, the High Priest, Joshua ben Gamla, passed a law providing for the establishment of elementary schools, with compulsory attendance from the age of six. Attendance before that age was strongly discouraged. Children would come to school equipped with a knowledge of reading, of some extracts from the Pentateuch, and the ceremonies learned from the father. By this law each community had to provide a teacher for every twenty-five children, with an assistant if the number rose to forty, and another teacher if the number reached fifty. The curriculum was religious, consisting of the Scriptures and anything arising out of this in the way of arithmetic, history, geography, and general knowledge. Josephus (*Contra Apion*, I, 12) says "Our chief care of all is to educate our children," and elsewhere (*ibid* II, 18) "from their earliest consciousness they had learned the laws so as to have them, as it were, engraven on their souls." The last statement is corroborated in almost similar terms by Philo (*Legat ad Gaium*, sec 31). How successful the system of education was may be shown by the testimony of Josephus (*Vita*, 2), who declares that at fourteen he could expound the most abstruse questions of law, a fact which may be confirmed by reference to the story of the Christ Child in the Temple (Luke II, 46, 47).

*Academies* — One of the most interesting illustrations of the influence of education on the survival of a nation is that presented by the Hebrew academies (*Beth hamidrash*). The synagogues had already been centers of study, probably from the time of Ezra, for in addition to the prayers, passages from the Holy Writ were read and explained to the people. After the destruction of the Temple Johanan ben Zakkai obtained permission from Vespasian to establish an academy at Jamnia or Jabneh, which became the new center for Jewish life. Here the traditional literature and laws of the nation were discussed, legal and ritual questions were decided, contradictions in the law were settled; theoretical and hypothetical questions were considered at length, and the foundation for future development was laid.

Under Gamaliel II the academy at Jabneh acquired great influence. Young men flocked here for training and ordination as rabbis, with power to teach, judge, and, with limitations, to decide on questions of ritual. Other academies sprang up at Lydda, Bekei, Usha, Sepphoris, Caesarea, and Tiberias. With changing political conditions and the eminence of the teachers, the influence moved from one place to another. The right of ordination was at first vested in the patriarch, whose office was hereditary in the house of Hillel, but later was exercised by the patriarch and council. A formal order and routine gradually sprang up according to which the privilege of speech was regulated and ranged from the president of the academy (*Rosh Yeshibah*) through the sages and

ordained students to the unordained disciples or candidates (*haberim*), with the power to sum up reserved to the president. In this way was accumulated the lore which for many generations was handed down orally. Since hardly any limits were set to the discussions, almost every field of knowledge was touched upon, including theology, philosophy, mathematics, astronomy, astrology, medicine, geography, history, architecture, botany, and animal anatomy, etiquette and manners were also discussed. By 219 these traditions were collected by Rabbi Jehuda Hanasi (the Prince), head of the academy at Sepphoris, and formed the *Mishnah*, a word literally meaning "teaching," and applied to the laws and regulations. At Tiberias the foundations were laid by Johanan ben Nappaha (A.D. 189–279), the founder of the academy, for the work which was finally compiled in the fifth century as the Jerusalem *Gemara*, or supplement of the *Mishnah*, consisting of supplements, discussions, and elaborations of that work. The academy at Tiberias flourished with brief intervals to the time of Saadia. The teachers at the academies bore different names at different periods, up to the compilation of the *Mishnah* they were known as *Tanaim* (teachers), during the development of the *Gemara* they were called *Amoraim* (speakers), later the name was *Saburaim* (examiners or investigators).

At the same time a parallel development was going on among the Babylonian Jews, where the academies became important about 219 A.D. Sora and Nehardea were the chief centers at first, but the place of the latter, on its destruction, was taken by Pumbeditha. At Sora originated the Babylonian *Gemara* under Ashi (d. 427). This work during its compilation was submitted treatise by treatise to the assemblies for discussion and criticism, until it was completed in the sixth century by the *Saburaim*. The Babylonian academy was called *Metibta* (meeting or session), or *Yeshibah*, the one being the Aramaic, the other the Hebrew name, and the head was called *Resh metibta* or *Rosh yeshibah*. At first the title of *Gaon* (Excellency) was given to the head of the academy at Sora, but was later bestowed on other eminent scholars. Sora was surpassed in importance in the eighth century by Pumbeditha, which continued successfully until it was brought to a close on the death of Hai Gaon (1038). An interesting institution connected with the Babylonian academies was the *Kallah*, a general assembly meeting twice each year, at the end of summer and winter, and not unlike the modern institutes or Chautauquas. A treatise, previously announced, was prepared by the disciples and discussed at the *Kallah*, the assembly being seated according to rank and a definite procedure being followed. All present were questioned individually by the president. In addition to the prescribed work, questions from all parts were discussed,

and the answers were formulated by the president. And these questions came from wherever Jews had settled, for the Babylonian academies had during the Gaonic period (from the seventh century on) surpassed and taken the place of those in Palestine, and it was not until the tenth century, when Moses ben Chanoch, himself a student of Sora, founded an academy at Cordova, that the Western Jews became independent of the East.

The two compilations, the *Mishnah* and *Gemara*, dealing with the laws and regulations and the exegetical discussion that had grown up around them, were known as the *Talmud*, which for many centuries remained the storehouse of Jewish learning and the center of Jewish intellectual activity.

**Educational Theories in the Talmud** — The theory of education in the nine centuries following the Old Testament period are to be found scattered in the Talmud. Education, meaning, as always, religious education, was regarded as the business of life. The ignorant man, the *Am ha'arez*, was to suffer civil disfranchisement and social ostracism, for the ignorant man cannot be religious, while "whoso knows the Bible, *Mishnah*, and morals will not sin easily." Hence the school was as much a requisite in every community as a synagogue, and to live where there was no school was forbidden. "The world exists by the breath of the children in the school." The importance thus attached to education explains also the reason why teachers were regarded as "the protectors" of a town. But the maintenance of schools was not a matter of importance to the individual alone, but also to the nation; and on these grounds the Patriarch in the fourth century sent two inspectors of schools up and down the country. The first and last duties of the father were to care for the education of his children, duties in which the mother also participated to some extent, and it was in the home that children first learned the meaning of the religious ceremonies and rites. The education of the child by the father began as soon as he could talk. In some communities infant schools (*Makri Dardeki*) were maintained, and received children at the age of five. Here the alphabet was taught, mainly through play and fanciful stories attached to each letter. But generally it was not considered wise for their future development to send children to school before the age of six, when they were admitted to the public schools, which were under the care of a publicly paid *Melamed Tinkoth* (teacher of children). But how intimate the relation between the home and the school was is evidenced by the fact that it was always the father, and not a slave, who took the child to school; while it was not unusual to supervise the work done at home. Great care was to be exercised in the selection of a teacher. The first qualification was an acquaintance with the whole store of learning. The teacher was to be married,

not young, patient and wholly devoted to the needs of his pupils, for a dishonest teacher was regarded as "of those of whom it is said, 'Cursed be he who doeth the work of the Lord deceitfully.'" Teachers were exempt from taxation, and, although those in the lower grades were paid a salary, it was very general for the teachers of the Talmud to follow some vocation; so Rabbi Johanan was a shoemaker, Rabbi Simon a weaver, Rabbi Joseph a carpenter. The reverence with which teachers were regarded is reflected in their titles, "Lights of Israel," "Princes of the people," "Pillars of Israel", and more respect and service were due to a teacher than even to a father, for "the father gives the son only temporal life, but the teacher helps him to obtain eternal bliss." Women could in no case be employed as teachers. Their sphere was the home. The pupils attended school morning and evening for five hours each day. The Sabbath and festivals were employed for review and examinations. Vacations were, accordingly, unknown, the only concession being a reduction of one hour a day during the heat of summer.

A well-defined school procedure came to be recognized, and a traditional curriculum was early established. The school age (five or six to fifteen) was divided into three periods — one devoted to the Scriptures, one to *Mishnah*, and one to *Gemara*. At thirteen boys were confirmed and attained their religious majority. The subjects mentioned formed but the core of the studies, the extent and scope has been described above in dealing with the development of the Talmud. The method, as usual with oriental peoples, and as is to be expected from the lack of written material, was wholly oral. The teachers, however, frequently wrote out sections for their pupils to read. The pupils sat on the ground or on benches around the teacher, and repeated their tasks aloud and articulately, for "to speak aloud the sentence which is being learned fixes it in the memory." Since so much of the work was a matter of memorization, numerous mnemonic devices were introduced. Among these may be mentioned acrostics, the arrangement of sentences in alphabetical order; the alphabet itself was learned in different arrangements forward, backward, grouping by twos taken from each end (a system borrowed from the Greek, *εγ αω, βψ*); numerical symbols were also used. But above all stress was laid on repetition, and teachers were recommended to repeat with their pupils until they mastered a subject thoroughly. Wholesale reviews and revisions were frequent in order to fixate the larger topics. At the same time it was not desired so much that the amount of information imparted should be great, as that a pupil should become the master of what he knew, and if a pupil failed to comprehend, the charge was laid to the teacher. But diligence and industry were expected from the pupils, and he who

said, "I have taken pains and acquired nothing," was not to be believed. The pupil was expected to ask questions, for "whoso is ashamed to question, learns nothing," and again "one who is bashful cannot be learned." Of classroom devices to stimulate the pupil there was no lack, emulation and rivalry being the chief of these. Sweetmeats and cakes, on which were inscribed words or whole sentences, were given to the younger pupils for good progress, while corporal punishment with a strap was inflicted for misbehavior or laziness. Older pupils were reprimanded or rebuked for breaches of discipline. On the whole, while teachers were expected to be stern, a certain degree of respectful intimacy between them and their pupils was recommended. The honor of a pupil was to be as dear to a teacher as his own. Mutual instruction and the instruction of backward children by an older boy, usually the head of his class (*Resh Duchna*), was a well recognized principle. In this way the teachers were relieved where classes were large, and a new stimulus was added, for "as a small chip of wood sets fire to a large one, so the younger pupils sharpen the older, or just as steel whets steel, so is one scholar sharpened by another," a principle which was rediscovered by the Jesuits. Further, intercourse with the learned was enjoined, since "even the ordinary conversation of the wise is instructive," or, as Rabelais puts it, "haunt the company of learned men."

The Talmud divides students into four categories, which "correspond respectively to a sponge, a funnel, a strainer, and a sieve," and develops the analogies. In another passage, which deserves quotation, it is stated that "four characteristics are found among the disciples. The first quickly comprehends and quickly forgets, such an one loses more than he gains. The second with difficulty comprehends, but does not readily forget, he gains more than he loses. He who comprehends quickly, but does not easily forget, has a goodly portion. He who slowly comprehends and forgets quickly has an evil portion." How the psychology of memory was developed has already been described. The connection between knowledge and conduct was emphasized, and the value of the impressions gained was measured by the expression in behavior. "Great is the study of the law, for it leads to action," and again "Not theory but practice is the important thing." And if the value of knowledge lay in its use, not the least service of the learned man was to teach others.

Intellectual training did not complete the education of children. Vocational preparation was not neglected, and this duty was enjoined on the father as much in the interest of society as of the individual, for "whosoever does not teach his son a handicraft, teaches him to be a thief," and again "learning, no matter of what kind, if unaccompanied by a trade, ends

in nothing and leads to sin." That "labor honors the laborer" has been shown by reference to the many scholars who were humble artisans. Fathers were also charged with the duty of the physical training of their children in so far as they were advised to teach them swimming.

Such was the educational tradition established by the Talmud. Modifications were made, but the spirit remained unchanged up to the present day. While there is some danger in attempting to read into the system what is not to be found therein, there is as little justification for dismissing, as some German writers have done, the educational theory of the Talmud as entirely valueless, because it did not have any historical influence. The reason for this, however, does not lie with the system, but in the fact that no trouble was ever taken to learn from a people which was regarded with contempt.

**Middle Ages — Spain.**—Few nations have responded so readily to external conditions as have the Jews, so in cosmopolitan Spain of the early Middle Ages their intellectual interests were as broad as the field of knowledge, and resulted in a profound influence on European thought, in Italy they showed the same light-heartedness, the same worldly spirit as their neighbors, while in Germany there is noticeable that strong moral and religious atmosphere, mystical tendency, which marked the Teutonic people.

For three centuries (sixth to ninth) there had been intellectual stagnation until the admission of Arabic influences gave rise to a new development, and a revived attention to the Talmud from a new point of view. Philosophy was called in to the support of the national religion. There arose an army of scholars, grammarians, astronomers, historians, philosophers, and poets, and with the new studies came a renewed interest in the education of children, and the formulation of educational theory to meet the new requirements. The educational ideals of the time (from the tenth to the thirteenth centuries) are indicated in letters, wills, and monographs. The best illustration of these is the will of Jehuda ibn Tibbon (1120-1190), a doctor and translator of philosophical and grammatical works. He had provided his son with a well-stocked library, with several editions of each book, and had engaged a teacher for him in secular subjects, the son is advised to study Arabic and Hebrew, orthography, grammar, and style, religion and medicine, he is to learn by teaching, to take pride in his library and be ready to spread knowledge by lending books willingly (the last recommendation is repeated frequently in other works of a similar nature as an act of piety). The highest point in the development of Hebrew-Arabic culture was reached in the time of Maimonides (*qv*), who attempted to reconcile Platonic philosophy with the Hebrew religion in the *Moreh Nebukim* (Guide of the Perplexed), which with his *Codex of the*

Talmud exercised a great influence on Hebrew study. Works on method of instruction and programs of study are now frequently met with, either original or based on Arabic sources. So Jehuda Charisi in the *Moral Sayings of the Philosophers* recommends ten subjects for a ten-year course: writing, grammar, and prosody, law or religion, arithmetic, mathematics, astronomy, medicine, music, logic, philosophy. These studies, however, always presupposed the Talmud and the Bible, which indeed formed a foundation. The best exposition of the ideas of the time is found in the *Healing of the Souls* by R. Joseph b. Jehuda Akinin of Barcelona (end of twelfth century). It is clear from this work that, as in Europe generally, so among the Jews, the influence of Aristotle led to an encyclopedic study. Numerous encyclopedias were written or translated in the twelfth and thirteenth centuries. Akinin's curriculum included reading and writing, the Pentateuch and *Mishnah*, grammar and poetry (carefully selected for its influence on character), Talmud, which must be memorized and thoroughly understood before proceeding to philosophy, including mathematics, natural science, and metaphysics. Philosophy is to be studied as a defense against heresy and for the prevention of error. Logic, dialectic, rhetoric, and poetics find a place, and Aristotle is the textbook. Mathematics includes geometry, astronomy, optics, music, and mechanics. Under natural science come medicine and the eight divisions given in Aristotle's *Physics*. Each study is justified on Biblical authority. No better description of the qualities of a teacher can be found than those given by Akinin. He must have full knowledge of his subject and critical ability, and knowledge must be the mainspring of conduct; he must treat his pupils as his sons and through knowledge lead them to right conduct; he must teach step by step according to the ability of his pupils, and teach them that learning is its own reward. The pupil must respect his teacher more than his parents; he must be ready to ask questions; he must let nothing distract him from his studies, beginning with the first principles; he must leave no point in his course unsolved; and he must leave his home to find the best teachers and the soundest learning. It is not necessary here to point out the analogies between the attitude toward philosophy and the curriculum here described, and the seven liberal arts and the aim of philosophical study in the scholastic period.

The change in political conditions, the expulsion of the Arabs, and the persecutions under Christian rule, combined with internal disputes, led to a decline in Jewish studies. In many places the rabbis forbade the study of philosophy at about the same time as the works of Aristotle were burned at Paris. Mysticism on one side or rationalism on the other, with a consequent contempt for religious prescrip-

tions, took the place of a study of philosophical foundations. It even became a matter of pride to admit ignorance of the sciences. Attempts were made here and there to revive secular learning, as by R. Jehuda b. Samuel b. Abbas (*Jair Natib*, or *Light of the Way*, c. 1250), by Schemtob b. Joseph Falaquera (c. 1290), by Abraham ibn Chasday (c. 1250), but with little avail. The reaction was complete in non-Arabic Spain and the Provence. While the study of philosophy was forbidden because it led to contempt for religion, justification for it was sought, as by Joseph Kaspi of Argentières (c. 1322), by claiming Hebrew origin for Aristotle's works and reaching into them commands to fulfill the words of the Hebrew teachers and prophets. As with scholasticism, so with Hebrew studies, ignorance began to cover its defects by disputations, by quibbling, and by strawsplitting; the spirit of the law was forgotten in a mass of petty details, novels, and commentaries. By 1350 Profiat Duran of Catalonia, although he himself had enjoyed a broad education, felt that the only way out of the confusion which had been wrought was a return to the traditional Hebrew curriculum. Hence his grammar (*Maase Efod*), which contains a number of pedagogic principles, omits all mention of secular studies.

As a general rule children received their education from private tutors, although every community maintained one or two public teachers. The practice of receiving payment for teaching became common in the twelfth century, as it was more and more impossible to combine a trade with the professional work. Maimonides rebukes teachers for receiving pay and scholars for accepting stipends and board. The teachers were always exempt from taxation. Instruction began at three or four, the child being introduced to his studies with ceremonials. Discipline as a rule was mild, rebukes being preferred to corporal punishment; fruit, clothing, and toys were used to stimulate the future scholar. While girls were excluded from schools, they learned the Hebrew language and prayers. Higher studies were pursued in the academies or public school-houses of the rabbis, the synagogues being also used. It became a matter of distinction for wealthy men to maintain academies at their expense, as it was also to possess a library and to be willing to lend books. The young men wandered from academy to academy in search of knowledge, many going as far east as Palestine and Babylon.

*Northern Europe.*—The Jews were long settled in the north of France and in the Rhine districts, their settlement having been encouraged by Charlemagne, who himself employed Jewish physicians and ambassadors. For several centuries they were allowed to live undisturbed and maintained friendly relations with their neighbors, as may be indicated in

France by the numerous fables (*Contes et Fabliaux*), both original and translations from the French, and in Germany by the use of the vernacular and the many popular translations or transcriptions into Jewish German dialect, while the troubadour, Susskind von Trimberg, could hardly have been an isolated instance of the part played by Jews in the literature of the homes of their adoption. The Crusaders, ecclesiastical decrees (e.g. that of Archbishop Odo of Paris, 1197), and the Black Death tended to destroy these relations, and the persecutions and intolerance broke up the Jewish homes and drove them to other settlements. Removed as they were from the Arabic influences, the northern Jews tended to remain largely in the traditional groove of intellectual activity, — collecting, editing, and commenting on the Bible, the Talmud, and other exegetical works. Epoch-marking was the work of R. Solomon b. Isaac, better known as Rashi of Troyes (1039–1105), whose summary, written in a simple, natural style, served as a useful school textbook to introduce students to the commentaries. This work was also used by Christians, so by Nicholas de Lyra, called the ape of Rashi, and by Luther.

The aim of Hebrew study at this time was to relate the Talmud to the changed conditions of life, and so new decisions and ordinances (*Tossafot* and *Tekanol*) were issued. While there is little on educational theory at this time, practice hardly differed from that among Jews elsewhere. The child was entered at school or with a teacher at Pentecost with a ceremony in the synagogue, and the teacher at once gave him his first lesson on the alphabet from a tablet smeared over with honey to denote the sweetness of learning, a cake, inscribed with several Biblical verses, was given to the young scholar, there were also other symbolical ceremonies. The curriculum differed but little from the traditional Bible, *Mishnah*, and Talmud, and Rashi. When the pupil had gone through these studies, it was usual to wander round to other teachers to learn the latest and most authoritative decisions and supplements (*Tossafot*), and many communities established houses of learning or academies (*Beth hamidrash*), and often provided board and lodging for wandering students.

It was in the north, and especially Germany, that the wandering spirit attained its greatest development among Jewish as well as Gentile students. The former (the *Talmud-bahur*) was more fortunate than his brother, for regular provision was made either in the *Yeshubah*, or academies, or in private houses for their reception and entertainment. But they suffered much privation and want in spite of this. The chief desire which inspired the wanderers was to hear some new explanation, some new decision. These scholars performed a service by making copies of, or in some cases stealing, works and thus circulating them, and by

spreading the new decisions and thus subjecting them to thorough criticism. It is not surprising that in time the value attached to "novels" led to hairsplitting disputations for their own sake and neglect and ignorance of the Bible and Talmud, features for which analogies can easily be found in later scholasticism.

An extremely interesting type of educational literature was produced by the northern rabbis which finds its analogy in the contemporary Books of Virtue, of Manners, and of Etiquette. But the distinguishing mark of the Jewish works is that they were addressed to the masses, while the chivalric books were intended for the gentry and noble. At a time when the canons of chivalry make almost no mention of learning, the *Conduct of Life*, contained in the will of R. Elieser of Worms (c. 1050) addressed to his son, emphasizes the importance of knowledge and piety, respect for learning and reverence for the teacher, intercourse with the wise, upright dealings with his neighbors of all religions; kindness to those in trouble and charity to the poor, and does not omit to give practical hints on hygiene and diet. Similarly R. Elasar of Worms (d. 1298) urges piety and humility, observance and knowledge of the Law, uprightness and love of neighbors, self-denial and kindness to the needy, constant study, and care for the education of children. The most complete work of this type is the *Book of the Pious*, attributed to R. Jehuda Chassid, a mystic of the thirteenth century. Here are emphasized neighborly love, upright dealings; kindly treatment of inferiors and animals, true piety and charity, education of children, boys by teachers and girls by their parents, separation of good and bad children, of bright and weak pupils, readiness to lend books and manuscripts, reverence for and care of sacred books. How the tradition was maintained is indicated in the *Book of the Pious* (called the "short" to distinguish it from the earlier work) of R. Moses Kohen b. Elasar of Coblenz (c. 1473), and in the anonymous *Book of Morals* (c. 1400), which was translated into the Jaigon in 1542. While both works repeat the emphasis on the qualities already mentioned, there are additions on table manners and etiquette in daily intercourse. Works of a similar character are found frequently throughout the sixteenth and seventeenth centuries, adequate testimony to the perennial interest in education.

**Hebrew Influence in Middle Ages** — In the early part of the period under consideration, that is, about the ninth and tenth centuries, Jew and Christian lived amicably side by side. Synagogal and church melodies were exchanged, and many Christian scholars used Hebrew words in commentaries. There was an interchange of thought on religious questions, and disputations appear to have been frequently engaged in. Aleinu refers to a disputation at Pavia about 800 between a Jew,

Julias, and Peter of Pisa. In the tenth century Rathernus, Bishop of Verona, defends his anti-Jewish attitude on the ground that the Jews were too outspoken in disputing with Christian theologians. The traditional training of the Jews afforded them a preparation for disputative argument which frequently led them to victory. Indeed, such was the confidence in their powers, that they were often the challengers. It is not surprising, then, to find that toward the end of the twelfth century the Church began by forbidding laymen to enter into theological discussion with Jews, and soon forbade such intercourse even to the somewhat better educated clergy. On their side, the Jewish rabbis used their influence to prevent such disputations when the era of persecution began (Cf. *Book of the Pious*). The friendly relations which existed between Jews and Christians not only led to disputations, but many of the clergy seized the opportunity to learn Hebrew from their Jewish friends, and there appears to have been an interchange of church and synagogal melodies. But the Church put an end to such tendencies to tolerance, holding *quoniam dispar est cultus, nullus debet esse amorum consensus*.

In two fields of study — medicine and astronomy — the Jews of the Middle Ages were preeminent, and their influence is strongly marked. The profession of medicine was almost wholly in their hands from the ninth to the thirteenth centuries. At Salerno there were in the early beginnings many Jewish teachers, and Hebrew was one of the languages in which lectures were delivered. The first medical encyclopedia (*Compendium Salernitanum*) was composed by Copho, who is thought to have been a Jew. From Salerno the Jewish doctors spread throughout Italy and held many important positions in ecclesiastical and secular courts, e.g. Farragut and Charlemagne, Zedekia and Charles the Bold. The *Canon* of Avicenna was first made accessible by a translation into Hebrew, and a commentary on Hippocrates was written in the thirteenth century by Abraham Cabrit. At Montpellier a Jewish medical school, the forerunner of the later university, was opened about 1025; and later, many Jews were connected with the medical faculty as teachers and as deans, until a ban went out in the thirteenth century against Jewish doctors.

In astronomy the Jews were active practically and theoretically. They made several astronomical tables, e.g. the Toledo tables in 1080, and the Alfonsine tables under the superintendence of Isaac ben Sid. Levi Gerson (Leo de Bagnolas) invented an astronomical instrument, and his work upon this was translated into Latin by order of Clement VI, and was highly appreciated by Kepler. As translators of Arabic astronomical works the Jews made accessible the most valuable studies in the field. Ibn Ezra (qv) translated the *Canons of the Khwarezmi Tables* of Al-Muttani, Moses ibn

Tibbon the work on the Ptolemaic system by Jahir ben Aflah; Jacob Anatoli translated Ptolemy's *Almagest* and Averroës' compendium on this work. Profiat Tibbon was professor of astronomy at Montpellier. In the field which was then so nearly allied to astronomy — astrology — the interpretations of the Jews were much sought after, until they were forbidden by the rabbis as likely to lead to trouble.

In philosophy the Jews exercised an influence for which they have only received scant credit. Interested as they were mainly in reconciling Hebrew theology with philosophical speculation, their work fell directly into line with the aims of the early scholastics, and few of the leading medieval theologians failed to show a knowledge of Hebrew philosophical writings. While it is true that the Jews served mainly as intermediaries between Greek and Arabic philosophy on the one side and Christian theology on the other, without this mediation the development of scholasticism would have been retarded for many years until a direct knowledge of Aristotle would have been possible. The first Hebrew philosopher to exercise a marked influence on Christian philosophy was the Neoplatonist, Ibn Gabirol or Avicbron (1021-1058), possibly because he was not known for several centuries as a Jew. Ibn Gabirol's *Fons Vita*, translated into Latin at Toledo, c. 1150, served as a textbook of Neoplatonism, and was known by Duns Scotus, Albertus Magnus, Aquinas, William of Auvergne, and Alexander of Hales. The work was a matter in dispute between the Franciscans as represented by Duns Scotus and the Dominicans, represented by Albertus Magnus and Aquinas. Duns Scotus was a staunch upholder of Avicbron, and accepted his theory of the universality of matter, and the emanation of the divine will. The latter view was also accepted by Albertus Magnus, who devotes some space in the *De Causis et Processu Universitatis* to a consideration of Avicbron's views. But the most permanent and broadest influence was exercised by Maimonides (Moses ben Maimon, d. 1204) (qv) through the Aristotelian *Moreh Nebukim* (*Guide of the Perplexed*), translated into Latin within fifty years of his death. He is quoted freely by Albertus Magnus as Moyses Ægyptus, and his work as *Dux Neutorum*. The *Moreh Nebukim* is an attempt to reconcile revealed religion and rationalism or Aristotelianism. Albertus accepts Maimonides' theory of the creation, and, as against Aristotle, his arguments against the eternity of the world. Albert's *De Divinatione* is largely based on Maimonides, especially the distinction between visions, dreams, and prophecy. Where Albert differs from his authority, it is purely on doctrinal grounds. Thomas Aquinas is even more indebted to Maimonides, whose views he reproduces almost verbatim. He accepts the proofs of God's existence, the theory of the creation, and

the views on the eternity of the world, on God's omniscience, and on angels as intelligences or emanations of God. These instances will perhaps suffice in a brief account, but many others could be cited, — Isaac Israeli, for example, whom Albertus Magnus regarded as the greatest philosopher after Maimonides, David (possibly the same as Ibn Daud or Johannes Hispalensis), whose *De Causis* he quotes, Andrea (or Anatoli), who assisted Michael Scot, according to Roger Bacon, Levi ben Gerson, the astronomer and commentator on Averroes' Aristotelian commentaries, who exercised some influence on Pico del Mirandola. Many other Hebrew writers could probably be discovered on investigation, for it was a custom of medieval writers to quote without citing authorities.

The greatest contribution of the Jews to the development of medieval civilization was made by their activity as translators. The Jews by the conditions imposed on them were necessarily polyglot. They readily adopted the vernacular of the countries which afforded them a home. How catholic were their interests may be seen by a glance at Steinschneider's *Hebraische Übersetzungen des Mittelalters*. They entered every field of human knowledge which was accessible to them. Their translations into Hebrew were made from Latin, Arabic, Spanish, and other languages. With many the impulse was purely intellectual, others were professional translators in the pay of patrons, of whom Alfonso X, Frederick II, Charles of Anjou, Robert of Anjou, and Don Pedro are the most notable. There were two methods by which otherwise inaccessible works found their way into the hands of Christian scholars, — most usually the Jewish secretaries translated into the vernacular, and this was in turn translated into Latin, or else they themselves translated directly into Latin. One of the most famous centers for translation, especially from Arabic, was established by Raymond, Archbishop of Toledo (1130–1150), who was assisted by Gundisalvi. The chief translator was Johannes Hispalensis, or Avendeath (*ie* Ibn Daud), a Jewish convert, who translated mainly Arabic astrological and astronomical works and some philosophy. He compiled an *Epitome Totius Astrologia*, probably from Arabic. Among other works translated under Gundisalvi with the same assistance were Avicenna's *Physics*, in which another Jew, Solomon, collaborated, *De Anima*, *Metaphysics*, *De Celo et Mundo*, *De Ortu Scientiarum*; the *Khwarezmi* of Mohammed ben Musa; some works of Maschallah, an astronomer. Other interpreters were Abraham bar Chijja, the astronomer, who probably assisted Plato of Tivoli in the translation of his *Liber Embadorum*, a work on geometry, and possibly in translations of his astrological aphorisms, taken from the Arabic Chajjim (c. 1250) translated astrological works of Ibn Ezra into French, and assisted Hen-

ricus Bates and several others with Latin translations. In the service of Alfonso X, were Isaac ibn Sid (Rabbi Zag), who translated into Spanish several Arabic works on astronomical instruments and assisted in drawing up the Alfonsine Tables, Abraham Alfaguin, who translated part of the Koran; Judah b Astruc compiled a *Book of Sentences* in Catalanian dialect from Arabic, Hebrew, Greek, and Latin, a work intended for the education of the nobles; Judah b Moses translated Arabic astronomical works into Spanish, *e g* Costa b. Luka's *Globe*, and also a *Lapidarium* of Abolays. Charles of Anjou employed Moses Farachi or Faradi, translator of the medical work *Continens* of Razi, Pseudo-Galen, *De Medicinis expertis* from the Arabic of Hunain, and a medical dictionary of Abu Ali ibn Djazla (*Tacuyum aegritudinum et morborum corporis*), Moses of Palermo was taught Latin at the request of Charles for purposes of translation, and translated from Arabic Pseudo-Hippocrates' *Lub de Curatombus Infirmitatum Equorum*. Kalonymus b Kalonymus translated for Robert of Anjou, among other works mathematical and medical, many of Averroes' Aristotelian commentaries, *e g* *Topics*, *Sophisms*, *Analytics*, *Plants*. It would be impossible here to enumerate the number of independent translators and interpreters or to do more than indicate those who made Arabic works accessible through translations into Hebrew. Of these the most famous were the members of the family of Ibn Tibbon, who settled in the south of France about the middle of the twelfth century, Judah ibn Tibbon, the father of translators (1120–1190), Samuel (1150–1230), the translator of Maimonides, Moses (fl. 1240–1280), the translator of Averroes, Euclid, and Avicenna; Jacob b. Machir (Profatius Judæus, 1236–1304), the translator of Euclid, Averroes, Kosta ben Luka, and the *Almagest*. Jacob b. Abba Mari (Anatoli), a son-in-law of Samuel ibn Tibbon, was retained as translator by Emperor Frederick II, and collaborated with Michael Scot. Direct translations into Latin by Jewish scholars do not appear in any number until the fifteenth century, and among these may be mentioned the works of Elias Del Medigo (whose patron was Pico del Mirandola), Abraham de Balmes, Kalonymus ben Judah, Jacob Mantino, and Moses Alatino. From the end of this century on, the knowledge of Hebrew was sufficiently widespread for independent translations by Christian scholars.

**End of Medieval and Beginning of Modern Period** — In France the period of Jewish development came to a close with the persecutions which ushered in the thirteenth century. A decline had already begun to set in as a result of the disputes centering round Maimonides' philosophy and this was completed when the Talmud was burned at Paris in 1242, and the Jewish academies were closely watched. That some attempt was made to stem the de-



cline is indicated in a remarkable school statute of the thirteenth century, of which three different versions exist. A school organization is projected from top to bottom. A "petty school" was to be established under a superintendent of studies and teachers who were to have only ten pupils of selected ability under their charge. Books were to be used instead of the oral method, and translation into the vernacular was to be employed. Pupils should be encouraged to hear each other every night for mutual improvement. Weekly, monthly, and half yearly reviews were to be conducted by the teachers. In the capitals an academy or "great school" was to be maintained at public expense, to which the "separated" or oblates, i.e. the firstborn male children, were to proceed at the age of sixteen, the lecture system was to be employed here and tutors were to be appointed to conduct "quizzes." The whole course in both schools was to last fourteen years, beginning with the fifth or sixth year. While there is no evidence of such a system in practice in France, it is possible that it may have existed in England, for there appears to have been a small provincial school at Norwich and a great school (*Magna schola Judæorum*) in London. For this reason an English origin is assumed for the code (see J. Jacobs, *Jews of Angevin England*, p. 342).

The education of girls was not encouraged, for "education leads woman to error." She was to be educated for the home, and in any case the custom of early marriage precluded an education beyond a knowledge of the faith and ritual necessary for the home. Many women conducted businesses, while their husbands traveled for study; many encouraged learning by loan of books, and by helping poor students with board and lodging, some, however, did themselves attain considerable knowledge of religious traditions.

In Germany and Poland, however, the medieval system began to be stereotyped, and when the sixteenth century is reached the traditional Jewish educational institutions are firmly established. The center of Jewish learning, however, tended to move to Poland, where the German Jews gradually settled in large numbers. The institutions are (1) the *Heder* or *Talmud Torah*, giving instruction up to the age of fourteen or even sixteen, and (2) the *Yeshibah*, or rabbinical academy. The *Heder* (lit. "room") was a private school in which pupils paid tuition fees. The teacher (*Melammed*), not always a competent scholar, frequently taught in the one room of his house, in the midst of his family, while he continued his occupation or business, if he had one. Sometimes he would have the aid of an assistant (*Belfer* or *Behelfer*) who brought the pupils to and from school and taught the elements. Since the number of pupils was small and they varied in age, class instruction was generally impossible, much to the detriment of a con-

sistent curriculum. Among defects of the *Hedarim* in the seventeenth century are also mentioned the bitter competition between teachers, frequent changes of schools, dishonest practices to retain pupils, inadequate accommodations, etc. (Moses ben Ahron, 1635). An interesting statute was passed by the community at Nikolsburg in Moravia to remove these and other abuses (1676, revived 1726). A board of education was also established at Frankfort in 1662. The conditions of the *Heder* remained unchanged up to the present day, although some attempt is everywhere being made to improve them.

The *Talmud Torah* was originally a communal school for poor and orphan children. Toward the beginning of the sixteenth century Talmud Torah societies are found in most of the Jewish settlements in northern Europe, elsewhere communal boards of education were elected (e.g. Posen, Worms). In both cases schools were maintained by fees, by voluntary contributions, by a share of the contributions to synagogues, by collections made at circumcisions, marriages, and funerals, and by charity. In Cracow the Talmud Torah Society supervised both private and public schools, and weekly inspections of instruction were made (see Statutes 1551-1639). But although more rigorously supervised, the Talmud Torahs were not much superior to the *Hedarim*.

The curriculum in both types of schools was the same. From the age of two or three children were taught a few prayers and benedictions at home, and were introduced to the ceremonies. Entering school at the age of five, they were taught the alphabet, benedictions, the daily prayers (*Sidur*), the Pentateuch with translations into the vernacular, the rest of the Bible, exegesis (Rashi and other commentaries), and Talmud. Reading and writing in the vernacular, Hebrew grammar, and arithmetic were also taught in some schools. But the main emphasis was on religious instruction and practice. Toward the thirteenth year, the time of initiation, when the boys became legally members of the community (*Bar-mitzvah*), they were instructed in the laying of the Phylacteries (*Tefillin*). The method of instruction throughout was oral, and the traditional mnemonic devices and numerous reviews were employed. If a boy proved intellectually dull at fourteen, he was put to a trade, apprenticeship fees being paid by the community or societies for the poor. Those who had the ability entered the *Yeshibah*, the public academy under the charge of the rabbi.

Academies were to be found in all large towns, in Spain and the south of France they provided, as was shown above, a broad university education. In Germany and Poland all energy was devoted to rabbinical studies, and all profane or vernacular works were rigorously forbidden. The course of study consisted of the numerous commentaries and



exegetical writings on the Scriptures, *Mishnah*, and Talmud. The chief of these were the *Halakot* (an abridgment of the Talmud) by Isaac ben Jacob Alfasi (d. in Spain in the eleventh century), the *Turim* (a compilation of the codes, omitting those parts which were obsolete) of Jacob ben Asher (1340), and later the *Shulhan 'Aruk* (code on ritual and legal questions) of Joseph Caro (b. 1488). One part of the course was given to private study of *Gemara*, Rashi, and *Tossafot* (the glosses on the Talmud which were begun after Rashi). The students prepared questions on their readings, which were discussed by the Rabbi at the next meeting. Another part of the course was devoted to scholastic disputation to clarify any difficulties or contradictions in the codes. This method of disputation (*Pilpul*) tended to become an end in itself, and led to subtleties and quibbling, but it demanded a ready knowledge of the fundamental codes and commentaries. Learning was greatly esteemed, and the learned man was given the place of honor wherever he came. Boys of promise were eagerly sought in matrimony, and wealthy fathers willingly provided maintenance for learned sons-in-law.

**Modern Period** — These forms of education have in part continued up to the present time, more especially among the Russian and east European Jews. The emancipation of the Jews dates from the time of Moses Mendelssohn (1729-1786), who realized that their further progress depended upon their restoration to the normal conditions of social life. The vernacular which the secluded Jews spoke through centuries of isolation must yield to the national language of their German environment. In order to bring about this change, Mendelssohn translated the Bible into German, knowing that the acquisition of the language of their adopted country would be a right beginning toward the reformation, and that the Bible, always a household book among the Jews, would be the most effective means for the purpose. "Never was a people so serious and so passionate and so ideal in the pursuit of an education. Ten or twenty years sufficed to make a remarkable change. The dilettantes, who had preoccupied the schools and whose want of understanding of both their obligation and their opportunity had been in a large measure the cause of the decadence, disappeared, and schools arose in several places, patterned after the best models, such as the Philanthropin of Basedow (*qv*) in Dessau. Among these may be mentioned the Samson'sche Freischule at Wolfenbuttel, the Freischule of Berlin, the Philanthropin of Frankfort a. M., the Freischule in Seesen, and a large number of congregational schools all over the land. The Freischule of Berlin was organized on the plan of David Friedlander, the friend of Moses Mendelssohn, in 1778. When, in 1774, J. J. Basedow opened the Philanthropin, Mendels-

sohn urged that the Jews encourage the undertaking, and a brother of H. Wessely came to its support and enlisted a number of Jewish families for its patronage. But although the experiment failed, the Jews of Dessau, in the light of the experience and the interest in educational matters which it stirred, undertook to establish a school which should secure for the Jews the influences and the enlightenment so vividly desired by them. At first a school for poor Jewish children, it soon became a communal school receiving even non-Jewish children. This school was known as the Jewish Central and Free School (*Judische Haupt- und Freischule*), and later the Duke Francis School (*Herzogliche Franzschule*), its principal was David Fraenkel.

Noteworthy schools of this period are the school of Seesen, founded by the reformer Israel Jakobson in 1801, the school at Breslau established by Joel Loewe, a pupil of Moses Mendelssohn, in 1791, the Samson'sche Freischule at Wolfenbuttel, which graduated such eminent pupils as Leopold Zunz, the bibliographer, and J. M. Jost, the historian, and the Philanthropin at Frankfort a. M., which was established in 1805. Some of these schools are still in operation, though their method of instruction and their aims have been modified by the changed conditions and the modern conceptions of pedagogy.

In Austria, by the Edict of Tolerance issued by Emperor Joseph II (Oct. 29, 1781), Jews were permitted to establish schools of equal standing with those of Christians. It was the purpose of the "Toleration" to enable the Jews in the Austrian Empire to speak the prevailing language and to enter into the trades. The results of this liberal policy were not slow to appear. The Jewish educational institutions were organized by Heitz Homberg in 1818, who was supported in his labors for the uplift of the Jews by the wise and persistent policy of the government. The training of teachers was provided for at the very beginning of the movement for the reform of Jewish education. The Pedagogical Seminary at Cassel was established in 1809, and the one in Berlin, founded in 1840, was under the direction of Leopold Zunz. There are also seminaries at Munster and Hannover. The aim is to equip the teachers of the Jewish communal and congregational schools in a manner comporting with the modern requirements.

In England secular institutions were not established until the beginning of the nineteenth century. Talmud Torahs and religious schools probably existed earlier. In 1811 the Westminster Jews' Free School was established, followed in 1817 by the Jews' Free School in Whitechapel, now one of the largest elementary schools in the world. In the provinces, schools were not established until some years later, the Jews' Free School at Manchester and the Hebrew School in Liverpool were both

established in 1842. In 1851 the Jewish schools were allowed to share in the national grant to education. The subsequent history of the Jewish schools has been the same as that of other denominations voluntary or non-provided schools. (See ENGLAND, EDUCATION IN)

Jewish secular schools have not been numerous in the United States. Schools were early attached to synagogues and taught both religious and secular subjects. Hebrew schools were established in New York in 1808 by the Sheareth Israel. In Philadelphia a general Sunday school, not affiliated to any synagogue, was established in 1838, followed in the same year by one at Charleston, S. C., at Richmond, Va., in 1839, in New York in 1845 by the Emanuel Society. In 1864 a Hebrew Free School Association was established, in which the children were brought together irrespective of their synagogue affiliation and were taught by voluntary teachers. The rapid increase of immigration immediately raised a complicated problem, the extent of which has only recently been realized and which is only just being faced.

**The Present Problem** — The problem of purely Jewish education is becoming more and more difficult and complex in proportion as the facilities for secular education increase. In Russia and eastern Europe many of the types of schools referred to above, the Heder, the Talmud Torah, the Yeshibah, still play a significant and important part in the lives of the people, in Russia these schools also provide the secular education which is denied the Jews by the government authorities. But it is in the countries where freedom has been greatest that the decline of Jewish teaching has been most rapid. The Jewish religion has always been essentially a religion of the home, many of the ceremonials only have meaning as they are performed in the home, the welcoming of the Sabbath, the close of the Sabbath, the celebration of the festivals, are occasions for the inculcation in a concrete manner of Jewish tenets and Jewish beliefs in the minds of the young. The growing economic independence of children, and frequently the difference in outlook, due to difference in language and education, are tending to break down the home bonds and home life which have been at the root of Jewish life. This, however, is only one of many causes. On the side of the Jewish schools for the purely sectarian and religious education, little has been done to keep pace with the advance in educational thought and practice. The methods are still in the majority of instances the methods of the medieval period. Cramming and memory work without appeal to the understanding too often tend to arouse a rebellious spirit. On the material side, too, the schoolroom, especially the Heder, is too often an unsanitary room used for most other purposes of life beside teaching; the teacher,

however learned he may be, in most instances takes up his work as a *pis aller*. Class instruction is unknown in the Heder, and the boys take their lessons in turn for a few minutes at a time. The visiting Hebrew teacher (*Melammed*) is professionally of the same type as the master of a Heder, his presence is unwelcome, his methods as unmethodical, and his remuneration as miserable as of the Heder teacher. Of a higher type are the communal Talmud Torahs, which alone may hope to cope with the problem. They are housed in modern school buildings, they provide a consistent curriculum, and the beginnings are being made to train teachers for the work. Class work takes the place of individual and random tuition. Above all, instruction is given in the vernacular (English or German) and not in the Yiddish jargon. At present these schools have a struggling existence, since they are dependent to a large extent on voluntary contributions and fees. The curriculum generally includes elementary Hebrew, the Daily Prayers, the Pentateuch, the principles of Jewish faith and practice, and with more advanced students other parts of the Bible and simple commentaries. But even the Jewish parents who are anxious to educate their children in many cases have only the confirmation (at the age of thirteen) in view, after that time, when the boy is able to read his portion of the Law and to lay the Phylacteries, little further attention is paid to his education. As for the girls, their education is almost entirely neglected and rarely goes beyond ability to read and a knowledge of Jewish faith and practice. This problem is one of the most difficult which Jewish educators will have to face. Traditionally the home has always provided for the education of girls. The decay of the home, the early economic independence, the weak hold of the synagogue, the so-called attractions of the street contain in them the causes of many a tragedy. The girls, it must be recognized, have as great a claim on the attention of the Jewish school as the boys.

One other type of school may be referred to, the congregational school, modeled on the Sunday school, maintained in connection with a synagogue and meeting on Saturday afternoon or Sunday morning and sometimes one other period in the week. Here the program is less ambitious and is confined to a little Hebrew reading, Biblical and post-Biblical history, the Jewish creed, and some singing. But too often the teachers are voluntary workers, the school has not the support of the parents, discipline is weak, and the pupils attend at will and drop out early. There is a tendency, too, in the congregational schools, more particularly in those connected with the reformed synagogues, to abandon entirely the teaching and study of Hebrew, since services are in any case conducted in the vernacular. In these schools the curriculum consists of

Biblical history, singing, and some discussions of Jewish creed and principles.

Much thought is being given to the question of Jewish education both in England and America. In London the Jewish Religious Education Board (est. 1894) has for a long time certificated teachers for Sunday school work, and in New York several well-conducted Talmud Torahs have sprung up which meet the best requirements of secular schools in material conditions, and the Kehillah (Community) has established a Bureau of Education under an efficient director to consider the whole question of reform in the direction of efficiency. Statistics have been obtained of the number of unsanitary schools (Hedrim), of teachers, salaries, funds, etc., and conferences have been held for the improvement of the curriculum. One other tendency which will contribute in large measure to some reform is the strong national or racial movement, an offspring of the Zionist movement, which, without raising any question of loyalty to the adopted country, aims to arouse an interest in the cultural side of Jewish history and Jewish life. With these proposals there is frequently connected the adoption of the new method of teaching Hebrew by the direct method (*Ivrit be-Ivrit*), with which much successful work has already been done. The reformed curriculum will, therefore, have an emotional as well as an intellectual aim, it will stimulate an appreciation in the best that has been, and by dissipating ignorance will remove much of the besetting sin of contempt and scoffing. I. L. K. and L. G.

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#### JOANNES DE GMUNDEN (c. 1380-1442)

— The first professor of mathematics, as a separate subject, in Austria. He is also known as Johann von Gmunden, and Johannes de Gamundia, and the names Wissbier, Nyden, and Schmdel, are also doubtfully assigned to him. He was born about 1380 at Gmunden on the Traunsee, Gemund in Lower Austria, or Gemund in Swabia. He died at Vienna, Feb. 23, 1442. He was educated at Vienna and was professor of mathematics there. He wrote a work on sexagesimal fractions (see FRACTIONS), *Tractatus de Minucius phisicis*. D. E. S.

**JOANNES DE MURIS** — A prominent writer on arithmetic, astronomy, and music. He was born in Normandy about 1310, and died after 1360. He is also known as Jean de Meurs (Murs, Muria). His *Arithmetica cōmunis* appeared in print in 1515. D. E. S.

**JOHN, ABBOT OF ST MARTIN'S.** — See BISCOP, BENEDICT

**JOHN B STETSON UNIVERSITY, DELAND, FLA** — A coeducational institution founded in 1887, the present name was adopted in 1889. The university maintains an academy, college of liberal arts, college of law, a business college, a normal school, a school of mechanics arts, a music school, and a school of fine arts. The entrance requirements are equivalent to sixteen units. Candidates for the college of law which offers a two years' course must satisfy the faculty with evidence of their qualifications. The degrees of A B, A M, B S, and LL B, are given on the completion of appropriate courses. The faculty consists of forty-seven members.

**JOHN OF DAMASCUS** — The founder of Greek scholasticism and the forerunner of the scholasticism of the West, was born in the latter part of the seventh century and died shortly before 574. He entered the cloister of St. Sabas at Jerusalem about 730, but even before that he had distinguished himself as a theological writer of ability. He spent two years of his noviciate at this monastery, and was ordained priest before 735 at Jerusalem. He spent the rest of his life almost entirely in his monastery of St. Sabas. His importance in the history of the Eastern Church rests upon his great dogmatic treatise in three parts, entitled by him the *Fountain of Knowledge*, his spirited defense of image worship, and his admirable hymns. Several of the latter are used in English translations by Neale, in the Eastern Church these compositions are of great liturgical importance. The importance of John in the history of education rests upon the use he makes of Greek philosophy in the first part of his *Fountain of Knowledge*. In this part, entitled Philosophical Chapters, later called *De Dialectica*, and intended to be introductory to theology, John establishes by practical use the principle that philosophy was to serve as the handmaid of theology or faith, a position which became a commonplace in Western theology and education in the Middle Ages, but was first stated and applied by John. With this conception of the relation of the two, he constructs a well-wrought-out methodology, based upon the categories of Aristotle and the universals of Porphyry's *Isagoge*. In this way the revived Aristotelianism, already strongly tinged with Platonism, became a part of the theology and theological training of the East. The *Fountain of Knowledge*, especially

the first or philosophical part and the third or the Exposition of the Orthodox Faith, continued for many centuries to be the most important and the authoritative summary of the philosophy and theology of the Greek Church, taking a place as a basis of teaching more authoritative than even the *Sentences* of Peter Lombard in the West, or the *Summa* of St. Thomas in the modern schools. But the influence of the work did not remain confined to the East. It was translated into Latin by Bernardino of Sienna in the fifth decade of the twelfth century, and was used by Peter Lombard in the compilation of the *Sentences*. From this translation it has been thought that Peter adopted his method of exposition, whereby quotations of the Fathers are arranged under each head. J. C. A. Jr

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 See also the various histories of Christian doctrine by Bach, Loofs, Harnack, Nitzsch, Thomasius-Bonwetsch, and Schwane

**JOHN OF SALISBURY** — A famous English scholar, teacher, diplomatist, historian, philosopher, and bishop of the twelfth century (1115-1180). Early in life he crossed over to France, where he studied for fifteen years under Abélard (*qv*) and other great teachers and secured the best scholarly training which was to be had. Returning to England, he became secretary to Archbishop Theobald, by whom his talent for practical affairs and remarkable scholarship were utilized in many ways. He was intrusted with many delicate and difficult undertakings both at home and abroad and exercised a quiet but powerful influence in the affairs of Church and State. Later on he was the trusted friend and adviser of Thomas à Becket, shared his misfortunes and was present at his tragic death. During the last four years of his life he was Bishop of Chartres.

He was an enthusiastic humanist and became the best classical scholar and the most elegant Latin writer of the Middle Ages. The range and readiness of his knowledge was unparalleled. He was more thoroughly familiar than any man of his time with the speculations of the ancient philosophers, was devoted to the Platonic tradition, and was the first to make the whole of Aristotle's *Organon* available to medieval readers. At the same time he was conversant with all the phases of the scholastic controversies and has given us accurate and critical accounts of contemporary philosophical

discussions His own philosophy is known as moderate realism He struck a middle course between the extremes of realism and nominalism, combining the most valuable elements of both. While he regarded dialectic as sterile in itself, he admitted its efficiency as an aid to other disciplines Reacting from the prevalent mysticism, he made a thorough examination of the psychological questions of the relative importance of sensation, perception, and understanding in arriving at concepts, and of the relations of faith, opinion, and knowledge His historical knowledge was wide and accurate, and his theology was based upon extensive patristic learning. His acute and active intellect never tired of hearing and weighing the views of the men of his time, and he has left us valuable estimates of their learning and philosophy His writings help us to understand the literary and scientific conditions of the twelfth century His great learning and indefatigable industry were applied largely to educational pursuits Not only was he one of the most cultured scholars of the century, but one of its greatest teachers, directing the investigations of a wide circle of learners He discusses frankly the educational conditions of his day and describes in detail the methods then in use He has left us in his *Metaphysics* one of the very few circumstantial accounts of medieval student life and educational procedure His writings form an invaluable storehouse of information as to the matter and method of scholastic education They cover a wide range of subjects His *Polycraticus* (*The Statesman's Book*) deals with the principles of government, philosophy, and learning and is the most perfect reflection remaining to us of the cultivated thought of the twelfth century His *Metaphysics*, in four books, is a defense of the method and use of logic and philosophy His *Letters*, some three hundred in number, shed valuable light upon the constitutional struggle then agitating England His *De Septem Septenis* is a treatise upon the Seven Liberal Arts as then understood and practiced His *Historia Pontificalis* and his *Lives of St Anselm* and *St Thomas à Becket* contain important historical materials, and possess great human interest W. R.

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**JOHN SCOTUS ERIUGENA.**—See ERIUGENA.

**JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD**—Incorporated Aug 24, 1867, and opened Oct 3, 1876, has from its inception

been influential among American institutions in upholding high standards of scholarship and scientific research The university was founded by Johns Hopkins, who was born in Maryland, May 19, 1795, and died Dec 24, 1873, in Baltimore, in which city he had accumulated a fortune The first Board of Trustees was organized on June 13, 1870, and met on Feb 6, 1874 The Board is a self-perpetuating body of twelve members and the President *ex officio*; the trustees are elected for life The first president was Daniel Coit Gilman (*qv*); he was inaugurated on Feb 22, 1901, and held office during the first twenty-five years of the university, resigning on Feb 22, 1901 His successor was Ira Remsen, LL D, Ph D, professor of chemistry in the university, inaugurated on Feb 22, 1902 Upon the inauguration of President Remsen a suburban tract of 176 acres at Homewood was given as a future site by William Weyman, William Keyser, Francis M Jencks, Julian Le Roy White, and William H Buckler of Baltimore, and Samuel Keyser of New York Fifty acres of this property have been deeded to the city for a public park The site has been improved by the construction of a greenhouse and an athletic field Plans for new buildings have been drawn, after a competition among selected architects, and building operations have been begun

The institution maintains collegiate instruction for undergraduates Features emphasized in this work are the distinction between the discipline of college study and the freedom of advanced research, a modified elective system of studies (the "group system"; see COLLEGE, AMERICAN, under *Present Type of College Curricula*), and the influence upon undergraduates of distinguished professors and of the neighborhood of a body of graduate scholars conducting original investigations Admission depends upon the presentation of a certificate showing completion of courses in arithmetic, political geography, freehand drawing, and a science, preliminary to examinations in English, Latin, mathematics, history, and either Greek or French or German No certificates are accepted in place of examinations In 1907 the course was increased from three to four years, with an increase in enrollment The principal work of the university has lain in its graduate courses leading to the degree of Doctor of Philosophy, which may be gained in the departments of mathematics, physics, astronomy, chemistry, geology, zoology, botany, physiology, Greek, Latin, classical archæology, Sanskrit and comparative philology, Oriental languages, English, German, Romance languages, history, political economy, political science, and philosophy A graduate department of education is planned An important place in the university has always been occupied by the "fellows", twenty fellowships are awarded annually, each yielding \$500, but

not exempting the holder from tuition. Certain classes of individuals are also eligible for appointment as "fellows by courtesy." From its inception the university has offered, from time to time, systematic courses of public lectures. Since 1890 extension courses have been given for teachers and others in Baltimore; a number of these courses, which ordinarily do not carry credit for a degree, are offered in cooperation with Goucher College of Baltimore (*q v*). Admission is by examination or certificate. The medical school of Johns Hopkins University is one of the strongest in the United States. Its buildings, in another portion of the city from the other departments and adjoining the Johns Hopkins Hospital, include a central structure devoted chiefly to administration, two large private wards, a number of buildings containing separate wards, a large dispensary building, a surgical building and amphitheater, and a nurses' home. The Harriet Lane Home for Invalid Children, the Phipps Psychiatric Clinic, and the Phipps Dispensary for the Treatment of Tuberculosis are situated within the hospital grounds. The school has numbered among its professors Sir William Osler, now Regius Professor in Oxford University, Howard A. Kelly, a gynecologist, and William H. Welch, pathologist. The school is preeminent in medical research. Johns Hopkins University is one of the institutions originally accepted by the Carnegie Foundation for the Advancement of Teaching.

The buildings including those for the Medical School are valued at \$1,577,330.40, with equipment. The productive endowment is \$4,557,537.07. The State of Maryland appropriates \$25,000. The library has 137,000 volumes. The average salary of a professor is \$3184. There are (1910-1911) 197 members of the resident instructing staff, and 15 non-resident lecturers, 54 are full professors. The student enrollment was 781, of whom there were 156 graduate students, 348 medical students, 52 physicians attending special courses, and 188 undergraduates. C. G.

See GILMAN, DANIEL COIT.

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*Launching of a University* (New York, 1906)

**JOHNSON, ELLEN CHENEY** (1819-1899). — Leader in the movement for reform schools for delinquent girls, was educated in the public schools and at the Francetown (N.H.) Academy. During the Civil War she engaged in the soldiers' relief work of the Sanitary Commission, and at its close engaged in prison reform work. She was a member of the Board

of Prison Commissioners of Massachusetts, and superintendent of the Massachusetts Reformatory for Women at Sherborn (near Framingham) from 1884 to 1899. She wrote many papers on reformatory education.

W. S. M.

See REFORMATORY EDUCATION.

**JOHNSON, SAMUEL** (1709-1784). — It would be strange if among the numerous interests of the great English writer, some characteristic utterances on education were not to be found. His own career as usher in the school at Market-Bosworth and as master of an academy where he only had three pupils, among them David Garrick, was not marked by success, nor does his *Scheme for the Classes of a Grammar School* display any originality. Strongly devoted to the humanities, he failed to recognize the value of other subjects. Hence the severity with which he criticizes Milton's *Tractate* and its emphasis on sciences and external nature. "The first requisite," he says, "is the religious and moral knowledge of right and wrong, the next is an acquaintance with the history of mankind, . . . we are perpetually moralists but we are geometers only by chance. Our intercourse with intellectual nature is necessary, our speculations upon matter are voluntary and at leisure . . . Those authors, therefore, are to be read at school, that supply most axioms of prudence, most principles of moral truth and most materials for conversation, and these purposes are best served by poets, orators, and historians." To the view that popular education would make people less industrious he replied, "when everybody learns to read and write, it is no longer a distinction." Of the public boarding schools he had a high opinion in general for "there is the collision of mind with mind, or the radiance of many minds pointing to one center." But there are exceptions, as in the case of dull or idle boys, where the private school is to be preferred. On the question of corporal punishment, Johnson has made several pronouncements, generally in its favor. He himself had been severely disciplined at school, but that apparently did not affect his judgment of it. "A child is afraid of being whipped, and gets his task, and there's an end on't, whereas by exciting emulation and comparisons of superiority, you lay the foundation of lasting mischief," and again, "Correction in itself is not cruel; children being not reasonable, can be governed only by fear." Of the power which he attributed to education the following is the best evidence. "I do not deny, sir, but there is some original difference in minds, but it is nothing in comparison of what is formed by education." Nowhere does Johnson devote himself to a general discussion of education, with the brief exception of the passage in the *Life of Milton*. His *obiter dicta*, however, are truly representative of the

## JOHNSON, SAMUEL, JR.

attitude of the cultured classes of the period to education

### Reference : —

BARNARD *American Journal of Education*, Vol. II, p. 66, Vol XIII, pp 359 sqq

**JOHNSON, SAMUEL, JR** (1757-1836). -- Lexicographer, was educated at Yale College, and published the first dictionary in the English language in America (New Haven, 1798) He was engaged in teaching, and refers to himself in the preface of his dictionary as "an instructor of youth for many years" Besides various augmented editions of his dictionary, he published a *Grammar of the English Tongue* and a *History of the English Language*

W. S. M.

**JOHNSON, SAMUEL, SR** (1696-1772) -- First president of Columbia College (then King's College) and educational writer, was born at Guilford, Ct., in 1696, and died at Stratford, Ct., in 1772 He graduated at Yale College in 1714 For two years he was a private family instructor and for three years a tutor at Yale For thirty years he was engaged in the ministry, and in 1754 he was selected as president of the newly organized King's College in New York This position he held until 1763, when he was succeeded by Myles Cooper (q v) His educational writings include: *Compendium of Logic* (1752), *System of Morality* (1746), *English Grammar* (1765), *Hebrew Grammar* (1767), and numerous essays and sermons on education and religion

W. S. M.

See COLUMBIA UNIVERSITY

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**JOHNSON, WALTER ROGERS** (1794-1852) -- Educational author and reformer, was born at Leominster, Mass He studied at Groton Academy and was graduated from Harvard College in 1819 He was principal of academies at Framingham and Salem, Mass., and Germantown, Pa (1819-1826), principal of the high school of Franklin Institute, Philadelphia (1826-1836), and professor in the University of Pennsylvania (1839-1843) He was afterwards connected with the Smithsonian Institution (q v) and carried on scientific investigations for the government of the United States He made a personal investigation of the condition of common school education in Pennsylvania (1822-1823) and was active in the passage of the common school law of that state in 1834 In his *Improvement of Learning in the United States* (1825) he strongly advocated the establishment by the State of schools for the training of teachers He

## JOHNSON, WILLIAM SAMUEL

believed it was a mistake to teach Greek in secondary schools as a dead language, and in the Germantown Academy and Franklin Institute the ancient language was taught only by oral and conversational methods He was one of the representatives of the United States to the first International Congress of Education held at London (1851), and was active in the organization of the American Association for the Advancement of Education (q v) and the American Association for the Advancement of Science, of which he was the first secretary His published educational works include: *Essays on Education* (1832), *Improvement of Learning in the United States* (1825), *Promotions for Education in Pennsylvania* (1826), *Lectures on Mechanics and Natural Philosophy* (1828), *Introduction to the Greek Language* (1829), *Duty of the Several States in regard to Education* (1830), *Importance of Linear Drawing* (1830), *General State of Education in the United States* (1831), *Schools of Art* (1835), and *Chemistry and Natural Philosophy* (1840) He contributed numerous articles on education to the *Journal of the Franklin Institute*, *American Journal of Education*, *American Annals of Education*, and the proceedings of the American Institute of Instruction.

W. S. M.

### Reference : —

BARNARD, H. *American Journal of Education*, 1858, Vol V, pp 781-802

**JOHNSON, WARREN** (1830-1877) -- State superintendent of schools, was educated at Farmington Academy and Bowdoin College, graduating in 1854 He was for two years principal of the academy at Foxcroft, Me., two years tutor at Bowdoin College, ten years principal of a secondary school for boys at Topsham, Me., and eight years (1868-1876) state superintendent of public instruction in Maine Author of reports and addresses on education

W. S. M.

**JOHNSON, WILLIAM SAMUEL** (1727-1819) -- Third president of Columbia College, was graduated at Yale College in 1744, engaged in the practice of law, and attained eminence in public life He was a member of the Continental Congress, a judge of the supreme court, a member of the convention that framed the constitution of the United States, and one of the first senators from Connecticut to the United States Congress He was president of Columbia College from 1792 to 1800 He was the author of a *History of Greece in Verse* (1807) and of several works on literature and science

W. S. M.

See COLUMBIA UNIVERSITY.

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**JOHNSTON, JOHN** (1806-1879) — Text-book author, graduated at Bowdoin College in 1823. He was an instructor and principal of Cazenovia Seminary, and professor at Wesleyan University. He wrote *Rudiments of Philosophy*, *Manual of Natural Philosophy*, *Chemistry for Common Schools*, and essays on science teaching and scientific subjects. W. S. M.

**JOHNSTON, WILLIAM PRESTON** (1831-1899) — First president of Tulane University (qv) and active in educational movements in the South, was graduated at Yale University in 1852. He served during the Civil War, and attained the rank of colonel on the staff of President Jefferson Davis. He was professor at Washington and Lee University (1867-1880), president of Louisiana State University and Agriculture College (1880-1883), and president (first) of Tulane University (1883-1889). He was active in the organization of higher education in the South and published numerous papers on educational subjects. W. S. M.

See TULANE UNIVERSITY.

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**JOHONNOT, JAMES** (1823-1888) — Institute lecturer and educational writer, was educated in the district schools of Vermont and at the Albany State Normal School. He was teacher and principal of schools in Vermont and New York, institute conductor in New York, principal of the high school at Joliet, Ill.; principal of the State Normal School at Warrensburg, Mo., and superintendent of schools at Deposit, N.Y. He was the author of a work on *School Architecture* (1872), *Principals and Practice of Teaching* (1886), and of several supplementary readers for school children.

W. S. M.

**JOINERY** — See MANUAL TRAINING.

**JOINT DISTRICT.** — See DISTRICTS, SCHOOL, CONSOLIDATION OF SCHOOLS.

**JOINT UNION DISTRICT.** — See DISTRICTS, SCHOOL; UNION SCHOOLS, CONSOLIDATION OF SCHOOLS.

**JONES, GRIFFITH** — See CHARITY SCHOOLS; WALES, EDUCATION IN.

**JONES, HUGH** (1669-1760). — Educator, received his training in the universities of England. He was for sixty-five years a teacher and preacher in Virginia, and from 1702 to 1722 a professor in the College of William and Mary. He urged the introduction of history and civics into secondary school courses and recommended the establishment of special departments in the colleges for the training of the civil servants

of the colonies. He was author of a *History of Virginia*, and of several papers on educational topics. W. S. M.

**JORDANUS NEMORARIUS** (d. 1236) — The greatest mathematician of the thirteenth century, excepting Fibonacci (qv). He was born at Borgentreich, in the diocese of Paderborn, and died in 1236. He studied at Paris. He is also known as Jordanus de Saxonia. His arithmetic was based on the theory of numbers as set forth by Boethius. It was first printed in 1496, at Paris, and went through several editions. He also wrote a work *De Ponderibus* which was edited by Apianus and was published at Nurnberg in 1533. An *Algorithmus Demonstratus* is also attributed to him. D. E. S.

**JOUFFROY, THÉODORE-SIMON** (1796-1842) — French philosopher and psychologist, born at Pontets and died at Paris. Entered the École Normale in 1814, and in 1817 was made doctor of philosophy and *élève-répétiteur* in philosophy in the École, and was given the chair of philosophy in the Collège Bourbon, which he resigned in 1820. In 1822 the École Normale was closed, and Jouffroy began to give private courses in philosophy, and to write for several literary journals. When the École Normale was reopened in 1828, he was made *maître des conférences* in philosophy. From 1828 until his death he was in succession professor of ancient philosophy, adjunct professor of modern philosophy, and professor of philosophy in the Faculté des Lettres at Paris. From 1833 to 1838 he was professor of Greek and Latin philosophy in the Collège de France, and in 1838 became librarian of the University. Jouffroy was a pupil and associate of Cousin and of Royer-Collard. His spiritualistic rationalism exerted considerable influence on educational thought in France during the second quarter of the nineteenth century. His chief work was in translating and expounding the Scottish philosophy. His principal writings were translation of Dugald Stewart's *Moral Philosophy*, 1826, *Mélanges philosophiques*, 1823; *Cours de droit naturel*, 1835-1842, *Nouveaux mélanges philosophiques*, 1842, and *Cours d'esthétique*, 1843. K. D.

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TISSOT. *Jouffroy sa vie et ses écrits* (Paris, 1876).

**JOURNAL OF PEDAGOGY.** — See JOURNALISM, EDUCATIONAL.

**JOURNALISM, EDUCATION FOR.** — Professional education for journalism is of recent origin. Only within the last ten years in the United States has there been a decided movement in American colleges and universities toward the establishment and maintenance of courses in journalism or departments and



schools of journalism. Occasional lectures upon journalism had been given in various institutions, but no organized courses in journalism or in preparation for journalism had been offered. The state universities of the Middle West were the leaders in the training for the new profession.

In different colleges and universities different courses are given, and there are various forms of organization for the courses. At the University of Wisconsin courses are offered in the academic department associated with the work in English. In Kansas at the state University two years' work is given in reporting, and in news and editorial writing. The courses are grouped in the academic department. At the Kansas State Agricultural College, at the Iowa Agricultural College, and at the Wisconsin Agricultural College courses are given in agricultural journalism. These college courses are to prepare writers on farm papers for the presentation of the news of agriculture in clear, convincing, attractive style. At the University of Illinois, the University of Indiana, the University of Ohio, the University of Washington, the University of Pittsburg, and other institutions there are departments of journalism in which fundamental courses in the gathering and presentation of news are given. The University of California, the University of Oklahoma, the University of North Dakota, Marquette College, and other institutions give special work for students who plan to take up journalism as a profession. At the University of Missouri journalism is a separate professional school, coordinate with the schools of law, medicine, engineering, and education. It has a separate faculty and gives, upon completion of a three years' course, the degree of Bachelor of Science in Journalism. Sixty hours of college work, in addition to a four years' high school course, are required for entrance. In other universities the courses in journalism count towards the degree of Bachelor of Arts. The gift of the late Joseph Pulitzer, proprietor of the *New York World* and the *St. Louis Post-Dispatch*, of \$2,000,000 to Columbia University for the establishment of a School of Journalism in connection with that institution insures education for journalism at Columbia. At Cornell University, Yale University, the University of Pennsylvania, and the University of Virginia, and in several other institutions lectures on journalism, usually by men in the active practice of the profession, are given.

While all studies are regarded as helpful in education for journalism—so broad is the field of work of the journalist—the studies which he may take at the different colleges and universities are correlated so as to present the subjects which will be of the most immediate and practical service. Students in journalism are usually most interested in English and other languages, history, economics, sociology, psychology, political science, philosophy, and logic,

on the academic side. On the professional side, journalism courses in these institutions include courses in news gathering, reporting, news writing, newspaper making, newspaper administration, editorial writing, editorial direction, the history and principles of journalism, copy reading, illustration, the ethics of journalism, advertising and newspaper publishing, and newspaper jurisprudence. The last-named subject includes a consideration of the libel law in its relation to newspaper publication. The names of these courses given in education for journalism suggest their content.

The new movement in education for journalism has as its fundamental and distinctive feature the application of the laboratory method. The students in the present-day schools or departments of journalism are taught to produce newspapers by producing newspapers. In nearly every college or university where journalism is now seriously taught, the students of journalism issue, under faculty advice, supervision, or direction, a newspaper, usually a daily newspaper, the work on which, other than mechanical, the reporting, news writing, editorial writing and other work, is done by the journalism students. In some cases the entire publication, even the mechanical work—typesetting and press work—is by the students. As the hospital supplies bedside instruction to the student of medicine, the training school practice in teaching to the student of education, and the moot court a laboratory for the student of law, so the newspaper affords actual practice for the student of journalism. Some of these newspapers are not mere college journals, but are general newspapers, giving the news of the community in which they are published. They carry advertising in their columns and have regular subscription lists and the students make them profitable business enterprises. At this point the schools of journalism are not theoretical, but intensely practical.

More than one thousand students are now enrolled in courses in journalism in American universities. The number increases each school year.

Assuming the teaching of journalism or education in courses preparatory to journalism, the problem of organization for such education presents itself. Various conditions existing in various institutions made necessary various forms of organization. The organization, moreover, depends upon the extent of courses in journalism and upon the general purpose and content of such courses. An organization which is sufficient where only an occasional lecture on journalism is given, or where courses in journalism are offered in connection with an already existing department of instruction, is manifestly insufficient where more extended courses are offered and independently of any other department of instruction. The tendency is towards the sep-

arate grouping of journalism studies and to such organization of the professional school or department as will best bring about such separate grouping. This is obtained, in some degree at least, under practically any form of organization. It is obtained in the newer forms of organization by grouping specifically and formally the journalism students in a separate and distinct professional department or school in charge of a responsible faculty. In the organization of such faculty to the teachers selected from the College of Arts and Science or academic department, whose subjects are those prescribed or usually elected in preparation for journalism, are added the members of the so-called professional faculty, who are teachers who give courses in theoretical and practical journalism. The schools of law, medicine, engineering, and particularly the school of education, have afforded models for the organization of the school of journalism. This form of organization dignifies education for journalism, concentrates the attention of the students upon the subjects best adapted to their professional education and lends interest, emphasis, and strength to the courses thus offered. W W.

See NEWSPAPERS AND PERIODICALS IN SCHOOLS AND COLLEGES.

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**JOURNALS AND JOURNALISM, EDUCATIONAL** — Specialized professional publications develop only with the growth of a profession. Hence educational journals of a professional type appeared only in the nineteenth century, and in most countries quite late in that century. Such professional journals were preceded by a type of publications, also properly called educational journals, which aimed to create popular sentiment in favor of public education. These in turn were preceded by a type of publications which were designed to improve the general intellectual condition of the people. Among these were *The Tatler* (1709) and *The Spectator* (1711) in England, and the *Moralische Wochenschriften* (1713) in Germany. These were counterparts of numerous book publications, such as *Defoc*, *Family Instructor*. The development of professional publications follows closely that of develop-

ment of educational associations (*qv*). (See also EDUCATIONAL JOURNALISM.)

The following article gives, first, the more important of the second type of magazines in England, the United States, and Germany, and second, a selected list of contemporary educational publications of various types in a large number of countries where the educational interest is great. In this connection see also the bibliographies in connection with the articles on the educational systems of the various countries, and also the article on OFFICIAL PUBLICATIONS ON EDUCATION.

**England** — Just as the study of education and the growth of a teaching profession are of recent origin, so the journals devoted to the interests of the subject and the profession made only a fitful progress up to the last quarter of the nineteenth century, from which period the best of the modern educational journals date. Although, as will be seen from the following article, which is not exhaustive, the number of such journals is large, few continued for more than about five years. But much valuable matter dealing with administration found, as it still finds, its way into the general magazines, periodicals, and newspapers, with which, however, no attempt will be made to deal in this article. Of the early magazines many were devoted to special causes or were associated with special societies. Probably the earliest educational journal in England was the *Guardian of Education* conducted by Mrs. Trimmer of Lancasterian fame as "a periodical work consisting of a practical essay on Christian education, founded immediately on the Scriptures and the sacred offices of the Church of England, memoirs of modern philosophers and extracts from their writings, extracts from sermons and other books relating to religious education, and a copious examination of modern systems of education, children's books and books for young persons." It appeared in 1802, and eight or nine numbers were issued each year, dealing with education from the religious and moral point of view. This magazine existed for four years. It is significant that more magazines were devoted to Sunday school work than to any other branch of education. The nature of the magazines which follow needs no further description. *The Sunday School Teachers' Magazine and Journal of Education* (1830-1867), the *Directory of Sunday School Teachers* (1831), the *Teachers' Offering and Sunday School Monthly* (1840-1862, 1863-1864), *The Teachers' Manual, a Repository of Practical Suggestions and Biblical Illustrations* (1840-1845), *The Sunday Scholar* (1843-1844), *The Sunday School Directory of Scripture Instruction together with the Psalms and Lessons* (1844-1846), *The Teachers' Monthly Magazine* published by the Church of England Sunday School Institute (1851-1854), and continued in 1857-1864 as the *Church of England Sunday School Monthly Magazine for*

*Teachers*, and in 1865 as the *New Monthly Magazine for Church of England School Teachers* (1865-1867); and many others. A periodical of a general educational character was the *Educational Magazine and Journal of Christian Philanthropy and of Public Utility* (1835-1836), continued as the *Educational Magazine and Journal of Scholastic Literature* (1839-1841), which during its last year was edited by F. D. Maurice (*q v*). The *English Journal of Education* was "specially designed as a medium of correspondence among parochial clergymen and all promoters of sound education, parents, sponsors, schoolmasters, Sunday school teachers, etc." (1843); with it were incorporated the *Educational Expositor* (f 1853), the *Educational Guardian* (f 1859), and the *Museum* (f 1861) in 1863 or 1864. It dealt also with elementary education and general educational questions, foreign educational systems, etc., although the belief was declared in the opening pages "that the principles of our education need not be imported from any other shore." The *Home and Colonial School Society Quarterly Educational Magazine* (1848) was the record of the society of that name (*q v*), and had as its object the "Christian education of the people." The same society issued in 1859 the *Home and Colonial School Society Educational Paper*, intended to help teachers in elementary schools by means of papers and the theory and practice of education. In 1831 the Society for the Diffusion of Useful Knowledge, of which Lord Brougham (*q v*) was chairman, issued the *Quarterly Journal of Education*, which attempted to record the progress of education in various countries and to communicate interesting developments and secure unity to education in the British Isles. This journal lasted until 1836. The British and Foreign School Society made known its objects through its organ, the *Educational Record* (1848), a continuation of the *Quarterly Extract* (1827), which also published notes as to the central administration of elementary education and papers on method, and still continues to appear. The *Educator, or Home, the School and the Teacher*, was established in 1854 as the organ of the Congregational Board of Education. The agitation for the centralization of education was responsible for several periodicals. The *Advocate of National Instruction* appeared in 1853 "for promoting the establishment of a general system of schools for secular instruction, supported by local rates and under local management" (1853-1854). The organ of the National Education League was the *National Education League Monthly Paper* (1869-1877), which discussed elementary education from the standpoint of undenominationalism; while a contemporary periodical in the interests of voluntary schools was the *National Society's Monthly Paper* (1847), which in 1876 became the *School Guardian*, a weekly educational newspaper and review.

Magazines of purely professional interest made their appearance throughout the century, but were all short-lived. The *National School Magazine* (1824), though intended for boys and girls, was a strong advocate of the national school. The *Educational Review and Magazine* (1826) only existed one year in the interests of higher classes of society. The *Schoolmaster* (1829) indicates its scope in its subtitle, "a weekly essay, the object of which is to point out the errors and defects of the present systems of education and modes of managing children and to propose better." The *Quarterly Journal of Education* has already been referred to as having appeared in 1831. The *Scholastic Journal and Magazine of Education* was issued for one year (1840). In 1844 appeared for the one year the *British Annals of Education, being the Scholastic Review* "of educational, philosophical, scientific, artistical, and general intelligence." In 1847 was formed what has proved to be the longest lived educational journal in England, the *Educational Times*, the official organ of the College of Preceptors (*q v*), which records current events and discusses educational questions, a feature of this journal has for a long time been the number of pages each month devoted to mathematical problems. The practical work of teachers in elementary schools was treated in the *Papers for the Schoolmaster* (1851-1853). The *Educational Expositor*, "specially designed for schoolmasters and schoolmistresses, mothers of families, and all interested in education" (1853), included principles and methods of teaching, biography of eminent teachers and educators, translations from foreign educational works and reviews, it was incorporated with the *English Journal of Education*. The three branches of education, elementary, secondary, and university, were covered in the *Literary or Educational Gazette*, "a weekly journal of Education, Literature, and Science" (1857). The *Educational Guardian* was edited and conducted by schoolmasters in the interests of the elementary school teacher mainly (1860-1863) when it was incorporated with the *English Journal of Education*. The pupil teacher system, by which young apprenticed teachers were practically thrown on their own resources to prepare themselves academically for the profession, led to the publication of several journals in their interests, of these may be mentioned *The School and the Teacher*, "for the use of schoolmasters, schoolmistresses, and pupil teachers in elementary schools, conducted by Church Schoolmasters" (1854); the *Pupil Teacher*, a monthly journal of practical education and educational literature (1857), the *Teachers' Assistant and Pupil Teachers' Guide* (1876-1880), incorporated with *The Students' Magazine*, a monthly journal of assistance for private and class students in literature, science, and art; *The Teachers' Magazine*, being a monthly miscellany of

hints and helps to elementary teachers (1880)

The *Museum*, which was issued in 1861, was "a quarterly magazine of Education, Literature, and Science," and aimed to give an accurate record of educational events, to discuss current educational questions, and to combine with this the element of general literature. It included among its contributors Sir Joshua Fitch, S S Laurie, and J S Blackie. In 1865 it was issued monthly under the title *Museum and English Journal of Education*, having incorporated the *English Journal of Education* mentioned above. The *Academia*, scholastic, educational, and literary record (1868), was a journal which discussed both elementary and secondary questions, but was probably intended for secondary teachers. In 1869 appeared the *Educational Reporter*, "a new monthly journal reflecting the opinions and advocating the interests of the scholastic profession," which up to 1874 dealt with elementary and science teaching, and after that date as the *Educational Reporter and Teachers' Review* gave a large share of attention to questions of secondary education.

In 1870 the *School Government Chronicle*, now the *School Government Chronicle and Education Authorities Gazette*, made its appearance. This journal is the best organ on the administration of education, its reports and comments covering the proceedings of Parliament, the Board of Education, the Local Government Board, the Home Office, and the local education authorities. All parts of the educational system are dealt with. For a long time the journal stood for the principles of unity in the educational profession and administration, which was more or less achieved in 1899 and 1902. The *Educational Review*, which has as its subtitle "embracing topics of interest in general literature and science," appeared from January to July of 1871, and contained papers dealing with all grades of education. The National Union of Elementary Teachers began in 1872 the issue of its official organ, which has continued to appear weekly to the present day as *The Schoolmaster*, dealing not only with current news about elementary school teachers, but questions brought up in Parliament and educational committees particularly affecting elementary education. The *Journal of the Women's Education Union* (1873), edited by Miss Shurreff and G C T Bartley, was, as the name indicates, the organ of the society which aimed at the improvement of education for all classes of women.

In 1879 the *Journal of Education*, which is at present one of the leading educational periodicals in England, was issued for the first time under its present title. Its history goes back to 1870, when the *Quarterly Journal of Education and Scholastic Advertiser* appeared, the title was changed in 1875 to the *Monthly Journal of Education*, and in the following year

to the *Journal of Education* with which are incorporated the *Educational Reporter* and *Scholastic Advertiser*. In 1879 there was also incorporated in the present magazine the *Scholastic Register*, which dated from 1869. The *Journal of Education* is the best record of English educational thought and practice. Among the contributors may be found the names of most of the leaders in the recent educational development of England. The journal is the official organ of the Teachers' Guild (*q.v.*) since 1884, and is also employed as the medium of communication of the Association of Teachers in the Secondary Schools of Scotland and the Incorporated Association of Assistant Masters. While the articles deal with all phases of education at home and abroad, secondary education receives particular attention. Another feature is the Translation Prize which has been offered monthly since 1879. In 1881 was started the *Practical Teacher*, which still continues as a monthly devoted largely, but by no means altogether, to the interests of infant and elementary school teachers. Child study, geography, and science also form features of the journal. *School*, a medium for the ventilation of all matters of educational interest, was issued for four years (1886-1890). In 1899 another of the current leading periodicals was established, the *School World*, a monthly illustrated magazine of educational work and progress, devoted mainly to questions of secondary education and the practical work of the classroom. Important contributions have appeared on the teaching of science in all its branches. Notes are given on educational progress throughout Great Britain and Ireland. Recently the scope of the articles has been extended, becoming more general in character than formerly. *School*, a monthly record of educational thought and progress, appeared for five years (1904-1909), and dealt with topics of general interest in educational theory, practice, and administration.

The formation of numerous associations within the last few years (see EDUCATIONAL ASSOCIATIONS), devoted to special subjects, has led to an increase in the number of special-subject periodicals, of which the following may be mentioned: *Classical Review* (monthly), connected with the Classical Association of England and Wales, and of Scotland, and of the Oxford Philological Society, and the *Classical Quarterly*; *Modern Language Teaching*, the organ of the Modern Language Association, the *Modern Language Review*, the *Mathematical Gazette*, the organ of the Mathematical Association; *Child Study* (formerly the *Paedologist*, 1899), of the Child Study Society; *Child Life* (1899), of the Froebel Society; and several others. A number of periodicals serve as the organs of general educational associations, of which some have already been referred to; others are the *A M A.*, of the Assistant Masters' Association; the *Teachers' Guild*

*Quarterly*; the *Preparatory Schools' Review* (1895), of the Association of Preparatory Schools, the *Parents' Review* (1890), of the Parents' National Education Union, *Secondary Education* (1896), of the Private Schools Association, Incorporated, the *Highway*, of the Workers' Educational Association, *Training College Record and Journal of Experimental Pedagogy*, of the Training College Association, and several local publications. The most recent publication is *The Child*, "a monthly journal devoted to child welfare", it is according to announcements, "a medico-sociological and educational journal dealing with all questions relating to infancy, childhood, and youth." The first number appeared in October, 1910.

A E T and I L K

**United States.** — The first educational journal published in the United States was *The Academician* (1818-1820). It was a semi-weekly of sixteen octavo pages, and was edited by Albert and John W. Pickett and published by the Incorporated Society of Teachers of New York. The first number appeared on the 7th of February, 1818, and included essays on the best modes of education, notices of literary and philosophical institutions, and observations on moral and physical science. The labors of Pestalozzi and Joseph Lancaster, and the reforms which they advocated, were leading features of the journal during its two years' existence. *The American Journal of Education* (1826-1830) was a monthly of sixty-four octavo pages edited by William Russell (*qv*), and was published by Tait, Green, and Co., of Boston. The first number (January, 1826) contains a prospectus of eight pages by the editor, in which he observes that "the spirit of inquiry, which has of late extended to everything connected with human improvement, has been directed with peculiar earnestness to the subject of education." Science and literature, he points out, have their respective publications, but education, a subject of the highest practical importance, has hitherto not had a proper vehicle of information. The field to be occupied by the new journal was to include (1) record of facts regarding the past and present state of education in the United States and foreign countries, (2) enlarged and liberal views of education, with means of improvement in the science of instruction, (3) physical education, (4) female education, a topic which the editor deems "unspeakably important", (5) moral training; and (6) early and elementary education. The editorial statement was followed by original articles on systems of infant schools, progress of physical education, course of study in the New York High School, and the Boston Monitorial School, the latter by William B. Fowle (*qv*). Twelve pages of reviews and ten pages of intelligence completed the first number. Subsequent numbers contained articles on infant schools, the lyceum movement,

female education, monitorial schools, the educational value of the study of Latin and Greek, progress of education in the United States and Europe. The articles as a rule were not signed, but so far as there are signatures and initials, the contributors included Samuel R. Hall, A. Bronson Alcott, Thomas H. Gallaudet, William B. Fowle, Wilbur Fisk, William C. Woodbridge, James C. Carter, Walter R. Johnson, Cornelius C. Felton, and Josiah Holbrook (*qqv*). Among foreign educational writers whose articles were translated and republished were Pestalozzi, Jacotot, Maria Edgeworth, Jean Paul Richter, George Combe, and Elizabeth Harrison. The foreign correspondence included letters from Louvain on Jacotot's system of instruction in languages, Fellenberg's scheme of agricultural and industrial education at Hofwyl, and nine of Pestalozzi's letters to James Pierrepont Greaves (*qv*), on early education. William C. Woodbridge (*qv*) succeeded Mr. Russell as editor of the journal in January, 1829, and in June, 1830, it was merged into the *American Annals of Education* (1830-1839). The *Annals* continued the form and general character of the *Journal*. Mr. Woodbridge declared in his introductory editorial that it was his purpose to make the *Annals* subservient to the best interests of educational progress, and to draw from other countries the fruits of experience and observation in matters of institutions and methods of instruction. The first volume contained letters from Hofwyl on Fellenberg's system of education, accounts of educational legislation in New York, New Jersey, and Kentucky, and a notable series of articles on teachers' seminars by Thomas H. Gallaudet (*qv*). Among important articles in subsequent volumes of the *Annals* were the study of modern languages, school discipline, the language of infancy, manual labor schools, study of American history, ventilation of schoolhouses, use of the Bible in the public school, the study of physiology, music as a branch of education, moral and religious instruction, female education, truancy, education and crime, the use of pictures in schoolbooks, education of the American Indian, infant schools, letters from Hofwyl (twenty-two in all), articles on Harvard, Yale, Columbia, Princeton, Dartmouth, and West Point. The contributors included Walter R. Johnson, Catherine E. Beecher, Thomas H. Gallaudet, Samuel R. Hall, Goolde Brown, John Guseom, Lydia H. Sigourney, George Ticknor, Thomas S. Grimké, Jacob Abbott, William A. Alcott, Henry R. Schoolcraft, James G. Carter, William B. Fowle, Warren Burton, Theodore Dwight, Samuel G. Howe, and Horace Mann (*qqv*). Mr. Woodbridge was the editor of the *Annals* from 1830 to 1836, William A. Alcott during 1837, and M. G. Hubbard from 1838 to 1839. It was published in Boston, first by Carter and Hendee and later by Ticknor and Allen. Contemporaneous with the *Annals* was *The Com-*

*mon School Assistant* (1836-1840), a monthly journal edited at Albany by J Orville Taylor (*q.v.*). As its name indicates, it was directly interested in the common school movement and the review of elementary school textbooks. Its contributors included James Wadsworth, Gideon Hawley, and John C Spencer. Another New York state journal was *The District School* (1840-1852), edited by Francis Dwight (*q.v.*), and including among its contributors Horace Mann, Henry Barnard, W F Phelps, and Samuel S Randall (*qq v*). Still another New York journal was the *Teachers' Advocate* (1845-1852) which was edited by Joseph McKeen and to which Salem Town, E North, Emma Willard, Catherine E Beecher, William A. Alcott, and Chester Dewey contributed articles. This was followed by the *New York Teacher* (1852-1865) edited by Thomas Weston Valentine (*q v*). In New England the logical successors of the *American Annals of Education* were the *Common School Journal* (1838-1848), edited by Horace Mann (*q v*), and the *Connecticut Common School Journal* (1838-1842), edited by Henry Barnard (*q v*). Of most significance, however, was Barnard's *American Journal of Education* (1855-1881). This comprehensive work -- thirty-one octavo volumes of more than eight hundred pages each -- is a veritable encyclopedia of education. At a meeting of the American Association for the Advancement of Education (*q v*) held at Washington in 1854, Henry Barnard submitted a plan for a new quarterly journal of education which should include "accounts of systems, institutions, and methods of education, as well as current educational thought." The plan was approved by a committee appointed to consider the scheme, but as the necessary funds were not available, Barnard in the next year undertook the journal on his own responsibility. The first volume included accounts of the meetings of the American Association for the Advancement of Education (*q v*), Frederic D. Huntington's *Unconscious Tuition*, since become an educational classic, accounts, with statistics, of educational movements in England, France, Germany, Holland, and Russia, and the American states; sketches of the Lawrence Scientific School at Cambridge, the Peabody Institute at Danvers, the American Institution for the Deaf at Hartford, and the Perkins Institution for the Blind at Boston, with steel portraits of the founders of these institutions; papers on methods of teaching Latin, Greek, mathematics, and the physical sciences; education among the Hebrews and the Cherokee Indians, educational biographies of Ezekiel Cheever (*q v*) and Thomas H Gallaudet (*q v*); besides articles on school discipline, the education of women, improvements practicable in American colleges, and the prevention of crime among children. The *Westminster Review* said of it: "The first volume of the *American Journal of Education* we received with unmingled pleasure,

save in the regret that England has as yet nothing in the same field worthy of comparison with it." Practically all important educational writings, from Plato's *Republic* to Herbert Spencer's *Education*, were published in Barnard's *Journal*. He included accounts of all the great school systems of the world; histories of the systems of the different states of the American Union; sketches of the great educational reformers of the world, as well as of American educational leaders. Normal schools, institutes of technology, colleges and universities, educational associations, institutions for defective, dependent, and delinquent children, libraries, kindergartens, and practically every other subject relating to education, found exhaustive treatment in this monumental work; and all the American and foreign educational writers of the first three quarters of the nineteenth century are represented in its columns. In the publication of his *Journal* Barnard spent a private fortune of more than forty thousand dollars. To prevent the plates from going into the melting pot for type metal, the Henry Barnard Publishing Company, with William T Harris as president and C W Bardeen as secretary, was organized in 1891. The *Journal* is now published and sold by Mr Bardeen as a work of reference. The *College Courier* (1869-1874), edited by Chester C Chatfield, was devoted to the interests of secondary and collegiate education, and *The Academy* (1886-1892), edited by George A Bacon, was devoted to secondary education. Among the current American educational journals are the *Journal of Education* (1875), *School Bulletin* (1874), *School Journal* (1870), *Popular Educator* (1884), *Education* (1880), *Journal of Pedagogy* (1887), *Educational Review* (1891), *Pedagogical Seminary* (1891), *School Review* (1893), and *Elementary School Teacher* (1900). In many of the states of the Union there are journals which meet the local needs of particular geographic sections of the country.

W S. M.

**Germany** -- The history of educational journals in Germany goes back to the early part of the eighteenth century. Their forerunners were the "moral weeklies" (*Moralische Wochenschriften*), the earliest of which appeared in Hamburg in 1713, and which were modeled after Steele's *Tatler* (1709) and Addison's *Spectator* (1711). Many other cities followed, such as Leipzig, Zurich, Berlin, Gottingen, Jena, Magdeburg, Konigsberg, Danzig, Frankfort, etc. The most influential of these papers were the *Discourse der Mahlern*, published by the Swiss poets Bodmer and Breitinger in Zurich (1721), *Der Patriot* (Hamburg, 1724), and Gottsched's publication, *Die vernunftigen Tadelrinnen* (*Reasonable Female Critics*) (Halle and Leipzig, 1725). These and their numerous imitators devoted much attention to the reform of education. Many of the pedagogical ideas which later on were advocated by Rousseau and

Basedow find an earlier expression in these old weeklies. Through their influence on the educated classes, they prepared the soil for the spread of that enthusiasm for education which characterizes the second half of the eighteenth century.

Gradually the pedagogic interest in many of these weeklies predominated over the literary and social, and purely pedagogic journals also began to be published. Among the earliest are *Der getreue Hofmeister* (*The Faithful Tutor*), Frankfort and Leipzig, 1725, *Vierteljahrliche Unterhandlungen mit Menschenfreunden über Erziehung* (*Quarterly Discussion with Philanthropists on Education*), published by Basedow in Bremen, 1768-1769, *Der Kinderfreund*, by C. T. Weisse, Leipzig, 1776, 24 vols., *Pädagogische Ungelichungen*, by Campe and Basedow, Dessau, 1777, *Das Schweizerblatt*, by Pestalozzi (1782), *Der Bote aus Thüringen*, by Salzmann (Sehneppenthal, 1788). In the early part of the nineteenth century the most important pedagogical journals were Zerrenner's *Deutscher Schulfreund* (Magdeburg, 1791-1823), Stephani's *Der bayerische Schulfreund* (Erlangen, 1811-1832), and Gutsmuths's *Bibliothek für Pädagogik, Schulwesen und die gesammte pädagogische Literatur* (Gotha, 1800-1819).

With the greater attention paid to the preparation of the teacher and with the rise of the teachers' profession, the number of pedagogic journals increased, so that, at the beginning of the second quarter of the century, there were about twenty published in the different provinces of Germany. Prominent among these was Diesterweg's (*qv*) journal, *Rheinische Blätter für Erziehung und Unterricht* (1827-1902), and the *Allgemeine Schulzeitung*, which was published by Dilthey and Zimmermann in Darmstadt (1824-1881). The present output of the educational press in Germany is far in advance of that of any other country, both in the number of periodicals and the degree of specialization which has been reached. Not only every province, but almost every district, has its own educational paper, while, at the same time, a considerable number of papers circulate all over the country. Many of them appear weekly, or even twice a week, and one, the *Preussische Lehrerzeitung*, is a daily publication. The local papers are generally controlled by the teachers' associations, which are found in every part of Germany. Every kind of school, every subject of school study, as well as every important educational movement, has its own publication. Thus there are not only separate journals for the kindergarten, the Volksschule, the Bürgerschule, the Gymnasium, the Realschule, the University, as well as for teachers' seminaries, trade schools, commercial schools, continuation schools, etc., but, in addition to these, special periodicals for the study of methods in religious instruction, the mother tongue, modern languages, classical languages, geography, history, mathematics, biology,

physics, and chemistry, drawing, manual training, physical education, etc. The fight for the reform of secondary schools was largely carried on in the *Zeitschrift für die Reform der höheren Schulen*, founded by Fr. Lange (Berlin, 1889), while *Das humanistische Gymnasium*, published (since 1890) by Jäger and Uhlig, represents the point of view of orthodox classicism. The success of the reform method in the teaching of modern languages was greatly aided by *Die neueren Sprachen*, founded in 1893 by Vietor in Marburg. In like manner the teachers interested in school hygiene, in female education, in the playground movement, in Herbartian pedagogy, and other movements, have each their own separate periodicals. There are also a number of educational periodicals especially devoted to the interests of Catholic schools.

The official publications of the different states, such as the *Zentralblatt für die gesammte Unterrichtsverwaltung in Preussen*, which has been published since 1859 by the Prussian Ministry of Education, furnish a periodical record of changes in laws and regulations affecting the schools. Of great importance also are the various *Jahrbücher* or annuals; the most important of these is the *Pädagogischer Jahresbericht*, founded by Naeke in 1845, and the *Jahresberichte über das höhere Schulwesen*, published since 1887 by Rethwisch in Berlin, the first devoted chiefly to elementary schools and the second to higher schools. Of the highest rank, both by the weight of its articles and the liberal spirit of its discussions, is the *Monatsschrift für höhere Schulen*, whose two editors are members of the Prussian Ministry of Education, this journal, whose publication was begun in 1902, immediately after the great Educational Conference of 1900, undertakes to further the reforms in secondary school methods, initiated by the Conference. Similar in the spirit of broad tolerance are the *Lehrproben und Lehrgänge* (*Model Lessons and Courses of Instruction*) which have appeared since 1885, in quarterly installments (Halle, Waisenhaus), a journal that furnishes a valuable record of improvement in the teaching methods of secondary school subjects. Akin to these journals in their great educational significance are the official published records of the *Direktorenkonferenzen* in the various provinces of Prussia since 1879; at each of these conferences several important educational questions form the basis of prolonged discussions, each question being introduced by an expert referee previously designated for the task, a typical summary of the conclusions reached in these conferences published in Killmann, *Die Direktoren-Versammlungen des Königreichs Preussen von 1890-1900*. (Weidmann, Berlin.) *Frauenbildung*, edited by Dr. Wychgram since 1902, is the organ for the school activities of women in the different types of schools. In addition to these there are a number of statistical yearbooks and



calendars, among which *Minerva*, a calendar for universities, and *Mushacke's German School Calendar* may be mentioned F. M.

**France.**—Magazines dealing exclusively with educational questions did not appear in France until the organization of public education by the Convention and by Napoleon. In the eighteenth century such topics were not treated outside of special works, except in the *Mercure de France*, the *Encyclopédie* of Diderot (*q.v.*), the *Journal de Trévoux*, etc. It was during the decades of the revolutionary period that they found a place. At that time, 1811, Guizot founded the *Annales de l'Éducation*, soon after (1816) appeared the *Journal d'Éducation*, published by a society organized in Paris for the improvement of elementary education. This society, which is still active in the Rue du Fouarre in Paris, was the ancestor and prototype of the *sociétés philomatiques*, *associations philotechniques*, *cours d'adultes*, etc., so widespread in these days.

At present the educational journals may be divided into five classes (1) Kindergarten and infant school journals for the information of teachers in these schools, *e.g.* *L'Éducation Infantine*. To these may be added the recreational journals which are intended for children on the model of the *Magazin Pittoresque*, established in 1833, and which have increased since 1880, *e.g.* *Mon Journal* (1881), *St Nicholas* (1880), etc. (2) Journals for teachers in elementary schools. These are the most numerous. They contain official documents, subjects for pupils' home work, information for use in classroom, educational suggestions, etc. The chief of these are the *Manuel Général de l'Instruction Primaire*, established in 1832, weekly in 1850, monthly in 1858, and again weekly in 1864, and now conducted with the *Dictionnaire de Pédagogie* under the direction of M. F. Buisson, the *Revue de l'Enseignement Primaire et Primaire Supérieur*, a weekly giving besides educational articles others referring to professional, social, and associational questions. The *Revue Pédagogique*, under the direction of a committee of administrators, educationists, and members of the Ministry of Public Instruction, dealing with questions of primary, secondary, and higher education. (3) Journals for secondary education are the fewest in number. One of the earliest was *L'Université*, devoted to questions of public instruction and secondary education (1883); the *Revue de l'Enseignement Secondaire* (1884), which under the direction of M. Jules Gautier has cooperated in the majority of the reforms in secondary education; *Revue Universitaire de l'Enseignement Secondaire* (1891), changed to *Revue Universitaire* in 1892, *L'Enseignement Secondaire des Jeunes Filles*, etc. (4) Journals for higher education; in 1863 was established the *Revue des Cours Littéraires de la France et de l'Étranger*, and the *Revue des Cours Scientifiques*, etc., which in 1870 became the

*Revue Bleu* and the *Revue Scientifique*, in 1878 M. Boutmy founded the *Société de l'Enseignement Supérieur* to examine all questions relative to higher education, and to collect all documents, this society has set in motion most of the reforms made in higher education, and has as its organ the *Revue Internationale de l'Enseignement* now under the direction of M. F. Picavet. Since 1892 there has appeared a *Revue Hebdomadaire des Cours et Conférences* in the Sorbonne, etc., originally undertaken by a group of students in the Sorbonne. Nearly all the special studies of the universities have each their own reviews. (5) Journals for general educational questions, with discussions on school hygiene, physical and moral education. These are at present few in number. There may be mentioned *L'Éducation Moderne*, established in 1906 by J. Philippe and G. Paul-Boncour, and now under the direction of G. Compayré, *L'Éducation* established in 1909 by G. Bertier. J. P.

The following is a list of current educational periodical, with the frequency of their issue (a., annual, q., quarterly, m., monthly, f., fortnightly, w., weekly, d., daily, irreg., irregular) —

#### Great Britain —

##### General

Educational Record, 3 nos. (London)  
Educational Times, m. (London)  
Highway (Workers' Education Association), m. (London)  
Journal of Education, m. (London)  
Morning Post (Schools and Scholars), w. (London)  
Parents' Review, m. (London)  
Practical Teacher, m. (London)  
School Guardian, w. (London)  
School Monthly, m. (London)  
School Review, m. (London)  
School World, m. (London)  
Times, Educational Supplement, w. (London)

##### Administration

Education, m. (London)  
London County Council Gazette, w. (London)  
School Government Chronicle, w. (London)

##### Elementary

Educational News, w. (Edinburgh)  
Infants' Magazine, m. (London)  
Irish School Weekly and Irish Teachers' Journal, w. (Dublin)  
London Teacher, w. (London)  
Notes for Teachers, q. (Edinburgh)  
Schoolmaster, w. (London)  
Schoolmistress, w. (London)  
Teacher, w. (London)  
Teacher's Aid, w. (London)

##### Secondary

A. M. A. (Journal of the Assistant Masters' Assoc.), m. (London)  
Preparatory Schools Review, 3 nos. (London)  
Secondary Education, 6 nos. (London)  
Teachers' Guild Quarterly, q. (London)  
Many of the general magazines emphasize secondary education

##### Special Subjects

Classical Quarterly, q. (London)  
Classical Review, m. (London)  
Educational Handwork, m. (London)  
Geographical Teacher, 3 nos. (London)  
Manual Training, m. (London)  
Mathematical Gazette, 6 nos. (London)  
Modern Language Review, q. (London)



## JOURNALS AND JOURNALISM

Modern Language Teaching, 8 nos (London)  
 Moral Education League Quarterly, q (London)  
 Music Student, w (London)  
 Physical Education, q (London)  
 School Hygiene, m (London)  
 School Music Review, m (London)  
 School Nature Study, 3 nos (London)

### *Educational Psychology*

Child Life, 8 nos (London)  
 Child Study, m (London)  
 Journal of Experimental Pedagogy and Training College Record, 3 nos (London)  
 The Child, m (London)

### United States —

#### *General*

American Educational Review, m (Chicago, New York)  
 Education, 10 nos (Boston)  
 Educational Review, 10 nos (Rahway, N J)  
 Journal of Education, w (Boston)  
 Pedagogical Seminary, q (Worcester, Mass)  
 School Journal, 10 nos (New York)  
 Teachers' College Record, bm except July (New York)  
 Western Journal of Education, m. (San Francisco)

#### *Higher*

Intercollegian, 9 nos (New York)

#### *Secondary*

School Review, 10 nos (Chicago.)

#### *Elementary*

American Primary Teacher, 10 nos (Boston)  
 Educational Bi-monthly, bm (Chicago)  
 Educational Exchange, m (Birmingham, Ala)  
 Elementary School Teacher, 10 nos (Chicago)  
 Northwest Journal of Education, 10 nos (Seattle)  
 Popular Education, 10 nos (Boston)  
 Primary Education, 10 nos (Boston)  
 Progressive Journal of Education, 10 nos (Chicago)  
 Rocky Mountain Educator, ir (Denver)  
 School and Home Education, 10 nos (Bloomington)  
 School Bulletin, m (Syracuse, N Y)  
 School Education, 9 nos (Minneapolis)  
 School World, m (New York)  
 Southern School Journal, m (Lexington, Ky)  
 Teachers' Magazine, 10 nos (New York)

#### *Local (chiefly Elementary)*

American Education, 10 nos (Albany)  
 Atlantic Educational Journal, 10 nos (Baltimore)  
 Canadian Teacher, m. (Toronto)  
 Educator-Journal, m (Indianapolis)  
 Interstate Schoolmen, m. (Hutchinson, Kan)  
 Progressive Teacher, 10 nos (Nashville, Tenn)  
 School Exchange, 5 times a year (Newark, N J)  
 Schoolmaster, 10 nos (Saginaw, Mich)  
 Southern Educational Review, ir. (Chattanooga, Tenn)  
 Teacher, 10 nos (Philadelphia)  
 Western Journal of Education, 10 nos (Ypsilanti)  
 Western School Journal, m (Topeka, Kan)

#### *Psychology*

American Journal of Psychology, q (Worcester, Mass)  
 Journal of Animal Behavior, m (Baltimore, Md)  
 Journal of Educational Psychology, 10 nos (Baltimore)  
 Journal of Religious Psychology, q (Worcester, Mass)  
 Mind and Body, m (Milwaukee)  
 Psychological Bulletin, bm (Lancaster, Pa)  
 Psychological Clinic, 9 nos (Philadelphia)  
 Psychological Review, bm (Lancaster, Pa)

#### *Administration*

American School Board Journal, m (Milwaukee)

#### *Special Subjects*

American Physical Education Review, 9 nos (Springfield, Mass)  
 Boston Cooking School Magazine, 10 nos (Boston)

## JOURNALS AND JOURNALISM

Catholic Educational Review, 10 nos (St Francis, Wis)  
 Catholic School Journal, 10 nos (Milwaukee)  
 Child-Welfare Magazine, 10 nos (Philadelphia)  
 Classical Journal, 9 nos (Chicago)  
 History Teachers' Magazine, 10 nos (Philadelphia)  
 Journal of Geography, 10 nos (Madison)  
 Journal of Home Economics, bm (Baltimore)  
 Journal of Philosophy, Psychology, and Scientific Method, sm (New York)  
 Kindergarten Magazine, 10 nos (New York)  
 Kindergarten Review, 10 nos (Springfield, Mass)  
 Manual Training Magazine, bm (Peoria, Ill)  
 Mathematics Teacher, q (Lancaster, Pa)  
 Mathematics Teacher, ir (Syracuse, N Y)  
 Nature Study Review, 9 nos (Chicago)  
 Playground, m (New York)  
 Religious Education, bm (Chicago)  
 School Science and Mathematics, 9 nos (Chicago)  
 Science, w (New York)  
 Science and Mathematics (see School Science and Mathematics above)  
 Scientific Temperance Journal, m (Boston)  
 Southern Workman, m (Hampton, Va)  
 Vocational Education, bm (Peoria, Ill)

In addition to the above, there are a great number of minor educational journals chiefly of local circulation. Practically every state has such a local journal. In some states two or more compete for patronage. In the same way some of the larger cities possess such local organs. The Bureau of Education at Washington published in 1910 a list of more than 100 educational publications issued in the United States.

### Germany —

#### *General*

Allgemeine Deutsche Lehrerzeitung, w (Leipzig)  
 Aus der Schule für die Schule, m (Leipzig)  
 Blätter für deutsche Erziehung (Leipzig)  
 Die deutsche Schule, m (Leipzig)  
 Die Jugendfürsorge, w (Berlin)  
 Der praktische Schulmann, 8 nos (Leipzig)  
 Der Saemann, m (Leipzig)  
 Deutsche Blätter für erziehende Unterricht, w (Langensalza)  
 Deutscher Frühling, m (Leipzig)  
 Deutsche Lehrerzeitung, w (Berlin)  
 Deutsche Schulzeitung, w (Berlin)  
 Jahrbuch des Vereins für wissenschaftliche Pädagogik, a (Leipzig)  
 Mitteilungen der Gesellschaft für deutsche Erziehungs- und Schulgeschichte, 2-4 nos (Berlin)  
 Monumenta Germaniae Paedagogica, u (Berlin)  
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**JOURNEYS, SCHOOL** — See EXCURSIONS,  
SCHOOL.

**JOWETT, BENJAMIN** (1817-1893) —  
Teacher, theologian, and educational reformer.  
He was born in Camberwell, London, of a  
family which sprang from near Bradford,  
Yorkshire, and as a boy was addicted to private  
study showing exceptional mental precocity.  
Jowett attended St Paul's School, London,  
1829-1835, under Dr Sleath, who pronounced  
him the best Latin scholar whom he had ever  
sent to the University. At school Jowett learned  
by heart large quantities of Greek and Latin  
poetry and formed the habit of retranslating  
into the classics passages which he had previously  
translated into English. In 1835 he gained an  
open scholarship at Balliol and came into residence  
at the University, October, 1836. Among his  
contemporaries as scholars of Balliol were Dean  
Stanley, Stafford Northcote (afterwards Lord  
Iddesleigh), and Dean Lake of Durham. Among  
the Fellows of the College at the time were  
Tait (afterwards Archbishop) and W G Ward.  
Jowett won the Hertford (University) scholarship  
in 1837, and in 1838 was elected Fellow of  
Balliol while still an undergraduate. He took  
a First Class in Literæ Humaniores in 1839.  
He graduated B.A. in 1839, M.A. in 1842, and  
in the latter year was appointed to a tutorship  
in Balliol College, a post which he held for the  
following twenty-eight years. He took deacon's  
orders in the Church of England in 1842, and  
priest's in 1845. Brought up in evangelical  
opinions, Jowett was plunged at Oxford into the  
midst of the Tractarian Movement and was  
greatly attracted by W G Ward (see Oxford  
Movement). In 1844 he took a leading part on  
the side of toleration of religious opinion in the  
University. He now became acquainted with G  
Hermann

Becker and Ewald, and other famous German  
scholars. Hegel's writings fascinated him. He  
gradually turned to the study of Plato, to which  
he devoted a large part of his life.

For many years theology was his chief occupation.  
An intimate friend of A. P. Stanley, he undertook  
an edition of St Paul's *Epistles* and threw himself  
with vigor into the agitation for university reform.  
He wished to retain the college system, but favored  
an increase in the number of professors. The  
claims of the poor student found in him a  
strenuous advocate. With what he called the  
"gentleman heresy" of university life he had  
no sympathy. He gradually became recognized  
as an authority on questions of public education.  
In 1855 he was appointed to the Regius  
Professorship of Greek in the University. His  
supposed heterodoxy roused against him much  
theological opposition, which for a time deprived  
his chair of a greatly needed addition to its  
trifling endowment. As Professor of Greek,  
Jowett lectured on the *Republic* of Plato and  
the early Greek philosophers, and by his devoted  
attention to his pupils, not only those of his  
own college, won for himself an abiding place  
in the affection of the rising generation. In  
1860 his article on the interpretation of  
Scripture, when published in *Essays and Reviews*,  
excited once again the anger of his theological  
opponents. The controversy deepened his  
spiritual insight and caused him for a time to  
"hold his tongue about theology."

His tutorial labors in college were immense.  
At one time he saw every undergraduate in  
Balliol once a week. His remarkable influence  
is attested by the long list of distinguished  
and devoted pupils who received their  
inspiration from him, and by the stamp which  
he set on Balliol. From 1865 onwards he  
devoted much time to the organization of  
education both in college and in the university.  
Inter-collegiate lectures were arranged. He  
urged the necessity of lessening the expense  
of an Oxford career. He established a hall  
for poor students. He took an active part  
in the rebuilding of the college. He tried to  
enlarge the area from which the University  
drew its students. Elected to the  
Mastership of Balliol in 1870, Jowett  
redoubled his energies both for the  
enlargement of the college and for the  
extension of its usefulness, devoting to this  
work a large part of his private means.  
He interested himself in the development  
of university and secondary education in  
other parts of England. The University  
College at Bristol (now the University of  
Bristol) owed its foundation in large  
measure to him. He encouraged the study  
of Oriental languages in Oxford by  
candidates elected to the Indian Civil  
Service. He greatly improved the health  
of Oxford by taking an active part in the  
better drainage of the Thames valley. He  
encouraged the drama and music in Oxford.  
During a

brilliant Vice-Chancellorship he helped in developing the system of university extension and was chiefly responsible for the erection of the examination schools in the High Street, an important addition to the mechanism of university life.

In 1871 his translation of Plato was published, and later years were largely given to its revision for a second edition. No ordinary translation, this book contained a series of essays and commentaries which comprised the wisdom of a studious and active life. He also completed translations of Thucydides and of Aristotle's *Politics*. No Oxford teacher had a more brilliant circle of pupils or greater influence upon public affairs. He died in October, 1893, and was buried in Oxford.

Jowett's study of Plato had a profound influence upon his educational ideas. It was Plato who confirmed him in the belief that "education comprehends the whole of life and is a preparation for another life in which education begins again." It was Plato who encouraged him to press on men and women the duty of self-education in later life. In Bacon's words, Jowett asked counsel of both times—of the ancient time what is best, and of the later time what is fittest. Those whose privilege it was to work with him in public affairs can never forget the quickness of his insight, his grasp of detail, his courage in action, his indifference to academic hesitations, his severe self-command. With him mere information had been distilled into wisdom. His speech had always the "salt of circumstance," though his plans were touched with a secret idealism. He wrote no systematic treatise on pedagogy, but he was a master of the science and art of education. A hard worker himself, he hated loafing. But he knew that most men can only profitably give a few hours of intense application to their daily studies. Therefore he encouraged moderate athletics. He was a loyal friend of physical science and urged its study in the university. But he was no partisan of scientific as against literary, or of literary as against scientific, studies. He had reached the synthesis where the two are joined in one discipline. He was, perhaps, a little blind to some of the subtler evils of the system of competitive examination, which he did so much to generalize. He knew that examinations are necessary. He had seen the mischief caused by their absence, the danger of dilettante studies, the necessity for most men of a punctually recurring intellectual audit. But perhaps he did not foresee the danger of a too great development of the examination system. As a tutor, his way of teaching was to compel self-knowledge and to excite interest rather than to satisfy it. He disliked sentimentalism. He had Dr Johnson's hatred of exaggeration and conceit. He had a great idea that the welfare and prosperity of the nation depended on the upbringing and education of

the young men of station and ability who would be called upon to bear part in public life. To poor scholars he was a sincere and munificent friend. He was proud of the fact that the success of Balliol had been due to the Fellows having always preferred public interests to private ones. He was a sincere believer in the virtues of college life. But there was nothing monastic in his view of college training. He did not aim at making specialists, but men of affairs, men who would serve God in Church and State. It may be said of Jowett what he said of Plato, that "he had many sides of wisdom, and he was not always consistent with himself, because he was always moving onward and knew that there are many more things in philosophy than can be expressed in words, and that truth is greater than consistency." He would have said of himself, as he said of his master, Plato, that his teaching was "half playful, yet having a certain measure of seriousness."

M E S.

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**JUDGMENT** — This term is employed in a larger and more vital sense and in a narrower and more formal one. In its pregnant sense it means the act (or the power) of weighing facts or evidence, in order to reach a conclusion or decision, or (as is usual with words denoting acts) the result, the outcome of the process, the decision reached by the process of reflective inquiry and deliberation. In this sense judgment expresses the very heart of thinking. All thinking is, directly or indirectly, a part of the act of judging, of forming an estimate or valuation after investigation and testing. The difference in the adequacy of different cases of thinking is due to the care and thoroughness with which the operations of critical summoning and weighing of evidence are performed. The evaluating nature of judgment and its relation to a reasonably reached, intellectually valid conclusion, are suggested by the judicial procedure from which the word "judgment" is derived. There is primarily something at issue, at stake, something which is as yet undetermined, uncertain, but which needs to

be decided. Without a crisis of uncertainty of this sort, without a questionable or problematic situation, there would be no judging. Then there follows the calling and hearing of witnesses, presenting all the facts relevant to settling the matter — that is to say, there are the processes of observation, recollection, etc., which bring in the data or evidence upon which a correct decision depends. Then there is the sifting, comparing, classifying, and relating operation by which is determined the respective force, the authority, to be assigned to this fact or that. This weighing or evaluating process involves the use of the general rules or principles bearing upon cases of this sort that have been established in prior experience. Finally the judgment issues in a decision, or declaration that the case is thus and so, within certain limits of probable error. From this sketch it is evident that judging involves in individualized concrete form all the operations of thinking or reflective inquiry, both material and formal: that is, the material operation by which facts are gathered and the formal one by which the facts are weighed and their meaning determined. From the standpoint of logical analysis, existence and meaning are thus the defining traits of every judgment.

The central position occupied by the training of judgment in the scheme of education is obvious. It may be explicitly stated by calling up to view the errors involved in failing to give it a central position. In brief, these consist, on one side, in the amassing of mere information, through observing and memorizing material which is put to no intellectual use, and, on the other, in merely formal exercises in reasoning apart from consideration of subject matter. In contrast with these counterpart errors, judgments involve the gathering of facts, but also the use of reasoning to compare, contrast, place, and interpret the subject-matter. Only where these two processes are combined (corresponding to the interrelation of existence and meaning) is there any training which is of value either for the practical deliberations of life or for the theoretical pursuit of science. Conditions that work against in the training of judgment are, accordingly, such procedures as the following: The multiplication of isolated sense observations, as in some schemes of object lessons and sense training; the multiplication of logical analyses apart from their bearing on reaching a conclusion; attaching great importance to correct reproduction of things previously learned without employing that material in pursuing some further inquiry; attaching importance to correct results or "answers," quite apart from the mental operations by which the results were reached; exercises where the material and methods are externally dictated, with no opportunity for the employment of judgment in selecting, arranging, and testing, methods in which mechanical skill, automatic rapidity,

and accuracy are set above reflective inquiry — as in many so-called "drill" exercises, methods in which opportunity to commit errors is mechanically excluded, or in which, when committed, they are externally corrected without throwing upon the pupil any intellectual responsibility.

In its narrower and more technical sense a judgment is a statement of a relation between two objects, or between two contents of thought, two meanings. This is the meaning which the term "judgment" has gradually assumed in formal logic, from its standpoint the vitally practical meaning of judgment just expounded is sometimes contemptuously looked down upon as merely psychological in character. From the standpoint of judgment proper the actual operation of thinking as performed in life, the formal statement of a relationship *in abstracto*, is one important stage in the development of a controlled judgment. It marks a summing up, a gathering together of the net outcome of prior reflections. Such formulations are indispensable factors in the adequately performed vital judgment. Because the function of formulation is so important, judgment is not unfrequently identified with the statement of relations, or with the *proposition* (*q v*) J. D.

**JUNGE, FRIEDRICH** (1832–1905) — A German teacher, became prominent through his reform of the methods of nature study in the German schools. Born of an extremely poor family in a small village in Holstein, he prepared for the teaching profession at Segeberg, a seminary of his native province. From his earliest youth he was greatly interested in the study of nature, and when, as a man of forty, he received a position as a teacher in Kiel, he improved his opportunities by attending lectures in zoology and botany at the university, and by working in the laboratories and museums. As the fruit of these studies and of his long experience in the schoolroom he published, in 1885, his *Dorfteich als Lebensgemeinschaft* (*The Village Pond, a Biological Community*), which was read with great interest by teachers all over Germany. In this work he condemned the current methods of nature study, which aimed at mere systematization, and introduced the observation of communities of organic beings, both plants and animals, living under the same conditions and dependent on each other and on their environment. The child's interest was to be aroused by studying the life of an organic community which was near to him, such as the village pond, the meadow, the forest, the swamp, etc., proceeding thence to more remote organic communities, and finally to the aim of all nature study, a clear and sympathetic insight into the unity of all life in nature F. M.

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**JUNGIUS, JOACHIM** (1587-1657) — German scientist and schoolman, was born in Lubeck, and studied at the universities of Rostock and Giessen. In 1609 he was appointed as professor of mathematics in Giessen. Three years later he was ordered by his sovereign, the Landgrave Ludwig V of Hesse-Darmstadt, to investigate the new method of teaching promulgated by Ratke (*qv*). He published a very favorable report about the work, in which, among other things, he advocated instruction in the mother tongue. When Ratke was called to Augsburg in 1614, to put his method into practical operation, Jungius followed him there. The result of the experiment, however, proved disappointing, and Jungius returned to his native city of Lubeck in 1615. The following year he again entered the University of Rostock, this time as a student of medicine. He remained for three years, and then went to Padua, where he obtained the degree of Doctor of Medicine. Returning to Rostock, he founded there, in 1622, a scientific society (*naturforschende Gesellschaft*), the first in Germany and in the whole north of Europe, "for the purpose of investigating truth through reason and experience, of freeing from sophistry all arts and sciences which are based on reason and experience, and of promoting them by happy inventions." He thus became one of the first representatives of Baconian ideas in Germany. In 1628 he was called to Hamburg as director of the Johanneum, there he remained until his death. Among his friends were Comenius and Harthib (*qv*). Jungius was a pioneer in Germany in insisting on a truly scientific method of studying nature by means of experiments and induction. He applied his principles chiefly to physics and to botany. In botany he anticipated some of the ideas of Linnæus on the classification of plants. F. M.

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**JUNIATA COLLEGE, HUNTINGDON, PA** — An institution founded in 1876 as the Brethren's Normal School and Collegiate Institute, the present name being adopted in 1896. An academy, college, school of education, Bible and music schools, are maintained. The entrance requirements to the college are equivalent to fourteen points of high school work. The college course of four years leads to the degree of A. B. The faculty consists of twenty-three members.

**JUNIOR COLLEGE.** — A term used by the University of Chicago, the University of California, and a few other institutions of higher learning to designate that part of the four-years' college course embraced in the

freshman and sophomore years, the college course being thus divided into a junior college of two years, and a senior college of two years. The outline of instruction, or the requirements as to work and electives, vary in the two divisions, being more largely prescribed in the lower division than in the higher. One object of the division is to make a separation between what is pure college work and what is the beginning of university work, another is to form a basis for the radiation of professional instruction, beginning with the junior year, another is to encourage small colleges of limited endowment to limit their work to that of the junior college, and then make the transfer of their students easily by admitting them to the senior college, and another is to encourage the larger and better equipped high schools to gradually add a thirteenth and a fourteenth year to the high school course of instruction, and thus stimulate the building up of junior colleges in the larger cities. The term has thus, by transfer, also come to mean a two years' course of instruction beyond the four-year high school, and a number of city school systems to-day speak of having the first year, or both years, of a junior college. The legislature of California in 1906 authorized cities to establish such course of instruction, covering two years beyond the ordinary high school course, and a number of city high schools have now added one year, and a few are planning to add two years. A number of colleges in the Mississippi valley have entered into junior college relations with the University of Chicago. With the rapid increase in students in the larger colleges and universities, with the rapid growth of city school systems in equipment and in the ability to provide advanced instruction, and with the shrinking of the endowments and income of the smaller colleges, relatively if not actually, the junior college idea is likely to make much more rapid progress in the next decade than it has in the past. E. P. C.

**JUNIOR NORMAL SCHOOLS** — These are in a sense a revival in a new form of the old six-weeks summer normal institute, common thirty to forty years ago. These new schools are conducted under better auspices and embrace a more definite outline of instruction. Nebraska offers a good illustration of the new movement. This state first founded such schools nearly ten years ago and has so far provided for the establishment of eight such schools. The term of instruction is six weeks in length, and the session is held at some time during the three summer months. The instructors for each such school are selected and the course of instruction is outlined by the Board of Education for the normal schools of the state. County superintendents of schools in adjacent counties may declare any week of the term of the junior normal to be the institute week for their county, and appropriate

their institute fund to assist in its maintenance. The different schools are supported from state and county institute funds. A few other states, such as Idaho and Louisiana, have analogous summer institutes. The six-weeks summer sessions of the regular state normal schools is a step farther in advance, as in such cases the normal schools have the buildings, equipment and teachers of the regular school for the work of instruction. E. P. C.

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**JUNIOR REPUBLIC** — See **GEORGE JUNIOR REPUBLIC**

**JUNIUS, ADRIAN** (c. 1512-1575) — A learned Dutch scholar, of great repute for his knowledge in physic, classical writers, history, philosophy, and in modern languages. Had he lived, it was proposed to give him a professorship in the new university at Leyden. He was born at Hoorn in Holland. He pursued his studies at Haarlem, Louvain, Paris, and Bologna, and in the last-named university took the degree of M.D. He traveled in Germany, and lived in England 1543-1548.

He settled finally as a physician at Haarlem, where he was head of the College. He was a man of great erudition, and had a prodigious memory. The following are his chief educational works —

(1) Edited books of Ausonius, Cassius (animal medicine), Eupapius, Hesychius (*Lexicon*), Juvenal, Lucan, Martial, Nonius, Marcellus, Plautus, Plutarch, Seneca, Virgil. (2) Edited an *Epithetorum*. *Epitome* of J. Ravisius, usually called Textor. (3) *Adagiorum Centuriæ VIII cum dimidia Basilæ, Froben*, 1558 [an addition to Erasmus' Collections of *Adagia*]. (4) *Emblemata*, 1565. (See **EMBLEMS**, and Mr. Henry Green in his reprint of Whitney's *Choice of Emblems*, p. 250). (5) A *Greek-Latin Lexicon*, with dedication to Edward VI., 1548. (6) *Nomenclator*, 1557, in Latin, Greek, German, Dutch, French, Italian, Spanish. This work was translated into English by J. Higgins, London, 1585. The *Nomenclator* is a dictionary of all necessary words arranged not alphabetically, but grouped under subjects. Adrian's *Nomenclator* is, therefore, a forerunner of J. A. Comenius' *Janua Linguarum*, but without the descriptive sentences. There are many in common, *eg* living creatures, animals, fishes, all kinds of food, trees, vegetables, apparel, buildings, parts of ships, tools, terms in war, games, money, the elements, God and spirits, handicrafts, trades, affinities, etc. The *Nomenclator* is thus clearly a source of the *Janua Linguarum* of Comenius, though the form was suggested by the Jesuits' (Salamanka) *Janua Linguarum*. It may also be mentioned that Eilhardus Lubinus (*q.v.*)

in his *Epistolary Discourse* before his edition of the New Testament refers to this work of Junius, and Brinsley (*q.v.*) in 1612 recommends the repetition of a few words daily out of the *Nomenclator*. F. W.

**JUNKIN, GEORGE** (1790-1868). — First president of Lafayette College, graduated at Jefferson College in 1813. He engaged in the ministry, became interested in agricultural education, conducted the Manual Labor Academy at Germantown (1830-1832), was president of Lafayette College (1832-1841 and 1844-1848), president of Miami College (1841-1844), professor in Washington College (1848-1860) and Lafayette College (1865-1868). Author of several works on religious education.

W. S. M.

**JUSTIN MARTYR** (110-165 A.D.) — The earliest Christian apologist and the first Christian after the original Apostles whose writings are known with sufficient fullness to enable us to form a clear picture of him and his system. He was born in Shechem of heathen parentage and received a thoroughly Greek education with added advantages of foreign travel. He became familiar with a wide range of Hellenic culture and has left, in the opening pages of his *Dialogue with Trypho*, an interesting description of his studies and philosophical experiences. He was successively a Stoic, a Peripatetic, a Pythagorean, and a Platonist. After his conversion to Christianity, he saw no reason to forego the pursuit of philosophy nor abandon the distinctive dress of a philosopher. He simply embraced the Christian religion as the true philosophy. He did not break with philosophy, nor regard it as the enemy of Christianity, but rather as the handmaid of the truth. At Ephesus and at Rome, where he resided for some years, he held himself ready for discussion with every comer and devoted himself to the defense and dissemination of the Christian faith, drawing to himself many pupils and disciples who afterwards became famous champions of the cross. He was at once a philosopher and a saint. He used the dialectic method in the spirit of Socrates, but his mental attitude was distinctly Platonic. His apologetic method appeals strongly to men of the present day. While the Antonines were reigning as "philosophers," he was building up a great new system of Christian philosophy which could fearlessly appropriate everything that had ever been rightly said and done as its own and throw the light of revelation over the doubts and contradictions of the past. His writings are of the utmost value, not only as apologetical and theological treatises, but also as pictures of Christian life and thought before the Canon of the New Testament was completed, the main outlines of which are luminously drawn by him. His *Dialogue with Trypho, the Jew*,



modeled after the dialogues of Plato, contains all the vital points of Christian theology, and is a defense of Christianity as the successor of Judaism and of the Christian interpretation of the Old Testament. His *Apology*, addressed to the Emperor in defense of his fellow-Christians, is the noblest representative of early Christian literature. He wrote an essay on psychology in which he differed radically from Plato and the Greek philosophers on the nature of the soul. W. R.

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## JUSTINIAN — See ROMAN EDUCATION

## JUVENCUS, CAIUS VELTIUS AQUILINUS

— A Spanish priest of noble family, who composed a poem in four books consisting of about 800 hexameters in each book. The name of this Latin poem was *Historia Evangelica*, written about the year 330 A. D. Juvencus is the first of the conspicuous Christian Latin poets. "The [classical] lyric no longer existed, the mythological epic had been sung out, and an epic treatment of the New Testament was a new and daring undertaking to be approached only in a spirit of reverence especially as regards the subject matter" (J. T. Hatfield's *Study of Juvencus*). The story of the gospels is given in hexameters, closely following the old Latin version of the Bible, though at points in the New Testament Juvencus evidently has consulted the original Greek. The closeness of his following of the Scripture text has taken away from any possibility of originality of treatment of the subject matter. He especially follows St. Matthew, and ends his story where St. Matthew ends his. Juvencus is of importance as an early experiment in imitation of a classical model. He takes Vergil as a model, and as Dr. Hatfield's minute study of Juvencus shows, "the direct citations include every book of the *Georgics* and *Aeneid*, and not a few passages in the *Ecllogues*. He never quotes entire more than half a verse and thus but rarely." The combination of Christian subject matter directly from the gospels and the close imitation of Vergilian style made Juvencus a popular educational work in the Middle Ages, a popularity which continued into the sixteenth century. Colet in drawing up the Statutes for St. Paul's School, 1518, requires that the boys be taught specially in "*Christyn authors* that wrote theyre wysdome with clene and chaste laten other in verse or in prose," and specifically names Juvencus (with other authors) to serve as school authors to be read.

The preface or prologue to the *Historia*

*Evangelica* should be mentioned as rising to a higher level of poetic inspiration. In it Juvencus speaks of the transitoriness of all earthly material things. Nevertheless, men are celebrated through long ages for their deeds and lives, and poets who celebrate these deeds themselves reap fame. The glory of Homer and of Vergil is eternal. Juvencus' song is the life and work of Christ. Even the fires which will destroy this world will not touch that, and perchance, even Juvencus' book with such a subject will save him from the fire, and he ends with a prayer for divine assistance to speak worthily on his great theme. This desire of fame is a forecast of the early Renaissance spirit. F. W.

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## JUVENILE DELINQUENCY, JUVENILE COURTS, AND JUVENILE PROBATION —

"Juvenile Delinquency" is a term generally used to refer to the conduct of children of all ages when it runs counter to the public standards of propriety. The term has also a legal and technical meaning, as defined in the penal law of New York State since Sept. 1, 1909, which says that a child between the ages of seven and sixteen who commits any act or omission which in the case of an adult would be a crime not punishable by death or life imprisonment shall be deemed guilty of juvenile delinquency and punished in the same manner as an adult would be for the same offense except when the law provides specifically other punishment for children under sixteen (L. 1909, ch. 478, New York). The object sought by the New York law, which is similar to that in other states, is to relieve children who commit minor offenses from the stigma and disabilities of a public record of crime so as to give them the maximum chance and encouragement to make their future conduct normal. The criminal law now very generally holds children under seven incapable of committing crime in the legal sense, and a child between seven and fourteen years of age is entitled to the presumption of innocence of a guilty knowledge that he was doing wrong, though at this age *mens rea*, or intent to do a criminal act, may be shown by evidence and the child held to full responsibility.

It is less than a century since the attitude of the laws of England and the United States, and the practice of the courts in condemning and sentencing very young children to barbarous penalties for trivial offenses revealed little knowledge of the mental life of children and less regard for their possible reformation.

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Through association with hardened criminals and every form of vice during the period of police custody, court proceedings, and subsequently in jails and prisons when under sentence, the record reads like a deliberate attempt on the part of the State to manufacture criminals. Happily a very different effort is now made in all civilized countries, based on a better understanding of the psychology of child life and a better appreciation of the environmental factors in fixing responsibility for crime, which has for its aim reformation and prevention rather than punishment. Now every possible device is sought to keep the child away from the contaminating influences of police methods, criminal court procedure, jails, and prisons, and to deal with juvenile delinquency through the educational machinery of a children's court, with its special juvenile probation officers, and with the cooperation of parents, school authorities, and all public and private agencies dealing with children. Only a beginning has been made and the change in purpose necessitates so many new adjustments which only time can bring about that doubtless much of our present achievement in dealing with juvenile delinquents will seem to future generations to fall as far short of justice to the child as the record of the past looks dark and dreary to us.

**Character and Extent of Juvenile Delinquency** — Very trivial offenses may constitute delinquency, and the present tendency in juvenile legislation is to enlarge the scope of the law in order to bring conduct that may easily lead to more serious crime under preventive and probational control. Thus the Colorado law includes under delinquents persons under sixteen years of age charged with visiting saloons, jumping on moving trains, wandering aimlessly about the streets at night or about railroad yards, using vile or obscene language, associating with immoral persons, as well as those who violate state laws and city or village ordinances. Truancy is usually dealt with in the first instance by the truant officer or by the school authorities, and therefore does not appear often in court cases. For the entire country it would doubtless appear numerically near the top of the list of offenses charged against juvenile delinquents.

Owing to the varied and changing definitions of the law, no general or comparative statistics of juvenile crime throw any satisfactory light on the most frequent forms of juvenile delinquency.

The following table gives a summary of the business of several of the more important and best organized juvenile courts, covering the year 1908, as taken from a report of Miss M. Z. Doty to a subcommittee of the New York Child Welfare Exhibit. The figures are approximate and not comparable because of the different bases of organization and procedure in the different courts, but they serve to show the aggregate number of children coming before these courts,

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and something as to the probable serious or trivial character of the conduct that brought them into court.

JUVENILE COURTS	TOTAL	SENT TO REFORMATORY	PUT ON PROBATION	SENT TO HOMES FOR NEGLECTED CHILDREN	RELEASED <sup>1</sup>
New York City (Manhattan, Bronx, Brooklyn) . . . .	11409	1722	1649 <sup>2</sup>	554	7501
Chicago . . . .	4475	776	648	216	3061
Columbus, O . .	3751	772	1679	1025	255
Indianapolis . .	1200	154	331	276	273
Milwaukee, Wis .	1760	100	289	26	310
	926	86	544	97	199

<sup>1</sup> Paroled. There was no probation system in Manhattan in this year.

<sup>2</sup> Includes those acquitted, suspended sentences, and dismissed cases.

JUVENILE COURTS	DELINQUENTS TOTAL	DELINQUENTS			
		TOTAL	MINOR ACTS	CRIMINAL ACTS	OTHER OFFENSES
New York	2400	9000	6000	2000	1000
Brooklyn	539	1198		1198	
Chicago	1650	2100	500	1000	600
Columbus, O	400	785	235	200	350
Indianapolis	80		270	306	100
Milwaukee	170	770	160	460	150

Dr G. Stanley Hall gives a remarkable summary of the record evidences of juvenile faults, immoralities, and crimes in *Adolescence* (Vol. 1, ch. 5, pp. 325-410), which gives data for many countries and presents many considerations of value concerning the nature and character of juvenile delinquency. In New York City two thirds of the cases brought into the Children's Court were technically charged with violation of section 720 of the penal law, which in effect makes playing baseball in the city streets or any form of annoyance in public places and on public conveyances a misdemeanor. The majority of cases in the children's courts of other cities which children are summoned for, or charged with, like minor offenses, more often reveal changes in the natural environment of the child and the absence of proper provision for the natural, and, under slightly changed conditions, harmless acts of normal child life rather than a depraved or inherently criminal disposition.

A recent study of delinquent children brought to court in Chicago during the first ten years from June 1, 1899, when the first juvenile court in the United States was established in Chicago, to June 30, 1909, covered a total of 14,183 children, about equally distributed over the ten years. Of these, 11,413 were boys and 2770 were girls. Up to 1905 the

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court had jurisdiction only of children under sixteen years of age, but a change in the law that year gave the court jurisdiction up to seventeen for boys and eighteen for girls. Among the boys 22 per cent were fifteen years of age, 18.6 per cent were fourteen years, 14.6 per cent thirteen years, and 13 per cent twelve years of age. The largest number of girls range from fourteen to seventeen inclusive, with the maximum per cent 26.3 at fifteen years.

An analysis of the offenses which were the cause of these children being brought to court is interesting, and shows that more than half of the delinquent boys were charged with violation of rights of property ("stealing from the railroad" heads the list; stealing money comes second, junk, third, shop-lifting, fourth, breaking into empty buildings, fifth, stealing from parents, stealing and driving away with horse, motor, or bicycle, stealing gum, fruit, candy, or tobacco, stealing pigeons, ducks, stealing newspapers and miscellaneous thefts follow in due order). A careful study of these cases led the investigator, Dr. Breckinridge, to comment: "Without minimizing the dangers into which a boy may be led, it seems clear that a considerable number of these acts are not vicious, but are performed in a spirit of harmless adventure and without realization of their possibly serious consequences."

Next after stealing, to which is credited 50.8 per cent of the offenses, comes incorrigibility (21.7 per cent), disorderly conduct (16.2 per cent), malicious mischief (6.5 per cent), vagrancy (2.3 per cent), immorality (1.6 per cent), dependent charges, — drunkenness of parents, lack of care, etc. (8 per cent), truancy (7 per cent), miscellaneous offenses (1.4 per cent). This makes the total 102 per cent. Two per cent represents cases counted twice, that is, brought into court under two different charges. The total number of cases brought into court was 11,641.

Of the girls (2,770) the offenses are classified as follows: stealing (15 per cent), incorrigibility (42.8 per cent), immorality (31.4 per cent), disorderly conduct (6.7 per cent), malicious mischief (2 per cent), vagrancy (1 per cent), dependent charges (3.3 per cent), miscellaneous (1 per cent), not reported (4 per cent). The charge of immorality is somewhat different from that in the case of boys, and usually signifies that the girl has been going in bad company, or in the street day and night, or has a bad reputation, or is staying away from home in company with vicious people, is strongly suspected of being immoral, or is charged with using vulgar and obscene language. Every effort is made to protect girls from the charge of immorality, and where the evidence is not clear the offense charged is usually incorrigibility.

In the treatment of the cases just cited 59.3 per cent of the boys and 37.5 per cent

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of the girls were put on probation. Twenty-one and three tenths per cent of the boys and 51.5 per cent of the girls were committed to institutions, and 16.9 per cent of the boys and 10 per cent of the girls were cases continued indefinitely or dismissed, while the remaining cases (2.5 per cent boys and 1.4 per cent girls) were disposed of otherwise.

Another interesting fact in connection with the analysis of these Chicago cases shows that 67.9 per cent of the boys and 79.7 per cent of the girls appeared in court only once in this ten-year period, while 86.2 per cent of the boys and 96.7 per cent of the girls were in court twice or less.

**Causes of Juvenile Delinquency** — Much may be inferred as to causes of juvenile delinquency from what has been said as to its character and extent. Specific and convincing statistical evidence is not available, but recent studies of cases that come before juvenile courts in the large cities indicate that environmental conditions play the largest rôle. Congestion in living quarters, the absence of playgrounds or any outlet for normal physical activities of youth, inadequate or ill-adapted schools, and commercialized amusements which exploit the normal desire for recreation, taken collectively constitute a group of environmental conditions which in the large city play havoc with the growth and development of childhood.

Parental neglect and irresponsibility plays, perhaps, the second most important rôle. This in turn is attributed in part to the long working day of the father, to widowhood, and to conditions of poverty that require the mother to be away from home at work either for long hours or at hours when the children are free from the control or supervision of the school. The juvenile court as a public agency to deal with delinquent and neglected children has been extended to cover neglect, and in many states, as originally in Colorado, the parent or parents or legal guardian who is responsible for, or by any act encourages, causes, or contributes to the delinquency of the child is guilty of a misdemeanor. This enables the court to bring the parent into court on a charge directly connected with the delinquency of the child, and by suspending sentence the parent can practically be made the agent of the court to carry out the sentence of the court under the superintendence and direction of the court.

Poverty and dependence would seem to be responsible for a great deal of delinquency if we regard the records of the court as its sole measure. Many persons believe that children ought not to be brought into court at all on a charge of destitution or poverty, and it is certain that the courts are always embarrassed to know how to deal with such cases, which would seem more properly to belong either to private charities or to officials of the poor law than to juvenile courts. Definite commitments to institutions in the case of orphan children or of

children who must be taken from their parents because of improper guardianship would still have to be settled in a court of justice and should of course be put within the jurisdiction of a juvenile court

**Treatment of Juvenile Delinquency — The Juvenile Court.** — The movement for separate courts for children began in Massachusetts in 1869, and although measures were taken to secure them, no progress was made. The idea was, however, adopted in Adelaide, South Australia, in 1898, and soon after this example was copied in Toronto. As now known, the first juvenile court in the United States was organized in Chicago in 1899, and is now an institution very generally found in the larger cities of the country, as an adjunct of their judicial system. It has spread as an institution very rapidly even beyond the borders of the United States, and is now recognized in England and throughout Europe as a distinctive American contribution to social administrative progress. In many places, as in New York City, it is grafted upon the regular judicial system. In Manhattan, the New York Children's Court, as it is called, is known as the children's part of the second division of the Court of Special Sessions. Two of the judges of the Court of Special Sessions sit in turn, three months at a time, in the Children's Court, and it has its regular quota of court officials and police officers. Until recently it had no probation officers, but agents of the Society for the Prevention of Cruelty to Children acted as official investigators and parole officers of the court, now there are eighteen probation officers. The procedure of the court is that of the criminal court, with slight modification depending upon the attitude and personality of the judge on the bench. This is not a good sample of what the Children's Court ought to be, as conceived by those who regard it as a new device for handling children in a new way without necessarily implying any new legal principles or any radical changes in our jurisprudence.

The model juvenile court seeks to express a new attitude of society toward juvenile delinquency which will make the welfare of the child and the good of the State sufficient grounds on which to base the right of the court to control the custody of the child and to permit the court, if necessary, to take the child from its natural parents or guardians, provided its welfare is the determining factor. The juvenile court thus becomes, not an instrument for prosecuting a criminal, for the juvenile delinquent henceforth is not to be regarded as a criminal, but the agent of the State for the purpose of protecting and conserving a great and fundamental interest of the State, which is the well-being of each individual child whose well-being for any cause is not properly safeguarded by its natural protectors or guardians.

The juvenile court, organized as part of the

administrative machinery of the government, can also serve to bring into effective cooperation for the better protection of the child and the improvement of its surroundings through probation and other proper methods and court procedure every child-helping resource of the community, — parents, teachers, social workers, playgrounds, neighborhood centers, settlements, churches, and institutions of all kinds. It can secure for the child a physical examination and proper treatment for physical defects. It can do all of these things under the continuous and wise supervision of the court authorized at any time to intervene on behalf of the welfare of the child and exercise the full compelling authority of the State. The courts of last resort have construed the laws creating juvenile courts so as to uphold this broad exercise of power on the ground that this is a power which has been used from earliest times by the English chancellors, who in some of the oldest cases held that the right to take a child from the custody of its parents existed where the father ill-treated or was cruel to infant children, was drunken or debauched, or whose domestic relations tended to corrupt and contaminate his children.

To separate the child offender from the adult criminal, to make the court an agency for rescue as well as punishment, and to bring home to the parent a realizing sense of the great responsibility for the wrong-doing of his child, and to avoid the necessity for commitment of children to jail, — are among the prime objects of the juvenile court.

England through the Children's Act of 1909 (see CHILDHOOD, LEGISLATION FOR THE CONSERVATION AND PROTECTION OF) has made provision for juvenile courts by authorizing the appointment of special children's magistrates, and while, as yet, little progress has been made in providing different rooms or buildings from those in which other sittings of the court are held and thus giving to the juvenile court a distinctive character of its own, the legal machinery exists, and only a more liberal construction of the act by the home office is necessary to accomplish this result.

A great deal depends on the physical machinery of the juvenile court for its best success. A separate building constructed on different architectural lines from the traditional courthouse and separated from the machinery associated with police arrests and prosecuting methods is desired. Even in densely populated areas the impossibility of providing separate courts in sufficient numbers to be readily accessible for all the children suggests the further necessity of creating some local agencies other than police courts for hearing and sifting minor complaints, sending only the more serious ones to the children's courts.

The existing practice in many communities of assigning the regular judges and using the regular courthouse for part time in the work

of the children's court may be an intermediate step to an improvement on existing methods where there is no children's court, but it is not to be commended as a solution of the difficulties or as a way of achieving the aims of a proper juvenile court. The detention house, or a place where children may be kept in custody pending trial or investigation of their cases, or for brief periods of necessary confinement, is an important adjunct of the children's court, and should differ as much from the ordinary jail as the children's court is different from the regular court. The essence of juvenile court procedure, however, consists in a proper system of probation.

*Juvenile Probation* — The New York Probation Association defines probation as a means of disciplining and seeking to improve offenders without committing them to correctional institutions. This is applied both to children and adults in New York State, and now in many jurisdictions. The "fine" system is rapidly losing favor, especially in dealing with children, where the parent invariably paid the fine and was the one punished, or the child went to jail in default of payment and was put under influences likely to instil or develop criminal tendencies. Some method of treatment that will restrain children from continuing in evil ways and at the same time help them to overcome bad influences and encourage them to attend school regularly, keep away from harmful places and unfit companions, and conduct themselves with some regard for the rights of others is so universally needed, and probation, properly safeguarded in a way to secure appointment of efficient probation officers, so admirably meets this need, that its adoption is spreading rapidly. Massachusetts enacted the first probation law in 1878, which for two years applied only to Boston, then to the entire state, and both to juvenile and adult offenders. Illinois, Minnesota, and Rhode Island were the next states to adopt probation laws in 1899, more than twenty years after Massachusetts had pointed the way. New Jersey and Vermont followed in 1900, which brought the list up to six states, but by the end of another decade (1910) thirty-eight states and the District of Columbia applied probation to children, and twenty of these states to adult offenders.

The principles of probation are simple, but their application difficult. So much depends on the personality of the probation officer. In many places such officers are appointed as part of the spoils system in politics, and even where, as in very few cases, civil service appointments are made, it is difficult to secure competent persons and to get adequate appropriations for the payment of enough probation officers so that efficient work can be done without overburdening the probation officer with more cases than he can handle with due regard to the delicate nature of the work and thoroughness in its execution. Several states, like Massachusetts

and New York, have provided for state supervision of probation work through a state probation commission, and in this way secure more uniform and better results.

Volunteer and unpaid probation officers are relied upon in some communities to perform such work. They can be used as aids to public salaried officers, devoting their whole time to their professional duties. The paid probation officer serving as a public official under state supervision is essential to secure the best results, and the volunteer can best serve as an aid and supplementary force. The expense of the probation system is not large, and when considered in relation to the saving in the cost of maintenance where persons are put in jails or public institutions, it is a real economy. The "Big Brother" movement was started in 1904 by the Men's Club and Bible Class of the Central Presbyterian Church of New York through the efforts of Mr. Ernest K. Coulter, Clerk of the Children's Court of Manhattan, to secure a Protestant probation officer to look after Protestant children in the court as Jewish and Catholic children were being looked after by representatives of their own religious bodies. The idea of the movement is that a man shall take one boy, make a friend of him, and help him and his family in any way he can, that is, be "a big brother" to him. The proper assignment of boys from the court to the most suitable persons among volunteer big brothers, the securing of records and reports of what is done with the boys and the instruction and guidance of big brothers demands a central organization and supervision which has led to the incorporation of a board of directors. The cooperation of the Y.M.C.A. and the part use of its plant for big brother boys has been secured and plans have been considered to organize the movement on a national scale, but thus far it has been difficult to get sufficient financial support to test fully its possibilities. A woman's auxiliary known as the "Big Sisters" has been started to deal with girls.

**Recent Legislation** — The statutes enacted in 1910 on probation, juvenile courts, adult contributory delinquency and dependency, and juvenile detention homes are cited by chapter and date in the report of the New York Probation Commissioners for 1911, while similar statutes for earlier years are given in previous reports of that commission. In 1910 adult contributory delinquency laws were enacted in Virginia, Rhode Island, New York, and Kentucky, while the probation system was extended or adopted for the first time in the District of Columbia, Kentucky, Louisiana, Massachusetts, New York, Vermont, and Virginia, and statutory provision for detention homes was enacted in Maryland and New Jersey. S. M. L.

See CITIZENSHIP, EDUCATION FOR, CHILDHOOD, LEGISLATION FOR THE CONSERVATION AND PROTECTION OF; HUMANE EDUCATION, PENOLOGY, EDUCATIONAL ASPECTS OF; RE-

FORMATORY EDUCATION; SOCIAL JUSTICE AND EDUCATION, CHILDREN, CRIMINALITY IN; EDUCATION AND CRIME; ATTENDANCE, COMPULSORY, MORAL EDUCATION, RELIGIOUS EDUCATION

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**KALAMAZOO COLLEGE, KALAMAZOO, MICH** — A coeducational institution, chartered as the Michigan and Huron Institute, in 1833, and later changed to the Kalamazoo Literary Institute. For a few years following 1837 the school was affiliated with the University of Michigan In February, 1855, the institution was chartered as a college. Women were, from the first, admitted on equal terms with men. A theological seminary originally planned was early abandoned The Board of Trustees is a self-perpetuating body of thirty-six, elected in three classes, one class being chosen each year to serve three years There are no fraternities. Presidents of Kalamazoo College have been the Rev J A B Stone, 1855-1863, John M Gregory, 1864-1867, the Rev Kendall Brooks, 1868-1887, the Rev Monson H Wilcox, 1887-1891, Theodore Nelson, 1891-1892, and Arthur Gaylord Slocum, 1892 The institution maintains undergraduate courses leading to the bachelor's degrees in arts, and science, the entrance requirements are fifteen units The degree of A M is given for one year's graduate study in residence. Grounds, buildings, and equipment are valued at \$142,000 The productive endowment is \$460,000, yielding an annual income of \$22,000 There are (1912) thirteen members of the instructing staff The enrollment, in 1911-1912 was 186 C. G.

**KANSAS CITY UNIVERSITY, KANSAS CITY, KAN** — A coeducational institution established in 1896 under the auspices of the Methodist Protestant Church It includes Mather college, college of theology, college of music, Kansas City Normal School, Wilson High School, school of elocution and oratory and Kansas City Hahnemann Medical College Students are admitted on meeting the entrance requirements of fifteen units The degrees of A B, B S, Ph D, and B L are conferred The degree of B D is conferred in the theological department, for which the entrance requirement is the A B degree The faculty consists of fifty-six members, of whom forty have the rank of full professor. In 1910-1911 the enrollment of students was 445, of whom thirty were in the college, sixty-eight in medicine, and thirteen in theology The faculty consists of fifty-six members

**KANSAS STATE AGRICULTURAL COLLEGE, MANHATTAN, KAN** — An institution organized in 1863 as a result of the Morrill Land-Grant Act of Congress of 1862, and by the donation to the state of the grounds, buildings, and equipment of Bluemont Central College, founded in 1858. The college offers facilities for a liberal or a technical education The faculties include 186 professors, instructors, and assistants, organized into four divisions or schools, viz. Division of General Science, Division of Agriculture, Division of Mechanic Arts, and Division of Home Economics Four-

teen four-year courses, each leading to a degree, are offered in the several divisions. Graduate courses lead to the master's degree. Preparatory courses are offered, and also short courses of twelve to four weeks each, in agriculture, dairying, and domestic science. A department of college extension employs a staff of fifteen specialists, who devote their whole time to extension work consisting of lectures, farmers' institutes, social center work, rural education, correspondence courses, and highway, bridge, and drainage engineering. An agricultural experiment station with a central station at the college and four branches had an annual budget for 1911 of \$102,500. An engineering experiment station conducts investigations of engineering problems. The campus consists of 160 acres, and the experimental farms of 5130 acres. The college has twenty buildings devoted to instruction and laboratory purposes. The library contains 60,000 volumes. The total budget for 1911 amounts to \$563,000. The enrollment of resident students for 1910-1911 was 2407.

**KANSAS, STATE OF.**—First organized by Congress as a separate territory in 1854, and admitted to the Union as the thirty-fourth state in 1861. It is located in the north central division, and has a land area of 81,700 square miles. In size it is about the same as that of Minnesota and one third larger than all the New England states. For administrative purposes the state is divided into counties, and these in turn into cities and school districts. In 1910 Kansas had a population of 1,690,949 and a density of population of 20.7 per square mile.

**Educational History.**—The Jesuits were the first teachers in the territory, opening schools at a number of places for the instruction and conversion of the Indians. A white school was opened at what is now Kansas City, in 1844, but the school which is usually regarded as marking the beginning of free schools in Kansas was opened at Lawrence in 1855.

Four constitutions were prepared by different parties and conventions, viz in 1855, 1857, 1858, and 1859. The constitution of 1859 was finally accepted by Congress on the admission of the state. In each of the four constitutions, provision was made for a state system of education, and somewhat similar provisions with reference to education were contained in each of the four. In 1855 school trustees were required to report to the Secretary of State.

In 1857 a territorial superintendent of schools was appointed to look after the school lands, though little was done toward the opening of schools before 1859. In 1858 county superintendents were provided for, but the office was abolished the next year. In 1860 township trustees were directed to divide their townships into districts and the district system was definitely established. For each district

three teachers and an inspector were to be elected for one-year terms. During 1861 reports show that the schools in existence were mostly subscription schools or private enterprises, no state aid was granted that year and only twelve counties made any returns as to schools. A law providing for a state one mill tax was enacted in 1861. In 1862 reports from twenty-eight counties were received. Between 1855 and 1860 as many as eighteen universities and ten colleges were chartered by the legislature, only three of which survived, two of the three becoming state institutions.

In the constitution of 1859 definite provision was made for a State Superintendent of Public Instruction and for county superintendents, for the preservation of the school lands and for a board of school fund commissioners, and for the establishment of a state university and the preservation of its funds. The educational provisions of the 1859 constitution have remained unchanged to the present time. After the settlement of the slavery difficulties, the eastern portion of the state began to fill up, and the increase in population was still more rapid after the close of the Civil War. The number of original school districts in 1865 was 222, in 1866 it was 986, and in 1870 it was 2068. In 1863 the first teachers' institute was held, and the State Teachers' Association was organized. In 1863 Lawrence University, chartered in 1859, became the State University of Kansas (*qr*), Blumont College, chartered in 1858, became the Kansas State Agricultural College (*qr*), and the bill establishing a state normal school was signed. In 1864 the issuance of bonds for school buildings was first authorized, and the State Superintendent was directed to hold a teachers' institute in each senatorial district in the state. In 1868 the holding of teachers' institutes was changed from one in each senatorial to one in each judicial district. In 1869 the examination of teachers was taken from the county superintendents and given to a county board of examiners of three, of which the county superintendent was the chairman. In 1870 a district tax for library purposes was authorized. In 1870 a second normal school was established at Leavenworth, in 1872 one was established for colored students in connection with Quindaro University, and in 1874 a third school was established at Concordia. In 1876 the appropriations for all schools were cut off, and all but the one at Emporia were definitely abandoned. The land endowment saved Emporia, and appropriations for it were resumed a few years later. In 1873 the State Board of Education was created and given power to examine teachers for state certificates. In 1877 a four-weeks teachers' institute was made obligatory in each county, and the control of the institute was transferred, in part, to the county superintendent. About 1870 the

movement for public high schools began, and in 1885 the State University abandoned its preparatory department, after which the development of high schools was rapid. In 1897 a state textbook commission was provided for, in 1899 high school books and school supplies were also to be adopted, and in 1901 it was made unlawful for any one to offer to sell to trustees any book, map, chart, or piece of apparatus not approved by the commission and having a minimum price fixed by them.

In 1903 an efficient compulsory education law was enacted, and an extra tax for industrial training authorized. In 1905 the State Board of Education was given power to prescribe a course of study for the schools of the state, a good child labor law was enacted, and a tax for county high schools was provided. In 1907 educational requirements for the office of county superintendent were added.

In 1909 normal training in high schools and academies was provided for, and \$50,000 state aid voted for this purpose, the school land laws were revised; the Barnes high school law validated, and provision was made to license business colleges to canvass for students in the counties. The legislation of 1911 was the most important enacted by any legislature. The minimum term was raised from five to seven months, and state aid granted to weak districts; the standards for certification were to be increased gradually, and the State Board of Education given power to name and to increase requirements, consolidation of districts, and the provision of transportation were made easier, city boards of education were reduced in number, and made elective at large, township high schools were authorized, the high school normal training law of 1909 was extended and grants for agricultural instruction added; free high school tuition for rural pupils was provided, joint county institutes were permitted; and the salaries of county superintendents were materially increased.

**Present School System** — At the head of the school system of the state is a State Superintendent of Public Instruction, a State Board of Education, a Board of School Fund Commissioners, and a School Textbook Commission. The State Superintendent is elected by the people for two-year terms. He has general supervision and management of the educational interests of the state, gives official opinions to the county superintendents, prepares all blanks and forms, and edits the school laws biennially, visits each county biennially, and makes a biennial report to the Governor, apportions the school fund to the counties, and advises with the county superintendents as to the time and place of holding their normal institutes, and the selection of an institute conductor. The State Board of Education consists of the State Superintendent, the Chancellor of the University of Kansas, the President of the State Agricultural College, the President

of the State Normal School, and three schoolmen, appointed by the Governor with the consent of the Senate and for two-year terms. This Board meets at its own pleasure, and its chief function is to prepare uniform examination questions for use in the county examinations; to examine teachers for state certificates and state diplomas; to approve colleges and normal schools, both within and without the state, and place them on the accredited list for the exemption of their graduates from all or part of the state examinations; and to prescribe standards for the certification of kindergarten and manual training teachers, and to prescribe the course of instruction in manual training schools.

The State Superintendent together with the Secretary of State and the Attorney-General constitute the Board of Commissioners for the management and investment of the state permanent school fund, the normal school fund, and the university fund. The State Superintendent is Secretary of the Board. All school districts issuing bonds must first offer them at par to the Commission, thus insuring that all the school funds may be kept safely invested all the time.

The School Textbook Commission consists of the Superintendent of Public Instruction, *ex officio*, as chairman, and eight persons, appointed by the Governor for four-year terms, the Senate approving, and not more than five from the ranks of any one political party. This Commission adopts a uniform series of textbooks for the elementary and high schools of the state, and fixes the price at which they may be sold. Maps, charts, globes, and apparatus must be similarly adopted and a minimum price fixed. Any city, town, or district may vote to furnish free books to its pupils, but the use of the adopted books is made obligatory upon all.

For each county there is a county superintendent, elected by the people for two-year terms. He is required to visit schools, keep detailed records of many kinds, make quarterly and annual reports to the State Superintendent, apportion the school moneys to the districts, determine and change school district lines, and discontinue depopulated districts, hold an annual normal institute of four weeks in length, divide his county into from one to five truancy districts and nominate a truant officer for each to the county commissioners, to open schools, employ teachers, and levy a school tax sufficient to maintain five months of school in case school directors fail or refuse to do so, and to act as agent and supervisor of the orphan and reform school pupils indentured in his county, visiting each twice a year and reporting as to their condition and progress. For his services he receives a salary of from \$600 to \$1800 a year, varying with the school population of his county. The county superintendent together with two competent persons,



holding high-grade teachers' certificates and appointed by him, constitute the county board of examiners. This board conducts quarterly examinations, using questions prepared by the State Board of Education, and grants four grades of county teachers' certificates. Cities of the first and second class are exempt from the county examinations, and any school district employing ten or more teachers may have its own board of examiners and examine its own teachers. Holders of state certificates and normal school certificates are exempt from such local examinations.

The counties are divided into school districts, each having a district board, consisting of a director, a clerk, and a treasurer, each elected for three-year terms. Cities having a population of 15,000 or over constitute cities of the first class and are governed by boards of education of six members elected at large. Cities of from 2,000 to 15,000 population constitute cities of the second class, and are governed by boards of education of six members also elected at large. Cities of 250 to 2,000 people constitute cities of the third class, but, unless provided for by special law, these are governed as school districts. The treasurer of the board has charge of the money of the district or city, and the clerk keeps all records and makes an annual report to the school meeting and to the county superintendent. An annual school meeting is provided for, and its powers set forth. The annual meeting of the district may by vote, if the county superintendent concurs, discontinue its schools, and pay an adjoining district to teach its pupils for one or more years, and still retain its integrity as a district, or it may vote to annex the district to an adjoining district or city, or to consolidate its schools with those of one or more other districts.

**School Support** — The state originally received the sixteenth and thirty-sixth sections (2,801,306 acres) for common schools, two townships (46,080 acres) for a university, 90,000 acres for an agricultural and mechanical college, and 30,380 acres of salt lands for a normal school. The common school lands have been sold and a permanent common school fund of \$8,500,000 has been built up. So large is the number of school children in Kansas that the income from this fund is worth only about ninety cents per census pupil, five to twenty-one years of age, per year. It is apportioned to the counties and from the counties to the districts semiannually on this basis. The one-mill state tax enacted in 1861 was later repealed. Strong efforts have been made within the last ten years to secure a new state school tax, but so far they have been unsuccessful. The university lands have produced an endowment of \$145,000; the agricultural college lands, \$500,000; and the normal school lands, \$270,000. The chief reliance of the schools is on local taxation, which may go up to 4½

mills. District boards must levy up to that rate if necessary to maintain a seven months' school. Cities may also levy local taxes for schools up to 6 mills if of the first class, 9 mills if of the second class. All cities and districts may, in addition, levy a tax of from ½ to 1 mill for industrial training, and ½ to 2 mills additional for library purposes. About 85 per cent of the total expenditure for education comes from local district taxation.

**Educational Conditions** — Of the total population, about 95 per cent are white and 90 per cent are native born. The foreign born are largely English, German, and Swedish. There are few cities in the state, and about 75 per cent of the total population live in rural districts.

Since 1903 the state has had a good compulsory attendance law, and since 1905 a good child labor law. Each county is divided into from one to five truancy districts, and a truant officer is appointed to see that the law is enforced. Cities form independent truancy districts. In 1900 Kansas stood third in the percentage of literates (29 per cent) in the total population, Iowa and Nebraska alone having less. The estimated value of the school property of Kansas is \$18,000,000, or an average of about \$1900 for each schoolhouse in the state. Since 1903 the state has offered aid for industrial instruction (manual training and domestic science), duplicating any amount raised and expended up to \$250 a year in each place. Separate schools for the colored race are not permitted except in the cities of the first class and the high school at Kansas City, Kan., but a recent report of the State Superintendent recommends such change in the law as will permit of their establishment.

**Teachers and Training** — About one fourth of the teaching force each year is composed of inexperienced teachers, and about 80 per cent are teaching on second and third grade county certificates. About 5 per cent are normal graduates. For the training of these, and the improvement of those in service, a teachers' normal institute, of not less than four weeks' duration, must be held in each county each year. Adjacent counties may combine for a union institute. The time and place of holding the institute, as well as the institute conductors to be employed, must be approved by the state superintendent, and all conductors must be certificated for the work by the State Board of Education. A State Teachers' Reading Circle, under the direction of a board chosen by the county superintendents' section of the State Teachers' Association and with the State Superintendent as *ex officio* Chairman of the Board, outlines a course of reading each year for the teachers of the state, and all examinations for state teachers' certificates must include reading circle work as one of the examination subjects. For the training of new teachers, the state maintains three normal schools, and has made ex-

## KANSAS, STATE OF

tensive provision for normal training classes in the high school of the state, with annual state aid.

**Secondary Education.**—The law provides for three kinds of high schools,—district, union, and county. Cities and single districts may establish a high school for their own children, which must be maintained out of the ordinary district funds. Counties may establish county high schools for all the children of the county, by election and majority vote, and levy a special county high school tax up to six mills for the support of the same. Any two or more school districts may vote to unite to form a union for the purposes of providing higher instruction, in which case each district maintains its separate schools and the union district is a separate superimposed district, with power to levy regular district taxes, but the share paid by each district is in proportion to the number of children attending the union district. The support of all high schools is by local taxation, except that, since 1905, any county not maintaining a county high school may vote to levy a general county high school tax of from one fourth to three mills on all county property except that cities of 16,000 inhabitants or over are exempt, and to apportion the proceeds of such tax *pro rata* among the different high schools of the county in proportion to the average daily attendance in each. Pupils in non-high school districts in the poorer counties are provided with free tuition in adjacent high schools. State aid is granted for normal training classes (\$500) with \$250 additional if they also offer courses in agriculture and domestic science.

**Higher and Special Education**—The University of Kansas (*q v*), opened in 1866, and the State Agricultural College (*q v*), opened in 1863, are the two higher institutions maintained by the state. In addition to these two state institutions, eighteen denominational colleges offer higher education within the state.

COLLEGE	LOCATION	OPENED	CONTROL	FOR
Highland University	Highland	1857	Presb	Both sexes
Baker College	Baldwin	1858	M E	Both sexes
St Benedict's College	Atchison	1858	R C	Men
Ottawa College	Ottawa	1865	Bapt	Both sexes
Washburn	Topeka	1865	Cong	Both sexes
St Mary's	St Mary's	1869	R C	Men
Bethany	Lindsborg	1881	Luth	Both sexes
Emporia	Emporia	1883	Presb	Both sexes
Kansas Wesleyan University	Salina	1886	M E	Both sexes
Southwest Kansas College	Winfield	1886	M E	Both sexes
Midland College	Atchison	1887	Luth	Both sexes
Cooper College	Sterling	1887	U Pres	Both sexes
Fairmount College	Wichita	1892	Cong	Both sexes
St John's Lutheran	Winfield	1893	Luth	Men
Kansas City University	Kansas City	1896	Meth	Both sexes
McPherson College	McPherson	1897	Prot Ger	Both sexes
Friends University	Wichita	1898	Bapt	Both sexes
Campbell College	Holton	1903	Friends U B	Both sexes

## KANSAS, STATE UNIVERSITY OF

Since 1899, the state has made special appropriations for the partial support of Western University at Quindaro, an institution founded for "freedmen" before the days of emancipation. The Governor also appoints a majority of its Board of Trustees, thus virtually making it a state normal, agricultural, mechanical, and domestic science school for the colored race. The state has similarly practically adopted the Topeka Industrial and Educational Institute, a western Tuskegee, and makes small annual appropriations for its partial support. The state also maintains the Soldiers' Orphans' Home at Atchison; the State School for the Deaf at Olathe, the State School for the Blind at Kansas City, Kan., the Boys' Industrial School at Topeka, and the Kansas Industrial School for Girls at Beloit. E P C

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*Repts Supt Publ Inst Kansas*, annual 1861-1876, biennial, 1877-1878 to date. The First Bien Rept., 1877-1878, pp. 34-42, contains an outline of the history of education in Kansas from 1854 to 1876.

**KANSAS, STATE UNIVERSITY OF, LAWRENCE, KAN.**—A coeducational institution forming part of the free public school system of the state, and established by act of legislature in 1864. Seventy-two sections of land had already been set apart for the purpose by Act of Congress in 1861. The institution was opened at Lawrence, the citizens of which provided the first building, in 1866. The law school was opened in 1878, the school of pharmacy in 1885, the school of engineering in 1891, in 1896 the graduate school was organized, and in 1899 a full school of medicine was instituted, in 1909 the school of education and division of university extension were added.

The government of the University is vested in a board of seven regents, six of whom are appointed by the Governor and who hold office for four years. The departments of instruction of the University are as follows: graduate, college, fine arts, law, pharmacy, medicine, summer session, education, university extension. The entrance requirements are fifteen units except in the medical school, where two years of college work are required, and in the law school, where, after 1912, one year of college work will be necessary. All the departments offer four-year courses leading to their appropriate degrees, except the law school, where only a three-year course is given leading to the LL.B. Advanced degrees, including A.M., M.S., and the Ph.D., are conferred for work in residence. The total registration in

1910-1911 was 2398. The teaching staff consists of 176 professors and 65 instructors and assistants.

**KANSAS WESLEYAN UNIVERSITY, SALINA, KAN** — A coeducational institution founded in 1886 under the auspices of the Northwest Kansas Conference of the Methodist Episcopal Church. Academic, collegiate, normal, musical, commercial, and oratorical departments are maintained. Candidates are admitted on about eight points of high school work. On completion of the appropriate courses the degrees of A. B., Ph. B., and B. S. are granted. The faculty consists of forty-three members.

**KANT, IMMANUEL** (1724-1804) — The most important and commanding figure in the development of later modern culture, and the author of the intellectual and moral revolution which brought forward and fashioned a radical conception of the significance of humanity. He was born of humble parentage in Königsberg, Germany. The advantages that came to him in youth through his education during eight years in the *Collegium Fredericianum* were due to the devotion and wisdom of his mother, the material assistance of a maternal uncle, and the belief in his ability by the family pastor, F. A. Schultz, who was also a leader in the movement known as Pietism. Despite his poverty, he completed a course at the university in his native city (1740-1746), intending, as sometimes supposed, to prepare himself for the Church. This alleged purpose waned as he passed on in the acquisition of culture in many fields under the influence of Knutzen and Teske, professors of philosophy and physics, respectively. The following nine years were passed as a tutor in several families near Königsberg, and brought to him valuable personal and pedagogical experiences.

In 1755 Kant returned to the university, and, qualifying as a private lecturer in mathematics, physics, and philosophy, was destined to pass over forty years as an eminent teacher in this one institution. His six years' service as a librarian in the castle library after 1766 enabled him to expand his acquaintance with literature in all its branches. Having earlier declined the vacant chair of poetry, he was promoted in 1770 to the professorship of logic and metaphysics. His brilliant and popular lectures covered a wide range of subjects, as was then the custom of members of the philosophical faculty. Arnoldt's inquiry into the range and repetition of Kant's lectures is in itself an interesting sketch of his versatility. He lectured on logic 54 semesters, metaphysics 49, physical geography 46, moral philosophy 28, anthropology 24, theoretical physics 20, mathematics 16, natural right 12, encyclopedia of philosophy 11, pedagogy 4, besides on a number of other subjects. He created and gave academic

standing to physical geography and anthropology, despite his lack of travel. His active teaching ceased in 1796, owing to the infirmities of age. By the exercise of strong will he overcame the physical weakness of his youth, and by regulating his daily life by principles he fashioned a character that is one of the noblest models of self-education.

Before Kant became the author of the revolutionary critical philosophy, his mental development carried him through several interesting phases. Equipped as a student with the Leibnitz-Wolffian philosophy, he turned his attention to the more scientific problems of the material universe. He held to the unity of the physical world, advocated a mechanical dynamism for the explanation of its phenomena, elaborated the nebular hypothesis to account for its origin, and gave foreshadowings of the conception of evolution (*A General Natural History and Theory of the Heavens*, 1755). These years were succeeded by a period of rather quiet and uncertain empiricism in which the influence of Hume and Rousseau seemed to impress him. The *Dreams of a Spirit-Seer explained by the Dreams of Metaphysics* (1766), was written apparently to show the impossibility of knowledge beyond experience.

In 1769 a "great light" came to him which brought out clearly the contrast between nature (to be explained by causality), and spirit (whose essence is to be found in morality and religion). In his inaugural dissertation, *On the Forms and Principles of the Sensuous and the Intellectual Worlds* (1770), he had advanced so far as to see that physical science and philosophical idealism are but two aspects of knowledge and reality which human experience unifies. In a letter to Herz (1772) there is the first definite intimation of the settling of the real problem that he tried to solve. Then followed the silent and lonely years of reflection which resulted in the *Critique of Pure Reason* (1781) and marked the beginning of the philosophical revolution that is still in progress. The new method of "criticism" shows the possibility of experience and science by discovering the *a priori* forms of space and time and the twelve categories possessed by reason, and by establishing the principle of human self-consciousness as the maker of nature and the unifier of experience. The subjective and synthetic basis of all truth of nature was made a basis for the objective and metaphysical value of morality as expressed in the "categorical imperative" of the *Critique of Practical Reason* (1788). The systematic rounding of his thinking was reached in the æsthetical and teleological principles of the *Critique of Judgment* (1790). The completeness of his attack on the problem of the unity of experience appears from the attempted harmonization of the three *Critiques* by giving a psychological foundation to the first in intellect, to the second in will, and to the third in the feelings. His service to

philosophy became a harmonization of rationalism and empiricism, of dogmatism and skepticism in the method and results of "criticism," making possible the radical development of idealistic philosophy which greeted Germany within a decade after his death.

The influence of the critical philosophy grew slowly. The less than thirty publications on it after three years grew to one hundred and fifty in five years, and fell but little short of three thousand books, pamphlets, and articles by 1804. Kant became the center of a contending mass of friends and foes. An anonymous philosophical book (by Fichte, 1794) was immediately attributed to him. Three years later Feder, who in an early review of the first *Critique* called him a Berkeleian and thus drew from Kant the *Prolegomena to Every Future Metaphysics that can appear as Science* (1783) and eventually the famous second edition of the *Critique* (1787), was on his own admission literally forced out of his chair of philosophy at Göttingen because he could not seem to understand the Königsberg philosopher. Important additional writings of Kant are *Idea of a Universal History*, etc. (1784), *Fundamental Principles of the Metaphysics of Morals* and *Metaphysical Foundations of the Natural Science* (1786), *Religion within the Limits of Mere Reason* (1793), *The Metaphysics of Ethics* (1797), *Anthropology with Reference to Pragmatic Ends* (1798), *Logic* (1800), *Physical Geography* (1802), and *On Pedagogy* (1803), the last three being edited by two of his pupils.

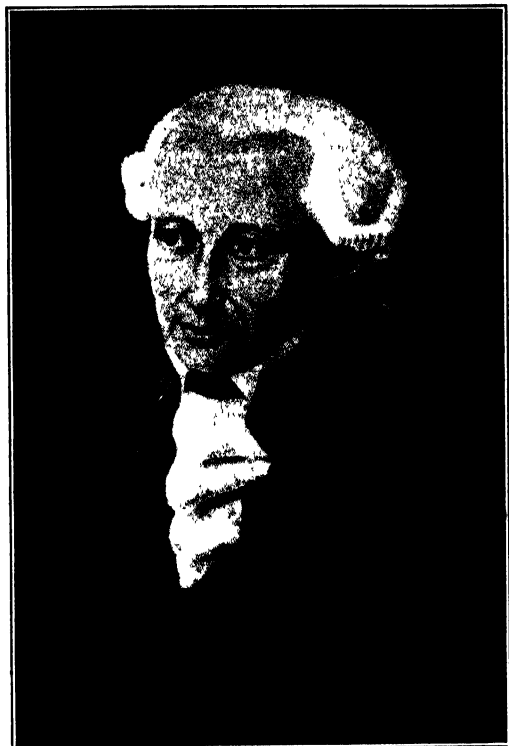
Kant's contributions to education as a practice and a theory are to be sought in his long career as an effective teacher of the leaders of his country, his writings bearing directly on the subject, and the immeasurable influence of his epistemological and ethical thinking upon the cultural and technical thought of his own and succeeding ages. In later years he modestly doubted the value of his early efforts as a teacher of children, saying, "there could never have been a worse tutor in the world than himself, because he could not even apply those pedagogical rules which he knew." As an academic teacher he held his chief end to be "to promote right opinions, and to inculcate fixed principles in minds of native excellence, in order to afford the only proper direction to the development of talent." His high ideal demanded that students should be taught how to think, rather than given mere information. The famous tribute of Herder in 1792 to his teacher of thirty years before shows the rare command of knowledge ("nothing worth knowing was indifferent to him"), the well-developed technique of instruction, and the effective guidance of liberty in thinking which made Kant the great teacher.

Owing to an old university rule, which required of one of the professors public lectures on the subject two hours a week, Kant's formal attention to education was given chiefly in his lectures on pedagogy throughout four semesters

between 1776 and 1787. This material, which never received systematic handling, was edited by Rink and published as *Ueber Pädagogik* (1803). It has since appeared in several German editions, and in one French and two English translations. Kant's interest in education as a topic for reflection probably awakened during the early years when Montaigne was a favorite author and Rousseau's writings riveted his attention, and continued to the end of his active career. He treated directly, however, of only a few questions in education. He drew chiefly on the memories of his own experiences as a teacher, and in part agreed with the pedagogy of the *Aufklärung* as it was expressed in Rousseau, Basedow, Campe, and others. In some of his views he characteristically departed from the positions of his contemporaries and set problems for the nineteenth century, chiefly in the evolutionary basis and the moral task of education.

Education is the greatest and hardest problem that is presented to man, because its purpose is the attainment of human destiny and perfection which consist in absolute moral worth. "Man can become man through education only." The history of the race shows progress through education toward the development of humanity. Since "there are germs in human nature" and the unfolding of "humanity from its seeds" does not take place of its own accord, education is the most necessary of all arts. A call for an effective rationalization of this art and for experimental schools is made at the same time that princes and parents are criticized for pursuing the defective aims of experience instead of "the good of the world and the perfection for which man is intended." As a principle Kant declares "Children should be educated, not with reference to their present condition, but rather with regard to a possibly improved future state of the human race, *i.e.* according to the idea of humanity and its entire destiny." His conception of education includes its necessity, its possibility, its worth, its principles, its art, and its types. It is necessary, because of the great gap existing between the rawness of infancy and the human will organized into free action under law, and because nature alone does not educate. It is possible, because a "germinal reason and a quasi-germinal morality," as innate capacities, actually equip man for perfection. It has value, because of the absolute worth of goodness as human destiny. "It is morality alone which gives meaning to man, and at the same time puts an end into educational thought and effort." It is rational and involves principles, and we may therefore hope for a future science, wherein every activity in the artistic nature of teaching will be placed on a firm basis. Education is evaluated also according to types of schools, teachers, and methods.

The educational solidarity of the individual and the race is expressed not only in his wonder



Immanuel Kant (1724-1804) See p. 586



Georg Wilhelm Friedr. Hegel (1770-1831) See p. 243



Johann Friedrich Herbart (1776-1841) See p. 250



Friedr. Wilhelm Christ. Karl Ferd. von Humboldt  
(1767-1835) See p. 340.

A GROUP OF GERMAN EDUCATORS.



"whether the education of the individual should imitate the development of the race in general through its various generations," but also in his insistence "that every phase of educational effort must proceed upon a recognition of the basis which natural and mechanical processes universally present, be it in physical, psychical, cultural, or moral education, in the constant endeavor to hand the child over to a free, rational, individual independence"

Kant's "treatise" on pedagogy was divided into two parts *On Physical Education* (§§ 34-90) and *On Practical Education* (§§ 91-113). The former includes all natural or mechanical processes, the latter all that has reference to freedom. The development of the individual is conceived as requiring four types of educational activity: discipline, cultivation, civilization, and moralization. Discipline includes everything pertaining to physical nature, and attempts "to prevent the animal nature from becoming injurious to human nature," both individually and socially. Under cultivation are included instruction and teaching, which are designed to equip the individual with skillfulness as the means of executing a great variety of purposes. Civilization, which is not treated by Kant, leads to the acquisition of prudence, and the complete socialization of the individual. Moralization is the means of bringing the individual to "acquire that type of mind which chooses good aims only." He charged his age with developing the first three and omitting the fourth type of educational activity.

The antinomy between constraint and freedom haunted Kant constantly. He returns repeatedly to the question "How shall I cultivate freedom under conditions of compulsion?" His only definite recommendation with respect to the plan of instruction was the introduction of "a catechism of right," an outline of which he furnishes in the *Metaphysical Elements of Ethics* (1797). The method proposed invites children to apply the moral law to concrete cases of conduct, and thus become conscious of it and accept it as the one obligatory principle of the will. Moral education differs in aim and in method from the cultural development of the mental capacities of the individual. The ethical conception of duty also became the basis for religious pedagogy. His insistence on freedom as the essence of man's intelligible character and the very opposite of causality as the key to empirical character greatly influenced the educational theory of the following century, as is instanced in Herbart's polemic against transcendental freedom, and its continuance by his followers.

Kant disapproved of a state scheme of education, because it was too narrow and misdirected. The development of humanity being the end of education, "the basis of its plan must be cosmopolitan". Princes also distort education by seeking merely to make men "citizens" who are to be used to further the immediate

purposes of the State. His great interest in Basedow's philanthropic institute at Dessau was therefore due to his belief in this experiment as promising a way of true educational reform.

The philosophy created by Kant was itself a system full of pedagogical motifs by reason of its acute analysis of inner experience and its recognition of the creative power of pure reason. It also became fruitful in opening the current epoch of western thought in which the pedagogy as well as the philosophy of Fichte, Schelling, Hegel, Schopenhauer, Herbart, Schleiermacher, Schuller, Goethe, Niemeyer, Schwarz, and their numerous followers radiated throughout the nineteenth century. E. F. B.

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**KAY-SHUTTLEWORTH, SIR JAMES PHILLIPS** (1804-1877) — First Secretary of the Committee of Council on Education in England and Wales, was born at Rochdale, Lancashire, in 1804, the son of Robert Kay. As a boy he was employed in a bank belonging to a relation at Rochdale, but in 1824 entered the University of Edinburgh as a student of medicine, becoming M.D. 1827. He had a brilliant university course during which, both in Edinburgh and in Dublin, he studied the condition of the poor. After graduating he settled at Manchester as a physician and served as medical officer of the Ancoats and Ardwick Dispensary situated in one of the poorest and most crowded districts of the city. During the outbreak of cholera in 1832 he was devoted in his attendance at the cholera hospital. The experience gained during this epidemic and as secretary to the Manchester Board of Health impressed upon him the social danger of the insanitary surroundings of the poor. In 1832 he published a pamphlet entitled *The Moral and Physical Condition of the Working Classes Employed in the Cotton Manufacture in Manchester*, the disclosures of which led to

local measures for sanitary and educational reform. He was an ardent supporter of the Anti-corn Law movement. He was appointed in 1835 Assistant Poor Law Commissioner, and for some years served in that capacity first in Norfolk and Suffolk and afterwards in the metropolitan district. As a Poor Law official he became more than ever convinced of the necessity of national educational reform. In 1839, when the Committee of the Privy Council for Education in England and Wales was first appointed, in order to administer the parliamentary grant for public education in Great Britain, Dr Kay (as he was then called) was appointed the first secretary of the Committee, being allowed to retain for a time the superintendence of the metropolitan schools for pauper children under the Poor Law Board. He thus became the first secretary of the Education Department for England and Wales.

Hand in hand with his intimate friend and colleague under the Poor Law Board, Mr. Edward Carleton Tufnell (born at Chichester 1806, educated at Eton and Balliol College, Oxford, and subsequently director of Greenwich Hospital), Dr Kay worked out a plan for establishing a training college for the preparation of teachers who would devote their lives to the care of hapless pauper children in the Poor Law Schools of Norwood. The condition of these children was deplorable. Kay and Tufnell conceived the idea of establishing a training college, the discipline and spirit of which should fit and inspire young men for this task of mercy and rescue. Their first step was to travel in Europe in order to acquaint themselves with the best that had been done in other countries for the professional training of teachers destined for the schools of the poor. After visiting Holland, Prussia, and France they went into Switzerland, attracted by what they had heard of the work of Pestalozzi (who had died in 1827) and of Fellenberg and Father Girard (*qqv*) who were still engaged in their educational work. Returning to England, Kay and Tufnell found premises at Battersea in West London. The house still forms the nucleus of St John's College, Battersea. In 1840 the college was opened for the admission of students, the first pupils being some boys selected from the school of industry at Norwood in view of the excellence of their conduct and their intellectual promise. The period of instruction in the training school was to last for three years and to be followed by two years' employment as pupil teachers in the Battersea village school during three hours of every day. The new training college, which was maintained at the private cost of Kay and Tufnell, was cordially supported by philanthropists in all parts of the country and quickly grew into an institution of considerable size. The whole of the household work was committed to the charge of the boys and young men. The masters

partook the same diet as the pupils. The aim was that the teacher of the peasant's child should himself be acquainted with the peasant's duties. In this, the first organized training college for men teachers in England, the first Secretary of the Education Department resided during the critical years in which he built up the administrative fabric of English public education under the supervision of the civil State.

The success of the college was great. In 1843 Kay (who had assumed the name of Kay-Shuttleworth on his marriage in 1842 with Janet, daughter and heiress of Robert Shuttleworth of Gawthorpe Hall, near Burnley) handed over the college to the committee of the National Society (*qv*), by whom it has been conducted with increasing usefulness, though with great modifications in its curriculum and mode of life, to the present day.

In the meantime Kay-Shuttleworth had thrown himself with vigor into the new work of the Education Department. On his appointment as Secretary, the Ministers of the Crown had given him a special injunction to assert the civil influence in education. The first steps were to propose (1) the establishment of a great training college for teachers, and (2) the inspection of all schools receiving government aid. The first of these schemes was wrecked by dissensions between the civil power and the ecclesiastical bodies on the subject of the religious instruction to be given in the college. The second part of the plan, viz. inspection, was entirely successful, the whole weight of the Benthamite tradition favoring the adoption of the plan. It was because the idea of a state training college broke down that Kay-Shuttleworth and his friend Tufnell determined to establish the training college at Battersea at their own expense. Their indomitable courage and personal self-sacrifice won the day. Established by private effort, the college became the first of a long succession of training institutions.

During the early years of his secretaryship, Kay-Shuttleworth proved himself brilliantly resourceful in administrative ideas. He persuaded the government to employ John Hullah to introduce a modification of the Wilhelm method (the fixed *doh* system) into the teaching of singing in elementary schools. It was an application of the Pestalozzian method of ascending from the simple to the general through a clearly analyzed series of steps. Hullah's efforts were extraordinarily successful. Kay-Shuttleworth also introduced Pestalozzian methods of the teaching of arithmetic and geography. He was also the first to insist upon the teaching of drawing as an indispensable part of elementary education.

In 1843 the Committee of Council, on Kay-Shuttleworth's advice, began to give regular grants in aid of (1) the erection of teachers' residences; (2) the purchase of school furniture and apparatus; and (3) the establishment of training colleges under the management of



religious bodies or approved educational societies. This gave a decisive turn to English policy in regard to national education. The idea of a State monopoly in elementary education was definitely abandoned. Under Kay-Shuttleworth's influence the State entered into a partnership with the religious and voluntary associations for the improvement of the education of the poor. This concordat between the civil state and the religious or voluntary associations was the keynote of Kay-Shuttleworth's policy. In an eloquent pamphlet entitled *The School in its Relations to the State, the Church, and the Congregation*, issued anonymously with the sanction of the government, Kay-Shuttleworth expounded the policy of the new Minutes and vigorously defended the idea of a concordat between the State and the religious bodies against the secularist party on the one hand and the anti-governmental ecclesiastical writers on the other.

Owing to a breakdown of health from overwork, Kay-Shuttleworth resigned his office of Secretary of the Committee of Council in 1849. In the same year he was created a baronet. Recovering from his illness he devoted himself with ardor to public work. He was vice-chairman of the Central Relief Committee during the cotton famine in Lancashire, 1861-1865. He served on the Royal Commission on Scientific Instruction (Duke of Devonshire, chairman) from 1870-1873. His later years were occupied with reforming the administration of several local grammar schools, especially Giggleswick and Burnley. He died in London, 1877.

Kay-Shuttleworth was the true begetter of the modern English system of elementary education aided by the State. The training of teachers, public inspection of schools, the pupil teacher system, the combination of secular instruction with religious teaching and with liberty of conscience, and the synthesis of contributions from the government treasury and from local benefactors were prominent features of his plan, and all of them have persisted with modifications down to the present time. Matthew Arnold said with justice that, "when at last the system of English elementary education comes to stand fully and fairly formed, Kay-Shuttleworth will have a statue." He combined in his own person the administrative decision of the Benthamites, the philanthropic ardor of the sanitary reformer and the religious zeal of the Anglican statesman.

M. E. S.

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**KAZAN, UNIVERSITY OF** -- See RUSSIA, EDUCATION IN.

**KEAGY, JOHN M** (1795-1837). -- American advocate of the word-method of teaching reading. He was educated in private schools and graduated from the university of Pennsylvania in 1817. In turn he was principal of the Harrisburg Academy and the Friends' High School in Philadelphia, and professor in Dickinson College. He became interested in the work of Pestalozzi and his American disciple, Joseph Neef (*q v*), and became an ardent advocate of the word method of teaching reading in opposition to the alphabet method then in use. His educational writings include *Essay on English Education* (1824) and *Pestalozzian Primer, or First Steps in Teaching Children the Art of Reading and Thinking* (1827).

W S M

**KEATE, JOHN** (1773-1852) -- Headmaster of Eton College from 1809-1834. He was educated at Eton and King's College, Cambridge, where he distinguished himself in classical scholarship. He graduated B.A. in 1796 and was elected fellow. In 1791 he was appointed assistant master at Eton and in 1809 became headmaster. His whole career was a struggle with the frequently turbulent and rebellious boys; discipline was bad, and he suffered many indignities. Under such conditions the state of scholarship was poor. Keate's chief claim to fame as headmaster was his constant and wholesale use of the birch, on one occasion he flogged as many as eighty boys. Many stories are related of the flogging headmaster. He distrusted boys as much as Hawtrey and Arnold (*qq v*) relied on their sense of honor. Nor was the staff of masters of the standard of scholarship usually connected with good schools. In the end, however, Keate attained a measure of popularity and secured efficient assistants. He was able on his resignation to hand over to his successor, Hawtrey (*q v*), a better disciplined school than he had found. He sympathized with educational reforms, but the problem of discipline absorbed the greater part of his attention. He did encourage oratory and English composition and the establishment of debating and other societies. After his resignation he lived in retirement as rector of a country church.

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**KEBLE, JOHN** (1792–1866). — English poet and divine, born at Fairford, Gloucestershire, the son of a clergyman from whom he received his education until his entry into Corpus Christi College, Oxford. He obtained a fellowship at the early age of nineteen, after graduating with a double first. He was ordained in 1815 and remained at Oxford until 1823, when he became a parish priest. In 1827 he published the *Christian Year*, a collection of religious poems which attained a remarkable popularity. From 1831–1864 he was professor of Poetry at Oxford. In 1835 he became Vicar of Hursley in Hampshire. It is, however, with the “Oxford Movement” that Keble is most generally identified as one of its chief leaders and inspirers. Connected with this movement were his share in the *Tracts for the Times* and the translation of the Church Fathers (*Library of the Fathers*). Keble wrote many books on religious topics and in addition to the *Christian Year* was the author of *Lyra Innocentium* (1846), and *Prælectiones Academicæ* (1844), in which he discussed the theory of poetry. On state control of schools, which was suggested in his day, Keble took the stand that England “as a Christian nation was a part of Christ’s Church and bound in all her legislation and policy by the fundamental laws of that Church.” Keble College, Oxford, opened in 1870, was named in honor of Keble, “to the memory of one of the most eminent and religious writers whom the Church of England has ever produced, one whose holy example was perhaps even a greater power for good than his *Christian Year*.”

See OXFORD MOVEMENT.

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**KEHR, KARL** (1830–1885). — A German educator, born in Goldbach, Thuringia, and educated at the seminary at Gotha, where he was appointed teacher of pedagogy in 1863. In 1872 he became the director of the seminary, which position he later exchanged for a similar one at Halberstadt, and finally at Erfurt. Through his efforts in these positions, as well as through his numerous writings, he exerted a great influence on the training of teachers in Germany. His most important work is his *History of the Methods of Elementary Instruction in Germany* (*Geschichte der Methodik des deutschen Volksschulunterrichts*), published with the collaboration of a number of schoolmen in 1877. He was the founder of *Padagogische Blätter für Lehrerbildung und Lehrerbildungsanstalten*.

F. M.

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**KEILHAU**. — A village near Rudolstadt in Thuringia, Germany, the scene of Froebel’s first school, which he established in 1816 for the education of his brother’s children and others. Although founded in Griesheim as the *Allgemeine deutsche Erziehungsanstalt*, it was soon moved to Keilhau. Froebel was assisted by Wilhelm Middendorff and Heinrich Lange-thal; in 1823 they were joined by Johannes Arnold Barop, a nephew of Middendorff. Froebel left the institution in 1829. Under the influence of Barop, who became sole owner of the school in 1854, the institution gradually developed into a private boarding and secondary school. In 1870 the examination for the one year military service was held in the school for the first time. In 1878 Barop died and was succeeded by his son, Johannes Barop. In 1892 the Prussian curriculum for secondary schools was introduced, but the principles of Pestalozzi and Froebel remained, and the institution is still marked by the emphasis on the social and cooperative work. The school is now a Realschule with Latin as an optional subject. There are about 100 pupils. In 1896 an alumni association was formed. The present headmaster is Dr. Otto Wachter.

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**KELLER, JOSEPH EDWARD** (1827–1886). — Jesuit educator, educated at St. Louis University. He held professorships at St. Francis Xavier’s College, Cincinnati, and St. Joseph’s College, Bardonia, Conn. He was president of Woodstock College and provincial of St. Louis University. He was author of several religious and philosophical works.

W. S. M.

**KELLNER, LORENZ** (1811–1892). — One of the most prominent Catholic schoolmen of modern Germany, born at Kalteneber, near Heiligenstadt, Prussia, and educated at the seminary of Magdeburg. After a few years’ experience as an elementary teacher, he was appointed to a position in the newly founded seminary at Heiligenstadt, of which his father was the principal. From there he was called, in 1848, as school inspector to Marienwerder, West Prussia, and later on in the same capacity to Trier in the Rhine province, where he worked for thirty-one years until his retirement in 1886. For several years he was a member of the Prussian parliament. He published a large number of educational works and articles treating of the history of education, the methods of teaching the mother tongue, and other matters of pedagogical interest. Among these may be mentioned: *Erziehungsgeschichte in*

*Skizzen und Bildern; Zur Pädagogik der Schule und des Hauses*, etc His autobiography, *Lebensblätter, Erinnerungen aus der Schulwelt*, is a model of its kind F M

Reference:—

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**KELLOGG, MARTIN** (1828-1903) — University president, graduated from Yale College in 1850 and the Union Theological Seminary in 1854 He subsequently studied at the universities of Bonn and Berlin in Germany He was professor in California College from 1860 to 1869, when this institution became the University of California, and continued as professor in the University of California to 1893, when he was chosen president of the institution (1893-1899) He was the author of several Latin texts and of numerous addresses on educational subjects. W. S. M.

See CALIFORNIA, UNIVERSITY OF

**KELTIS, or CELTES, CONRAD** — See RENAISSANCE AND EDUCATION.

**KENDRICK, ASAHCL CLARK** (1809-1895). — College professor and textbook author; graduated from Hamilton College in 1830, and later studied at the University of Athens He was tutor and professor at Colgate University from 1831 to 1850, and professor at the University of Rochester from 1850 to 1880 His published works include *Child's Book in Greek, Introduction to Greek, and Greek Grammar*; he also edited several of the Greek classics W. S. M.

**KENESIS.** — See TROPISM

**KENNEDY, BENJAMIN HALL** (1804-1889). — One of the most brilliant classical scholars in England during the last century and headmaster of Shrewsbury School He belonged to a family of distinguished scholars When he entered Shrewsbury School in 1819, he at once attracted attention by the remarkable quality of his compositions, and while still at school he won the Porson Prize, one of the most important of the classical prizes at Cambridge University In 1823 he entered St John's College, Cambridge, and graduated B A with great distinction After serving for a year as assistant master at his old school he was elected to a fellowship at his college in 1828 From 1830-1835 he was assistant master at Harrow and in 1836 he was elected headmaster of Shrewsbury. Here his first task was to reduce the school to discipline, which, as in most English public schools of the day, was somewhat lax. He also paid much attention to the housing accommodations, then in a very bad state through overcrowding While laying chief stress on the classical studies, he introduced French and mathe-

matics, geography and history into the curriculum, although little value was attached to any of these subjects and none counted for promotion Another innovation was the institution of daily supervised preparation, athletics were encouraged, religious instruction and devotion were strengthened, and the establishment of a school choir encouraged an interest in music. In many ways Kennedy's reforms show the strong influence of Arnold (*qv*) at the neighboring school at Rugby When the inhabitants of Shrewsbury claimed that the school was founded as a free school in the literal sense, Kennedy wrote a pamphlet, *Shrewsbury School, Past and Present* (1862), to prove that *Libera Schola Grammaticalis* meant a royally chartered school preparatory for the universities, a view which was proved to be baseless (See FREE SCHOOLS) Kennedy was not only a remarkable classical scholar, but widely read in modern literature and history As a teacher he was, in spite of his impulsiveness, eminently successful, and trained a large number of famous scholars He had a remarkable ability in writing Latin verse, as may be seen in *Sabrina Corolla* (1850) and in *Between Whiles, or Wayside Amusements of a Working Life* (1882) His influence on classical teaching was exercised by his grammars, especially the *Public School Latin Primer* (1866) and the *Public School Latin Primer* (1871), he also edited a number of classical texts, including Vergil, the *Agamemnon* of Aeschylus, and Sophocles' *Edipus Tyrannus* He resigned from the headmastership in 1866, and in the following year was appointed Regius Professor of Greek at Cambridge.

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**KENTUCKY, STATE OF** — Originally a part of Virginia, organized as a separate territory in 1790, and admitted as the second new state in 1792 It belongs to the South Central Division, and has a land area of 40,000 square miles In area it is practically the same size as Ohio or Virginia For administrative purposes the state is divided into 119 counties, and these in turn into cities and towns on the one hand, and into educational subdivisions and subdistricts on the other In 1910 Kentucky had a population of 2,289,905, and a density of population of 57 per square mile

**Educational History** — The first permanent settlement was made in 1774, and the first private school was opened at Harrodsburg in 1776 Other schools were opened, and private higher schools or academies were established at various places before 1800, but these schools were very primitive and elementary In 1799 the foundation of a state university, to be known as Transylvania University, was laid by the union of Transylvania Seminary, estab-

lished by Virginia in 1780, and Kentucky Academy, chartered by the Kentucky legislature in 1794. The institution for a long time remained but little more than an academy. Though a number of private and advanced schools existed in the different settlements, no general interest in education existed before 1820 at least. So far as there was any interest, it centered about the academies, but even they did not prosper, and their lands and funds were not infrequently mismanaged or squandered. The state constitution, adopted at the time of admission, and a second state constitution, adopted in 1799, contained no mention of education.

The first legislation with reference to education took place in 1798, when the legislature granted 6000 acres of land to each of three academies and two seminaries. In 1805 and 1808 acts were passed extending these provisions to all the existing counties. Permission to raise \$1000 by a lottery was also given to each institution. By 1820 there were forty-seven county academies in operation, though they led but a precarious existence, and their failure as a system of education began to be recognized by this time. Between 1819 and 1829 six colleges were chartered, which were destined to compete with and eventually to ruin the chances of Transylvania University developing into a strong university.

The first mention of education in a message of the Governor occurs in the messages of Governor Slaughter in 1816, and again in 1817, 1818, and 1819, but the legislature took no action on his recommendations. In December, 1821, the state made provision for the first aid for common schools by providing that one half of the net profits of the Bank of the Commonwealth were to be set apart to form a permanent Literary Fund, but the income, which eventually amounted to about \$60,000 a year, was not spent for education, but was used by the legislature for defraying deficiencies in the general state revenues. In 1821 the legislature was induced to appoint a commission to investigate the question of public education and to make a report on the subject. This the commission did in 1822, reporting in favor of fostering Transylvania University as a state institution, the retention of the academies as training schools for teachers, and the establishment of a general system of public education for all, as nearly free as possible. The report favored the New York plan, with state appropriations supplemented by local taxation. The document was an able one, but since the people were not ready for taxation for education, the legislature did nothing more than print the report.

Louisville had the best schools in the state at the time, and in 1829 these were made free schools by a city appropriation for support. The next year, however, the city reverted to tuition fees, which continued up to 1840, when

the schools were once more made free city schools. Night schools were established in 1834, and a superintendent of schools was first appointed in 1839.

An act to establish "a uniform system of public schools" was passed in 1830. This gave county courts power to lay off the counties into school districts, and the people were to elect three trustees for each district. Taxes up to six and a quarter cents on the \$100 and a poll tax of fifty cents might then be levied for schools. So small was the interest in education, and so great the unwillingness of the people to pay taxes for schools, that few schools were ever organized, and the law remained practically a dead letter. The distribution of the surplus revenue in 1837 seems to have awakened a new interest in education. By an act of 1838 \$850,000 of this fund was set aside for education, and the foundation of a public school system was laid. By this law a state school fund was established; a state board of education and a state superintendent of common schools were created; and county school commissioners, district school trustees, and local taxation were provided for. At this time, half of the children of school age had never been to school, and one third of the adult population could not read or write. This law provided a definite form of organization, but it took fifteen years to overcome the indifference and the opposition of the legislature and the people sufficiently to get the law into operation in every county, and no marked progress was made until after the Civil War. In 1840 the state refused to pay the interest on the school fund, and in 1845 the state school bonds were destroyed by legislative act. In 1848 the debt to the school fund was recognized and capitalized in the form of a bond; and in 1849 a proposal to levy a state two cent tax for schools was submitted to a vote of the people and adopted. The new constitution of 1850, the first to mention education, contained a section which fixed the debt of the State to the school fund and declared it to be inviolate for the purpose of sustaining a system of common schools, and another section which provided for the election of a state superintendent of public instruction. In 1850 a law declaring the debt to the school fund a first charge on the resources of the treasury was carried in spite of the determined opposition of the Governor, and in 1853 some kind of a school was finally got into operation in each county of the state. The yearly income from all state sources was at this time but sixty cents per census child. By 1863 the income had risen to \$1.10, but the losses of the Civil War caused it to fall to seventy-two cents by 1867. In 1855 the state school tax was raised from two cents to five cents by popular vote, and in 1856 an unsuccessful attempt to revive Transylvania University by converting it into a state normal school was made. The Civil War for a time seriously interrupted the

work of education, and at its close the need of educating the negro was added to the educational problems of the State.

In 1867 agitation for a better organized and financed system of public education was begun by the new State Superintendent, Z. F. Smith. Two years later his proposals for an increase of the state school tax from five cents to twenty cents, with poll taxes and local taxation, were approved by the legislature and the people, and in 1870, a new school law was enacted which laid the basis of the present system. In 1873 district taxation was authorized to supplement the state funds. A system of colored schools was begun in 1866, when all taxes paid by the colored people were set apart for the benefit of colored schools, and in 1882 the apportionments for white and colored schools were equalized, and the state school tax raised from twenty cents to twenty-two cents. Since this time other additions have been voted, the present tax being twenty-six and a half cents. In 1884 county superintendents, elected by the people, were substituted for the county commissioners appointed by the county courts, the size of districts reduced, and provision made for state and county institutes.

In 1891 another new constitution was adopted, in which full and definite provision for a state system of public instruction was made for the first time, and the legislature was charged with the duty of providing "an efficient system of common schools throughout the state." The school fund was carefully defined, the direct-tax refund made by the national government, amounting to \$606,641.03, was added to the permanent fund, separate schools for the two races were made mandatory, the income from the fund was required to be distributed without distinction as to race or color; and aid to sectarian schools was forbidden. The revised school law of 1893 carried these provisions into effect and provided, in addition, for the grading of all schools a five-months term, obligatory county teachers' associations, and county teachers' libraries. In 1896 a compulsory school law was enacted, which required eight weeks of continuous attendance each year from all children between seven and fourteen. In 1902 an act providing for county taxation and a county poll tax to extend school terms was enacted. In 1904 county school book commissioners to select a series of uniform textbooks for the schools of the state were provided for. In 1906 two state normal schools for white teachers were established. In 1908 a county school district law was enacted which provided for a partial abandonment of the school district plan and a partial approach to the county unit system. County high schools were also provided for. An educational commission was also created for the purpose of considering a revision and improvement of the school laws of the state.

**Present Educational System.**—At the head of the state school system is a Superintendent of Public Instruction, elected by the people for a four-year term and receiving an annual salary of \$2500. He prepares all blanks and registers used, issues plans for school buildings; renders decisions on appeal; is general custodian of the school funds; must travel and visit the schools of the state; apportions the state school fund; makes plans for the teachers' institutes, and holds an annual conference with the institute conductors. He is also a member *ex officio* and chairman of the State Board of Education, the State Board of Examiners, and the Boards of Trustees of the three state normal schools, and a member *ex officio* and secretary of the State School Book Commission.

The State Board of Education is an *ex officio* body, consisting of the State Superintendent of Public Instruction, the Secretary of State, and the Attorney-General. It has charge of the school fund bonds, makes rules and regulations for the government of schools and the management of county teachers' libraries, and prescribes and publishes a graded course of study for use in the schools. The State Board of Education, together with the Governor, Auditor, Treasurer, and Clerk of the Court of Appeals, form the State School Book Commission, which adopts a series of textbooks for the schools of the state, acting on the recommendation of the different county school book commissions. The Superintendent of Public Instruction, together with two professional educators appointed by himself, constitute the State Board of Examiners. This body examines all county superintendents and all applicants for state diplomas and certificates, and prepares, subject to the approval of the State Board of Education, all questions used in the state and county examinations of teachers.

For each county a county superintendent of public instruction is elected by popular election for four-year terms. He must hold or secure a state certificate or diploma or a county superintendent's certificate. He must visit the schools of his county, superintend the taking of the annual school census and examine and report the results, decide all questions touching the administrative duty of teachers or trustees, pay all teachers on the certificates of the trustees, requisition the county judge for all textbooks needed to supply to indigents, and make an annual settlement with the county judge and an annual report to the State Superintendent. The county judge makes appointments, and may remove the superintendent for cause. With the county judge or the county attorney, he divides the county into districts and groups these into four, six, or eight subdivisions. Each district then elects one trustee and the different trustees unite to form subdivision boards of trustees, of each of which the county superintendent is *ex officio* a member, but without a vote except in case

of a tie. The chairman of these subdivision boards of trustees, together with the county superintendent, form the county board of education for the county. This body grants all county teachers' certificates, and the county superintendent makes a report of all receipts and expenditures to it. It employs all teachers for the county high schools and fixes their salaries, and may prescribe a course of study for the same. It determines the amount of county school tax needed and lays the amount before the financial court of the county. It may establish new school districts, change boundaries, and consolidate districts. It holds the title to all school property, and may condemn or purchase sites and build and repair school buildings. County boards are required to establish at least one county high school in each county not having a four-years high school, or to unite with such a school already in existence, and to arrange for the free tuition of all high school pupils in the county. Three and two year high schools may also be provided, and all courses shall include domestic science, manual training, and elementary agriculture. The county superintendent, together with two persons appointed by him, constitute the county board of examiners. This body examines all candidates for county teachers' certificates, using uniform state questions, and reports the results to the county board of education. The county superintendent, together with the county judge and the county attorney, constitute a county school book commission, of which the county superintendent is chairman. This body meets, examines the books submitted to the State School Book Commission in response to its advertisement and reports its choice. A book to be adopted must receive a majority vote of the county school book commissions, except that after three trials, the books having the largest number of votes may be adopted.

The school district law is an attempt on the part of the state to do away with some of the evils of the district form of school government, and is an approach toward the county form of school government. The number of trustees for each school district has been reduced to one, holding office for two years, and he is a member of a subdivision board of trustees. Each trustee is required to supervise the school or schools of his subdistrict, compile an annual school census, and report in writing to his division board. The division boards elect the teachers for the different schools, and have general oversight of the schools. Graded school districts, levying a special school tax for graded schools, may be established by petition and affirmative vote of the people. Such districts may elect their own boards of trustees, who possess about the same powers as boards of trustees for county subdivisions, and who report to the county superintendent of schools. Cities similarly enjoy special privileges, and

report to the State Superintendent direct. Graded school districts and cities receive their quota from the state school fund, but are exempt from the county school tax levied, if they levy a local tax of twenty cents for schools. The colored race may establish graded schools on the same terms as the white race, that is, each race pays for its own. Money and taxes for ungraded common schools are distributed without reference to race or color.

**School Support** — The State was admitted before the policy of making land grants for education was begun by the national government and hence received no public land for schools. The permanent school fund of the state is largely nominal, being in the form of bonds of the commonwealth, the interest on which is raised, in part, by direct taxation. The state money is apportioned to the counties (for the districts) and cities on the basis of the number of census children, six to twenty years of age, though in making the apportionment, no subdistrict is considered as having less than fifty census children. A county school tax of not over twenty cents on the \$100 and a county poll tax of \$1 may also be levied by the fiscal courts of the county, on the recommendation of the county board of education, but all cities and special tax districts which levy a local tax of twenty cents are exempt from this so-called county tax. Any subdistrict may levy a local tax up to twenty-five cents, but very few do. Graded school districts, where established by either race, may levy a local tax up to fifty cents and a local poll tax up to \$1.50. County high schools are maintained out of the county school tax.

**Educational Conditions.** — Of the total population about 87 per cent are white and 13 per cent are negroes. Only about 3 per cent of the population are of foreign birth. The state is largely rural and agricultural, 78.2 per cent of the total population living in rural districts, and about 18 per cent living in cities of over 8000 inhabitants. The illiteracy in the state in 1900 was very large, 16.5 per cent of the total population over ten years of age being illiterate. The percentage of illiterates among the whites was 12.8 per cent and among the colored people it was 40.1 per cent. This has been materially reduced since 1900.

In material conditions, the schools of the state, outside of the cities, make little better showing. Schoolhouses and school repairs are still provided largely by local subscription, though the number built by voting bonds has increased within recent years. As late as 1907 11.5 per cent of the schoolhouses of the state were log houses, and but 1.5 per cent were of brick or stone. Only 77 per cent of the schoolhouses are reported as being supplied with suitable desks and blackboards; 41 per cent as being supplied with globes, maps, and charts; while the average value of furniture and apparatus was but \$57 per schoolhouse, and the

## KENTUCKY, STATE OF

average value of schoolhouses and grounds was \$365 each. In the twenty-five cities of the state good school buildings are provided.

The school system of the state is as yet imperfectly organized, and the elementary school system is only imperfectly developed. The establishment of graded schools will help to round out the elementary school work, though these can be organized only in the more thickly populated districts, and few can be organized for the negro race under the present laws. In 1906-1907 there were 165 white and thirteen colored graded schools in the state. No statistics as to length of term of the county schools are available, other than that only 8 per cent of the schools are maintained for more than six months. No statistics are available to show the number of teachers who have had any form of professional training, but the number is not large.

**Teachers and Training** — Up to 1906 the preparation of white teachers for the state was made in private institutions, but in that year two state normal schools for white teachers, the eastern and the western state normal schools, were established by the legislature, and both of these have done good work during the short time they have been in existence. For the education of colored teachers the state has for some time maintained the Kentucky Normal and Industrial Institute for colored persons, an institution offering normal, agricultural, mechanical, and domestic instruction.

**Secondary and Higher Education** — Graded schools have been organized in many of the towns, but a high school system for the state is only now in the process of development. The new high school law of 1908 provides that the county boards of education, by 1910, must establish one or more county high schools in each county not having a first-class (four-year) high school, and directs the county boards to provide for the free tuition of all pupils completing the course of study in the elementary schools of the county. The law provides for the establishment of two, three, and four year high schools, and provides that domestic science, manual training, and elementary agriculture shall form a part of all high school courses of study. The funds for providing these schools are rather meager, as all county boards of education are allowed to levy a county school tax of only twenty cents on the \$100 for all purposes, and out of this fund the high schools must be maintained. With the awakening of the state in all matters relating to education which is now under way, a good system of secondary schools may be expected to be developed before long.

In higher education the state helps to maintain the State College of Kentucky (*qr*), located at Lexington. This institution owes its origin to the Land Grants of 1862, the institution opening in 1866. In 1880 a state tax of one cent was imposed for the benefit of the

## KENTUCKY WESLEYAN COLLEGE

college, and in 1904 an additional appropriation of \$15,000 per annum was made. The institution is a combined agricultural and mechanical college and a school of science and arts. The state also maintains the Kentucky Normal Industrial Institute for Colored Persons, located at Frankfort; two normal schools for white teachers, the Kentucky Institute for Feeble-minded Children at Frankfort, the Kentucky School for the Deaf at Danville, and the Kentucky Institution for the Education of the Blind at Louisville. Ten colleges for men or for both sexes, and nine for women, mostly denominational, supplement the one state institution in providing collegiate instruction for the young people of the state.

E. P. C.

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**KENTUCKY, STATE UNIVERSITY OF, LEXINGTON, KY.** — A coeducational institution founded in 1865 as a Land Grant college as a constituent member of Kentucky, now Transylvania, University. In 1878 the agricultural and mechanical college was separated from the university and in 1880 was moved to Lexington. By an act of the General Assembly the style and title of the institution was changed to State University. At present provision is made for departments of agriculture, mechanic arts, and military science; an experiment station is maintained; and instruction is offered in sciences and classics. The entrance requirements are about fifteen units. The university embraces an academy, colleges of arts and science, agriculture, civil, mechanical, and electrical engineering, law, and a school of education. The college of law, to which after 1911 only candidates who can be admitted to the freshman year of college work will be admitted, gives a three-year course leading to the degree of LL. B. The School of Education courses are accepted by the state for teachers' certificates of different grades and duration. There were enrolled in 1909-1910, 721 students, of whom 427 were collegiate, 46 law, and 155 in the academy. The faculty consists of 65 members.

**KENTUCKY WESLEYAN COLLEGE, WINCHESTER, KY.** — A coeducational institution founded in 1863 and under the auspices of the Kentucky Conference, Methodist Episcopal Church, South. It provides preparatory and collegiate courses. The requirements for admission are fifteen points of high school work. Courses are offered leading to the A. B. and B. S. degrees. The A. M. degree is conferred after a year's work in resi-

dence and the presentation of a thesis. The faculty consists of nine professors.

### KENYON COLLEGE, GAMBIER, OHIO.

— Founded in 1824 as the theological seminary of the Protestant Episcopal Church in the diocese of Ohio. The present title was adopted in 1891. Candidates are admitted by certificate from high schools or by examination, the requirements being fifteen units. The college courses are divided into four groups, the classical course leading to the A B degree, the philosophical course leading to the Ph B degree; the scientific leading to the B S and the literary leading to the B L. The faculty consists of twenty members.

**KEPLER, JOHN** (1571–1630) — One of the great astronomers, born at Weil in Wurttemberg. After attending various schools, he entered the University of Tübingen and studied classics and theology. He found an opportunity to study the Copernican system privately and devoted himself to the subject. In 1594 he was appointed to the chair of mathematics at Gratz, and had sufficient time to pursue his astronomical studies. In 1600 he became Tycho Brahe's laboratory assistant and in 1601 succeeded his master as imperial mathematician and astronomer. His first work which attracted attention was the *Mysterium Cosmographicum* (1596). In 1609 he published *Commentaries on the Motions of Mars*, the study of which had been assigned to him by Tycho Brahe. In this work he established two important rules: (1) of the elliptical movement of planets, (2) that the line joining the planet to the sun sweeps out equal areas in any two equal intervals of time. In 1612 Kepler became a teacher at Linz and continued his investigations. Between 1618 and 1621 he published: (1) *Epitome of the Copernican Astronomy*, in which his two previous laws are applied to other planets besides Mars, the distance from the earth to the sun is given with greater accuracy than by previous writers, the eclipses of the sun and moon are discussed and explained. (2) *Harmony of the World*, in which he formulated his third important rule that "The squares of the times of revolution of any two planets (including the earth) about the sun are proportional to the cubes of their mean distances from the sun." It was also in this book that he discussed the "music of the spheres," and gave a musical notation for each of the planets. (3) *Comets*, which included an account of the comet later known as Halley's Comet. In 1627 he published the *Rudolphine Tables* which were based on the observations made by Tycho Brahe and himself. While Kepler is ranked among the leading astronomers, much of what he wrote is of little value; of a mystical temperament, he often gave himself up to wild speculations, allegorical interpre-

tations, and astrological explanations and predictions. On the whole, however, his method of work was scientific, for however fanciful his hypotheses may have been, he was untiring in correcting these by thorough observation and investigation.

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**KERLIN, ISAAC N** (1834–1893) — Educator of feeble-minded and backward children. He was educated in the schools of New Jersey and the University of Pennsylvania, taking a medical degree in the latter institution in 1856. He engaged in teaching feeble-minded children, and from 1858 to 1892 he was superintendent of the Pennsylvania School for Feeble-minded Children. He was the author of a number of papers on the care and training of feeble-minded and idiotic children. W. S. M.

See FEEBLE-MINDEDNESS

**KERSEY, JOHN** (1616–1690?) — Teacher of, and writer on, mathematics. In 1650 he was teaching in Covent Garden, London, and afterwards he removed to the Sign of the Globe in Chandos Street, St. Martin's Lane, London. In 1650 he published *Arithmetique Made Easie, or a Perfect Methode for the true knowledge and practice of Natural Arithmetique, according to the ancient vulgar way, without dependence upon any other Author for the grounds thereof*. By Edm. Wingate, Esquire. *The Second Edition, Enlarged (at the request and with the approbation of the Author with divers chapters)*. By John Kersey, Teacher of the *Mathematiques*. The late Professor Augustus de Morgan described Wingate as "one of the very best of the old writers on arithmetic." Kersey is also associated with Edward Cocker's *Decimal Arithmetic*, 1684. On the title page it is stated "Whereunto is added also his Algebraical Arithmetic according to the Method used by Mr John Kersey in his Incomparable Treatise of Algebra." This had been published, the first volume in 1673 and the second in 1674, as *The Elements of the Mathematical Art, commonly called Algebra*. This work received the commendation of some of the best mathematicians, and became for some time the standard work. The Prospectus of John Kersey, which appears in the 1650 edition of Wingate's *Arithmetic*, shows the mathematical teaching in probably the best mathematical school of the times. F. W.

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**KEUKA COLLEGE, KEUKA PARK, N Y**

— A coeducational institution chartered in 1892 as a member of the University of the State of New York. The first class was graduated in 1900. It is under the auspices of Free Baptists and Disciples of Christ. It maintains a preparatory institute, a college, and a department of music. The admission requirements are about fourteen units. The Regents College entrance diploma is accepted. The college offers courses leading at the end of four years to the A B and B S. degrees. Of the enrollment of 107 students in 1910-1911, twenty-seven were in the college. The faculty consists of fifteen members.

**KEY.** — See **MUSICAL TERMS.**

**KHAYYAM.** — See **OMAR KHAYYAM.**

**KHOWARAZMI** — See **AL-KHOWARAZMI.**

**KIDDLE, HENRY** (1824-1891). — School superintendent and textbook author. He was principal of the first school established by the New York Public School Board (1841-1848). He was assistant superintendent of schools of New York City, under Samuel S. Randall (*qv*) from 1856 to 1870, and city superintendent of New York from 1870 to 1879. He was the author of textbooks in astronomy, physics, and grammar, of a series of school readers, and of several manuals for teachers, and was co-editor with Alexander Schem of a *Cyclopedia of Education*.  
W S M.

**KIEL, THE ROYAL CHRISTIAN-ALBRECHT UNIVERSITY OF**

— Founded by Duke Christian Albert of Holstein-Gottorp in 1665, the plans for its establishment dating back to the closing days of the Thirty Years' War, while the imperial decree had been secured as early as 1652 from Emperor Ferdinand III by Christian's father. The institution was opened under the most promising auspices, four faculties with a teaching staff of sixteen professors attracting no less than a hundred and forty students at the very beginning, a number which rose to almost nine hundred during the first decade of the university's life. After the death of the founder, the university was seriously impoverished as a result of the struggles which continued uninterruptedly between the house of Gottorp and the kingdom of Denmark. The history of the university at this time reads like that of an eighteenth-century American college, for we learn of an instructor who lectured on history, poetry, elocution, natural philosophy, politics, mathematics, and physics. But the attendance during the winter semester of 1762-1763 had shrunk to three students. Brighter days were in store for the university, however, for at this time the duchies of Schleswig and Holstein were reunited under Danish rule, and quiet was restored. In 1768

King Christian VII issued a mandate in accordance with which all residents of Schleswig-Holstein, who pursued university studies and looked forward to a career in their native land, were compelled to spend four semesters at the University of Kiel. Even under Danish rule the university continued to reflect German intellectual traditions and ideals, and politically, too, there was a strong sentiment among the faculty in favor of a reunion of the duchies with Germany. This pro-German attitude came to a head in 1848, when several of the professors sided with the duchy in its attempt to throw off the Danish yoke. As a result eight members of the faculty were dismissed after the disturbance had been quelled. After 1866 the university flourished under Prussian rule, in 1876 a new lecture hall was built, which was enlarged in 1902, while a library and a group of institutes and laboratories have been erected on the University hill. With these improvements in equipment, and with the growing importance of the city as a naval base, the attendance of the university has grown steadily of late and is still increasing, the summer enrollment being larger than the winter registration on account of the charming location of the city. The faculty of philosophy includes departments of agriculture and veterinary medicine, while the faculty of medicine makes provision for the study of dentistry and maintains, among others, a hygienic institute and a clinic for nervous and mental diseases. A student union, the Seeburg, situated on the shore of the bay, and, with the exception of the Palæstra Albertina at Königsberg, the only one of its kind in Germany, has recently been completed. The library contains almost 300,000 volumes and over 25,000 manuscripts. The annual budget of the university amounts to approximately \$450,000. Among prominent former teachers of the university may be mentioned Von Jhering in law, Stromeyer and Cohnheim in medicine, Pfeiderer in philosophy, Dahlmann, Droysen, Waitz, and Von Treitschke in history, Curtius, Mullenhoff, and Möbius in philology, Hertz in physics, and Eichler in botany. Klaus Groth, the famous Low-German (*Plattdeutsch*) author, was a docent at Kiel for several years.

The faculty is composed of 75 professors and 64 docents. In the winter semester of 1893-1894 Kiel ranked nineteenth in attendance among German universities, but by 1911-1912 it had advanced to the sixteenth position. In the latter year there were enrolled 1861 students, of whom 75 were auditors, the matriculated students being distributed as follows: Philosophy 708, medicine 506, law 320, theology (Protestant) 52.  
R. T., Jr.

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**KIEV, UNIVERSITY OF** — See RUSSIA, EDUCATION IN

**KILDARE PLACE SOCIETY.** — See IRELAND, EDUCATION IN.

**KINÆSTHETIC SENSATIONS** — The sensations which arise from moving the members or from lifting weights and similar experiences are known as kinæsthetic. It has been shown that there are sense organs in the muscles and tendons and in the tissues about the joints, and it has also been shown that the sensations of movement and the others of this group disappear or are weakened whenever these sense organs are anæsthetized, or when the posterior roots of the cord through which their impulses are transferred to the brain are destroyed, as is the case in the disease known as tabes. It is demonstrated that the kinæsthetic sensations arise from the sense organs in muscle, tendons, and about the joints

W. B. P.

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**KINASTON or KYNASTON, SIR FRANCIS** (1587–1642) — English scholar and poet, of a Shropshire family. He was at the University of Oxford 1601–1604, and also went to Trinity College, Cambridge, and took his M.A. there in 1609. He was called to the bar at Lincoln's Inn in 1611. In 1635 Kinaston published a Latin verse translation of two books of Chaucer's *Trilus and Cressida*. The object was to familiarize foreign as well as English readers with Chaucer's subject matter and is an excellent indication of the position of Latin at the period for such a purpose. Educationally, Kinaston is still more important on account of his project in 1635 to convert his own house in Bedford Street, Covent Garden, London, following Sir Thomas Gresham's (*q.v.*) example, into a college, which he agreed to furnish with books, manuscripts, musical and mathematical instruments, paintings, statues, etc., as well as charts, experiments, secrets, and demonstrations. He drew up *The Constitutions* of the college, which he termed the *Musæum Minervæ* (printed 1636). The normal course was to be for three years and a half, though it could be prolonged to seven years. It was to be confined to gentlemen. The object of the institution was to prepare the nobility and gentry with all necessary instruction (*e.g.* in languages) before undertaking foreign travel, which was then a part of educational equipment. The officers were: I. The Regent (in the first instance Kinaston himself), who was to "see performed" — Heraldry, Blazon of Coats and Arms, practical knowledge of Deeds and Evidences, Principles and Processes of Common Law, Knowledge of

Antiquities, Coins, Medals, Husbandry, etc. II. The Doctor of Philosophy and Physic III. The Professor of Astronomy who was to teach Astronomy, Optics, Navigation, and Cosmography. IV. The Professor of Geometry to teach Arithmetic, Analytical Algebra, Geometry, Fortification, and Architecture V. The Professor of Music to teach skill in singing and music, to play upon Organ, Lute, Viol, etc. VI. The Professor of Languages for Hebrew, Greek, Latin, Italian, French, Spanish, High Dutch VII. The Professor of Defence, to impart skill at all weapons and wrestling.

Other subjects to be taught in the *Musæum* were Riding, Dancing and Behavior, Painting, Sculpture, Writing. Further, Kinaston intended to have attached a school for "the young gentlemen whose parents are desirous to have them brought up in the *Musæum* from their first years." As much as possible all the subjects were to be treated "*by demonstration and experiment*." Every year each professor was to give some rarity to the library from his own branch of learning.

It was provided in one of the regulations that opportunities should be taken by pointing to examples of the leaders in their own time and of their own ancestors to train the scholars of the institution to serve as "an example, help, reason, and happiness" to their inferiors. This project fell through on the death of Kinaston in 1642. F. W.

See ACADEMY, COURTESY; GENTRY AND NOBLES, EDUCATION OF.

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**KINDERGARTEN, THE** — An institution for furthering the systematic development of children below the school age by the organization of their natural play instincts in accordance with the principles upon which development is based. The name, which signifies a children's garden or garden of children, was selected by its founder, Friedrich Froebel (*q.v.*), because it expressed the idea which he wished to convey, of development directed by a knowledge of the organism to be developed, and aided by the selection of a right environment. There is another aspect of the kindergarten, however, — its social aspect, — of which this name gives no suggestion. From this standpoint it has been defined as "a society of children engaged in play and in various forms of self-expression, through which the child comes to learn something of the values and methods of social life without as yet being burdened by its technique." These widely differing definitions indicate the complexity of the institution.

The kindergarten was the product of Froebel's mature years, since he had been a teacher

for nearly a quarter century before the idea of such an institution came to him. It is with the kindergarten that his name is chiefly associated, however, and upon it that his fame will ultimately rest. He himself considered the evolution of the kindergarten as the crowning achievement of his educational career, the supreme effort of his creative genius. This was due in part to the fact that he considered it the true foundation for effective school work and therefore the right beginning of all education, and in part to the fact that it embodies as in a nutshell the aims, means, and methods of education as he conceived it.

**Evolution of the Kindergarten** — The doctrines which the kindergarten embodies were derived from many sources. While Froebel was still a student at the University of Jena, he came into contact with the idealistic philosophy of which that university was the center, and by later study he made it his own. That philosophy interpreted the universe as an organic whole developing by means of a self-developing spiritual principle, and man as a part of that whole, whose end is to realize himself as one of its members by means of his own self-activity (*q n*). It interpreted the institution of society as expressions of man's spiritual nature, and held that that spiritual development of the individual could only be effected by participation in them. These views led Froebel to form certain important educational conclusions, — that education is in reality a process of development, that because man is spiritual and therefore creative, his development must be effected by means of creative self-activity, that since his spiritual development is achieved by participation in the organized life of his fellows education must be social, and that the best agency for his development during the early years is the child's own characteristic form of activity, play. All these doctrines Froebel had accepted and applied in his work with children of the customary school age for many years. The idea of an institution for young children in which play organized in accordance with these principles should be the sole educational agency did not occur to him until he was forced to consider the needs of a group of young children in an orphanage in Burgdorf, Switzerland, to the directorship of which he had been appointed in 1835. It was toward such an institution that his thought had been logically tending for some years, and it is not surprising that when the idea dawned upon him, he should have given several years to its elaboration.

In the institution which Froebel conceived he wished children to play with the freedom which they feel in the home, and the person in charge to organize and interpret their play experiences in the spirit of the mother but with an insight that the mother does not ordinarily possess. The carrying out of his idea, therefore, meant that the child gardener must be

able to meet the children upon their own plane and lead them to a higher one by guiding their natural play impulses. Froebel saw, however, that, if play was to become an educational agency in this sense, it must be organized in several respects. The customary forms of play needed to be analyzed and classified with reference to the ends which each tends to accomplish in the child's development, and a progressive series of play instrumentalities needed to be devised by which that development could be effected. More important than even these was the determining from a careful study of children what the leading play interests are during the years for which such a form of education was intended, and how each may best be organized. In providing for the child's physical development by means of play, for example, his physical status during the years between four and six, and the nature and degree of development possible to him, must be determined before plays and games for the furthering of that development could be devised. A like study was needed before the plays and games that tend toward social cooperation or toward constructive or æsthetic effort could be created.

Although the knowledge required for such a study of children's play needs was inadequate at this period, Froebel undertook the organization of the play instrumentalities which his institution called for. These instrumentalities fall naturally into two groups, those in which no material is needed, and those in which the idea requires a medium for its expression. In the first belong the games of social cooperation and control. These are mainly of two kinds, — the dramatic games whose purpose is to represent the activities of groups of social workers, such as the farmer, the carpenter, and others, and the games of skill by means of which the qualities needed for successful social effort are cultivated. The instrumentalities which Froebel invented for the progressive development of the children's constructive and æsthetic power are the materials known as the "gifts and occupations." He had employed modeling, weaving, sewing, etc., with older children, and it was with the adaptation of these to young children that he now began. He saw, however, that although progressive exercises in each provided for continuity in separate lines, the relation between them, which he considered necessary, was lacking. He recognized the need, therefore, of a principle of connection, not alone to bind together the various forms of creative expression, but to furnish a basis for expression of any kind. This gave him the idea of an organized series of playthings from which children should gain a progressive series of sense impressions. This was the root idea of the kindergarten gifts.

For the first of these he selected a set of balls of the six standard colors, for the second, the three fundamental forms, and for the several

immediately following, cubes differently divided. From these he wished the children to gain, progressively, ideas of color, form, number, dimension, etc., and the ideas thus gained he intended them to work out creatively by means of plastic material. The gifts as an organized series, therefore, furnished the central principle which bound the several forms of play material into an organic whole. The organization of a system of instrumentalities which embodied the idea of progressive development that he wished to see effected in the child was therefore an important step in the evolution of the kindergarten itself. By the establishing of unity in the material for play, Froebel felt that he had made it possible to bring about the higher unity required in true educational effort, — that between the child and the means by which his development is to be effected. There are additional reasons, however, for Froebel's choice of the objects designated as gifts. According to the thought of the period, children have foregleams of great principles in the form of "anticipations" and "premonitions." These principles, it was believed, could be brought to their consciousness by play with the objects that symbolize them. The gifts are, therefore, not alone the means of conveying fundamental sense impressions, nor yet agencies for the exercise of creative self-activity; they are symbols of universal truths for children to absorb. By play with the first gift, Froebel believed that they would become conscious of the principle of unity, and by play with the second of the principle of mediation of opposites. So important did he consider this second principle that he not only embodied it in a gift, but made it the principle of method in the gifts and occupations alike. This feature of the gifts occasioned no little criticism when the kindergarten doctrines were brought to the test of modern thought, as will be seen later.

**The Kindergarten in Practice** — With the organization of the materials for play completed, the institution which Froebel had conceived could come into existence. As has been stated, the conception of such an institution came to him in Burgdorf, Switzerland, in 1835. As an objective fact, it came into existence in Blankenburg, Germany, in 1837. It is because the name "kindergarten" was not adopted until 1840 that the latter year is given as the date when the first kindergarten was established. Blankenburg was a city of 2000 inhabitants, about two miles from Keilhau, the scene of Froebel's earlier labors. It afforded many opportunities for the gardening and nature excursions upon which Froebel laid great stress. A building adapted to the needs of the experiment was difficult to find, however, and the little company of children met in a disused powdermill. In spite of the unattractive surroundings, the new institution was at once successful. Froebel entered into a

play with the children so completely, and the materials which he presented were so attractive, that the children were carried away with enthusiasm, and never realized that their play was being directed. The exercises were simple and informal, but similar in general character to those of the kindergartens at present. The children formed a circle upon entering and sang songs of greeting and thanksgiving. Then came a period of play with the organized materials in which the children's experiences were taken as a point of departure, and given meaning and relation by Froebel. After this the children marched to the gardens, the woods or fields, or the playground out of doors. In both the games and the nature observations, the children's immediate interests formed the starting point, and from these they were led naturally to games or observations controlled by those in charge. After the games or out-of-door period, came another period of play with the organized materials, and sometimes stories were told. From all accounts, Froebel indeed "lived with the children." One writer says of these first kindergartens: "Although the kindergarten system was then still in the making, its spirit was there in a freshness and wholeness that can hardly have been surpassed since."

The kindergarten has made great progress since Froebel's day, although the play program which he devised has not been materially altered. The doctrines which the kindergarten embodies are more clearly comprehended at the present; the agencies which it employs have been greatly improved; the program of exercises has been elaborated; and the kindergartners are better prepared to realize its ideals. A more fundamental knowledge of the child's nervous and muscular development has shown the need of a larger material and more active games than those which Froebel planned. A clearer insight into his modes of thought has created stories suited to his comprehension yet tending toward the formation of true literary tastes, and a better acquaintance with the facts of his musical development has brought into existence songs that are childlike in thought and musical feeling, but in harmony with the fundamental principles of musical art. The kindergarten song, picture, and story are recognized to-day as the best that the arts which they represent can furnish.

The program of exercises in the kindergarten has changed somewhat since Froebel's day, although not wholly for the better. There are but few kindergartens at present in which the out-of-door work receives the attention which Froebel gave it or which its importance merits. Many other phases of the kindergarten program have been elaborated. The opening period, originally devoted mainly to songs, now generally includes more or less organized conversation upon some phase of the children's experience. A period is frequently





The Original Kindergarten Circle at Blankenburg



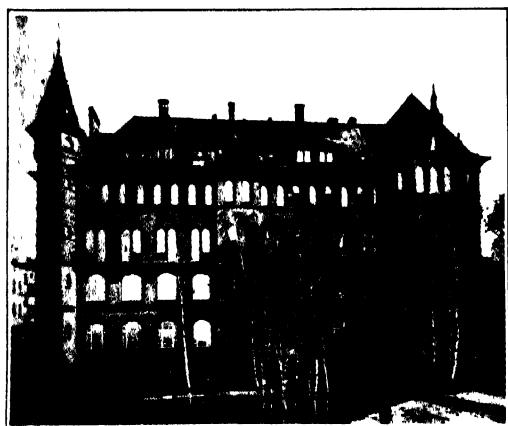
Gardening in an American Kindergarten



A Public School Kindergarten at Work



Kindergarten Circle in an American Public School.



The Pestalozzi-Froebel House at Berlin.



The Original Kindergarten House at Blankenburg.

devoted to musical interpretation, voice work, or picture interpretation, but the games, and gifts, and occupation exercises still receive the greater share of attention. In many kindergartens the gift and occupation exercises overshadow everything else.

The work of the kindergarten has been much criticized of late as being too formal to be in accord with the principles of child development. The foundation idea of the kindergarten is that of development, and formal work is therefore out of harmony with its fundamental conception. There is but one phase of kindergarten procedure which has a tendency toward routine, — the work with the gifts and occupations. Froebel devised these as one of several means to the child's development, apparently of no greater significance than the games or the garden and nature work. As time passed, the balance between these several agencies became disturbed, some being neglected and others overemphasized. The out-of-door work has been almost eliminated, as has been stated. The work with the gifts and occupations, on the contrary, has received an inordinate emphasis, for reasons given later. But to select for emphasis the one among the several agencies that tends toward the formal and the mechanical is to give the work a direction that its founder could not have intended, since it is out of harmony with the fundamental idea which the kindergarten embodies. It is the undue emphasis that has been placed upon the kindergarten material that has caused the work of the kindergarten to become stereotyped and formal. It is against this feature of its work that the "liberal" movement, discussed elsewhere, is directed.

**Status of the Kindergarten in Different Countries.** — The progress which the kindergarten has made during the seventy or more years of its existence has surprised even its friends. It has found its way to every continent and its literature has been translated into the world's leading languages. It was introduced into almost every country in Europe during the twenty years following Froebel's death in 1852, by his most distinguished pupil, the Baroness von Bulow. In some of these countries the movement has made little or no progress, and efforts in its behalf are unorganized at the present time; in others the kindergarten is replacing the infant school (*q. v.*), which had been organized to meet the needs of the pre-school period before the kindergarten came into existence, and in others it has become an organic part of the school system. In the countries of northern Europe the existing kindergartens are mainly private or charitable. They have existed in Holland since 1857 as a result of the Baroness von Bulow's influence, and may now be found in all the large cities. Institutions for kindergarten training have been established in Leyden and Rotterdam. The state, however, does not

concern itself with these. Denmark sent students to Dresden in the early seventies to be trained by the Baroness von Bulow, that they might introduce the kindergarten into their own country. As a result, the movement has had a steady growth, and kindergartens may be found in the larger cities. Copenhagen has as many as fifty, and a well-equipped training school. There are no kindergartens in Norway and very few in Sweden. In Finland, however, there are thirty or more, and a training school at Helsingfors. Russia sent students to Germany for training as early as 1861. There is a training school at St. Petersburg and some kindergartens in the large cities.

In Spain and Portugal, too, as well as in some of the countries of southeastern Europe, the kindergarten has but a slight foothold. A kindergarten was opened in Oporto in 1879, and at about the same time Spain sent several students to Dresden for training. Upon their return they established some kindergartens and a training college at Madrid. The king of Spain was trained by one of these kindergartners. In the early seventies several wealthy Greek women went to Dresden for training and upon their return established kindergartens in Greece. Kindergartens have also been opened in Bulgaria, Roumania, and Servia, but in all of these countries active effort in behalf of the kindergarten is slight. In many European countries the kindergarten has had a greater growth and has exerted a marked influence. In Germany, however, but little recognition has been given to it in spite of the effort of the Baroness von Bulow and other devoted friends of the cause. The centers of kindergarten influence in Germany have been Hamburg, in which Froebel's widow settled in 1854 to take up the work of kindergarten training, Dresden, which the Baroness von Bulow made the chief scene of her labors, and Berlin, in which city Froebel's niece and co-worker, Madame Schrader, built up the well-known Pestalozzi-Froebel Haus. As a result of these and other efforts the kindergarten is gaining strength in Germany, although it is not likely that it will be made a part of the system of public education. At the present time, kindergartens are to be found in all the large cities, supported in whole or in part by municipal grants. The *Bewahranstalten*, or caretaking institutions for children below the school age had gained favor in Germany before the kindergarten was conceived, and such institutions share with the kindergarten in public favor. In 1902 it was estimated that there were over 800 kindergartens and *Bewahranstalten*, in which 79,000 children were enrolled.

In Switzerland kindergartens have not been made a part of the school system, but their work is recognized as the true basis for that of the school, and the private institutions are rapidly being transferred to municipal authority. As early as 1876, 206 private *crèches*

were converted into kindergartens under state control in Geneva, under the able leadership of Madame de Portugall. In 1906 there were forty-seven municipal kindergartens in Zurich, and seventy-three in Basel. There are also several well-equipped training colleges.

In Italy kindergartens are private and communal, although they receive grants from the general government. Kindergartens have been established in at least one fourth of the communes, Milan alone in 1908 having sixty-five under communal, and eleven under private, control. Since children are allowed to enter at the age of two and a half years, many of the so-called kindergartens are in reality *crèches*, or day nurseries, in which the educational features of the kindergarten are wanting. The lack of trained kindergartners is the weakness of the Italian kindergartens. There are some good training courses in connection with the normal schools, and excellent private training schools in Naples, Verona, and Rome. In the last named city is the Royal Froebel Institute, which received an endowment from Victor Emmanuel II. (See MONTESSORI METHOD.)

England and France are the principal European countries that have retained the infant school instead of adopting the kindergarten. But the Froebelian doctrines have had a marked influence upon the infant schools of England, and the movement in that country is of great interest. The first kindergartens were opened in London and Manchester in 1854, as a result of the Baroness von Bulow's effort. Many of the leaders are known to kindergartners the world over. They have directed their efforts, not to the establishing of kindergartners, but to the modification of the methods employed in the infant schools (*q. v.*). Official recognition of Froebelian principles was given in the Education Department's Circular (322) on the *Instruction of Infants* (1893). This necessitated the organization of courses of instruction for the teachers, the establishment of courses in the training colleges, and the inspection of the work done. In 1896 there were thirty or more institutions that gave kindergarten instruction, and ten kindergarten colleges proper. This has proved a task of some magnitude in view of the fact that in 1900 there were enrolled in the infant schools of England 622,494 children below the age of five years. Of the results, Mr. R. E. Hughes says in his *Making of Citizens*, "In the best English infant schools a profound revolution has taken place during recent years. Formal lessons in the Three R's have disappeared and the whole of the training of the little ones has been based on the principles of the kindergarten as enunciated by Froebel. Much of the old routine still remains, nevertheless there is no part of the English educational system so brimful of real promise as the work that is being done in the best Infant Schools."

(See ENGLAND, EDUCATION IN, INFANT SCHOOLS.)

The Baroness von Bulow's efforts in France in 1855 resulted in many reforms in the infant schools of that country. Their reorganization upon a Froebelian basis continued for several years, but as the result of the feeling aroused by the Franco-Prussian war, everything German, even the name kindergarten, was rejected, and progress in that line came to an end. In 1906-1907 the *Écoles Maternelles* enrolled 651,955 children between the ages of two and six years. Their work is well organized and their equipment fair, but their educational work leaves much to be desired. (See FRANCE, EDUCATION IN.)

If the real purpose of the kindergarten is to furnish the right beginning for the work of the school, that purpose is best realized in Belgium and Austria-Hungary, since these countries have adopted the kindergarten as a part of the school system. Belgium had a system of infant schools for children between the ages of three and six years, but in 1857 the Baroness von Bulow convinced the Belgian authorities of the wisdom of reorganizing these on a kindergarten basis, and the *Écoles Gardiennes* or *Jardins d'Enfants* are now in effect true kindergartens. In 1905 there were 2771 such institutions in the country, which were attended by 258,149 children, one half of those between the ages of three and six in the country. In completeness of equipment, in the preparation of its teachers, and in the quality of work done the *Jardins d'Enfants* of Belgium may well serve as a model for other countries.

In Austria-Hungary infant schools had been organized before the kindergarten was invented, but the influence of Froebel began to be felt even during his lifetime, and the transformation of the infant schools was gradually effected. In 1872 kindergartens were made a part of the school system. In 1903 there were 77,000 children between the ages of three and six years in the kindergartens of Austria, and 154,000 in those of Hungary. There is also a completely organized system of day nurseries, which enrolled 152,000 children. The kindergartens of Hungary are among the best in the world and may be classed with the best Swiss and American kindergartens. The equipment is admirable and the spirit and training of the teachers excellent. There are many good training schools.

The kindergarten has gained a foothold on other continents also. Those in Asia and Africa are in the main the result of missionary effort by the leading churches of the United States. In Buenguella, Portuguese West Africa, there are kindergartens in four out of five mission stations. There is another such kindergarten in Umtali, Rhodesia. There are a few kindergartens in other parts of Africa,—in Cisambia, Bailundu, Machakos, and Cape Town.



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In Asia the kindergarten is in large measure the product of American missionary enterprise. In Asiatic Turkey there were in 1896 twenty-eight kindergartens, the outgrowth of a mission kindergarten opened in Smyrna in 1885. In India there are several kindergartens and training schools of missionary origin,—one at Lucknow, in connection with Thoburn College, and one at Sholapur. Kindergartens may also be found in Calcutta, Bombay, Cawnpore, Madras, and several other cities. There are several kindergartens in connection with missions in Burma, and at least two in China, one in Foochow, and one in Penang. In Foochow there is also a training school. In Japan the kindergarten is a conspicuous part of the missionary work. A kindergarten and training school were organized in Kobe College, one of the important centers for training of girls, in 1889, under the leadership of Miss Annie L. Howe. This has had a wonderful development. Several other training schools have been organized since that time.

In Japan, however, the kindergarten had been adopted before it became an agency in the missionary work of that country. When Japan reorganized its educational system upon a western basis in the early seventies, it sent to Germany for some one to introduce the kindergarten into its educational plan. As a consequence, a kindergarten was opened in connection with the Female Higher Normal School in Tokyo, in 1876, and the adoption of the kindergarten as a part of the public school system was provided for. In 1904 there were 185 public, and nearly a hundred private, schools. In these 24,000 children between the ages of three and six years were enrolled. In buildings, gardens, playgrounds, and in general equipment the kindergartens compare favorably with the best in America. Training work has not been adequately organized, however, and many kindergartners are not well trained. This is not surprising in view of the many difficulties to be overcome. The fact that Japan has already done so much is proof that she will do still more. The fact that the leading country of the Orient has adopted the kindergarten will insure a like adoption by other Oriental countries in the near future. (See JAPAN, EDUCATION IN.)

In Australia the kindergarten has not gained as strong a foothold as one would expect. The school system is based upon that of England and the problem is therefore that of substituting the kindergarten for the infant school, or reorganizing the latter in accordance with the principles of Froebel. The centers of kindergarten work and influence are Sydney, Melbourne, and Adelaide. Sydney stands at the head of the movement in Australia. It has a fully equipped training college, with a staff of American trained teachers. The college has about fifty students. In this city the tendency is to substitute kindergartens

## KINDERGARTEN

for the infant schools, and there are therefore several public kindergartens, as well as private ones. The Educational Department of New South Wales has become convinced of the value of kindergartens, and is establishing them in the public schools of the province wherever possible. The work in Melbourne has also been of great value. Something along kindergarten lines was attempted in the infant schools of this city as early as 1887. In 1900 the reorganization work of the infant schools upon a kindergarten basis was begun and much has been accomplished in that direction. Reforms in this direction have also been introduced in Adelaide.

In South America the kindergarten has apparently made but little progress. Some kindergartens were organized in Buenos Aires and elsewhere in Argentina in the nineties, but the training of the kindergartners was apparently very inadequate, and in 1900 all these in Buenos Aires were closed by the Board of Public Education. Miss Sara C. Eccleston, who has given kindergarten instruction in the normal school at Buenos Aires for nearly twenty years, said with reference to this that "the imitations which were permitted to flourish for a time have been a great hindrance to the advance of the system." She adds, "As there are now several members on the board who have an idea of how a genuine kindergarten should be conducted, it is to be hoped that what seems to be a blow at the system is but a means to reestablish the institutions under proper conditions." What the present status of the kindergarten in that country is could not be ascertained. In Uruguay the introduction of kindergartens was arranged for by the sending of students to Germany and Belgium for training by the government. The results of this effort made in 1890 could not be learned. In Chile some kindergartens have been opened, and some kindergarten instruction is given in the normal school at Santiago. In 1908 the government sent its leading kindergartner to the United States for observation. This will doubtless give the movement in that country an impetus toward kindergarten effort. In Brazil one or two kindergartens have been established as a result of missionary effort in the United States. In Mexico the kindergarten situation is not unlike that in the countries of South America. There are ten or more kindergartens in the City of Mexico, and a few in other parts of the country. Here, too, the training of kindergartners is very inadequate, since it is only such as can be obtained by the study of kindergarten books. The attempt is being made to improve this by improving and developing the kindergarten instruction in the Girls' Normal School of the City of Mexico.

In the United States the kindergarten has found a cordial reception and its doctrines have exerted a great influence. This country

has a creditable number of kindergartens, but the success of the movement is not measured by that alone; it is measured as fully by its reorganization of the school, and the application of its principles to other fields. The first kindergarten in the United States was opened in Watertown, Wis., in 1855, by Mrs. Carl Schurz, a pupil of Froebel. During the next fifteen years ten or more German kindergartens were organized in German-speaking communities. The first kindergarten for English-speaking children was opened in Boston in 1860, by Elizabeth P. Peabody, who is usually considered the apostle of the kindergarten in the United States. In 1868 Madame Matilde Kriege and her daughter came from Germany to organize kindergarten training in Boston, and in 1872 Miss Marie Boelte, now Madame Kraus-Boelte, organized kindergarten training classes in New York City. The following year, her pupil, Miss Susan E. Blow, in cooperation with W. T. Harris (*qv*), opened the first public school kindergarten in St. Louis, Mo. The movement grew rapidly and St. Louis became one of the chief centers of kindergarten influence. At about the same time a kindergarten was opened in the German-English Academy of Milwaukee, Wis., and training courses were organized both in German and English by the president, W. N. Hailman, and his wife, Eudora L. Hailman. The first kindergarten in Chicago was opened in 1874 by Mrs. Alice H. Putman, and training work under her direction was inaugurated soon after. In 1880 four hundred kindergartens had been opened in thirty different states, and kindergarten training had been organized in ten of the leading cities. During the decade from 1880 to 1890 kindergarten associations were organized in all the important cities of the country for the promotion of the kindergarten cause. Many of these opened kindergartens in the poorer parts of their respective cities, and thus proved the value of the kindergarten to educational authorities. In consequence, kindergartens were increasingly incorporated into the school system. From 1890 on, the increase in public school kindergartens has been rapid. In 1903-1904 the *Report of the Commissioner of Education* showed that there were over 3000 public kindergartens, which were attended by nearly 200,000 children. The number of private kindergartens is supposed to be about 1500.

With the growth of the movement there has been a great increase in the number of kindergarten training schools. At first these were all private or were supported by kindergarten associations. There are at least a hundred of these at present. In addition, kindergarten training departments have been organized in more than seventy state normal schools, and nearly twenty colleges and universities. This growth has been made possible by the enactment of laws in twenty-seven states,

legalizing the expenditure of public school funds for the education of children below the legal school age. In eight states the kindergarten may be established without legislation. The kindergarten therefore has a legal foothold in all but eleven states. It has also been adopted in Cuba, in Porto Rico, and the Philippines.

The kindergarten in the United States has been the stimulus to the adoption of the kindergarten in Canada. This was the direct result of a visit made to the kindergartens of St. Louis by Mr. J. L. Hughes of Toronto in 1882, at the request of the department of education of the Province of Ontario. The result was the adoption of the kindergarten as a part of the school system in that province, Miss Ada Marean, now Mrs. Ada Marean Hughes, being appointed supervisor of kindergartens in Toronto. Before the end of the decade the other cities of the province had adopted kindergartens, and training departments had been organized in the normal schools at Toronto, Ottawa, and London. In 1905 there were 130 kindergartens in the province, which were attended by 12,000 children.

In the province of Quebec there are public kindergartens in Montreal only. The movement in this city was inaugurated in 1892, and in 1905 there were sixteen public kindergartens in the city and suburbs. There is a kindergarten training department in the McGill normal school. In other Canadian provinces the kindergarten has found less foothold. In New Brunswick there have been private and mission kindergartens since 1880, but it was not until 1910 that public kindergartens, two in number, were opened in St. John. In Nova Scotia there are three public kindergartens, and a kindergarten training department in the normal school at Truro. In Winnipeg there are only private and charitable kindergartens. The need of kindergartens in the western provinces is conceded, however, and its extension to that field is but a matter of time.

**Influence of the Kindergarten.** — The recognition which the kindergarten has received the world over is proof that it possesses exceptional educational value. Its doctrines, based upon the conception of evolution before the theory had been worked out, are in fundamental accord with modern thought, and have in recent years received signal indorsement from the evolutionary sciences. As the world's thought has been reconstructed on the basis of these sciences, the value of the kindergarten has been increasingly recognized. The critical study which it has received during recent years has satisfied educational experts that the conception of education which it embodies is essentially the true one. In spreading that conception, and in indicating the reconstruction in general education which must follow its acceptance, the kindergarten has been a

significant influence. By showing the vital interest that children take in doing, the kindergarten demonstrated at one stroke that activity, based upon the child's stage of development, forms the true basis for education. By revealing the child's delight in beauty, it indicated the value of art as an educational factor; and by illustrating the pleasure and profit that children derive from games and other forms of social cooperation it suggested a means for the child's social development that had not thus far been utilized for educational purposes. It demonstrated these truths for one period only, but from that demonstration their application to the rest could easily be inferred. The application of these truths to educational procedure beyond the kindergarten has as yet made little progress except in a few countries. Although kindergartens flourish in Germany its doctrines are wholly unrecognized in the work beyond the kindergarten. But in Belgium, Switzerland, Austria-Hungary, and Italy, these same doctrines have exerted a marked influence, not alone in transforming the infant schools, but in reconstructing that in the grades beyond. And although England has not adopted the kindergarten, a complete reorganization of the infant schools is in progress on the basis of its principles, and a reorganization of the work beyond as well. It is in the United States that the application of the kindergarten doctrines to the work beyond the kindergarten has made the greatest progress, and what follows applies mainly to that country. The fact that the elementary curriculum is being reconstructed in the United States on the basis of the child's developing powers at different periods, that subjects involving activity, such as art and manual training, are being accorded an important place there, and that games and other forms of cooperative effort are being incorporated into school life, -- all these changes are due in no small degree to the influence and example of the kindergarten.

It is not alone in the reorganization of the curriculum upon a psychological basis, however, that the influence of the kindergarten is apparent; it is discernible also in a new conception of method. Upon the old basis little was asked of the child in the educational process except receptivity. According to the new, as illustrated in the kindergarten, the child must make his contribution of self-active effort before the teacher can furnish the interpretation and guidance which constitute her contribution. On this basis, educational method is a process of interaction between the child and the teacher, in which the child contributes the impulses and interests, and the teacher the organization of these toward their educational ends. The attitude toward children which this calls for is illustrated by the kindergartner, whom the children regard as a companion rather than as a teacher. Such a

method calls for even more than sympathetic insight, it calls for a knowledge of the children's progressive development at different stages, and the means of furthering it that was not demanded of the teacher in the earlier day. That the spirit which this conception of method implies has already permeated the school in large measure is apparent. The work in art, in manual training, in music, and in language shows that the teacher seeks to secure from the children original expression, upon which she may exercise her function of guidance, for the purpose of leading them to higher levels of insight and power.

The influence of the kindergarten is apparent in still another direction. The school is organized upon a monarchical principle. Its chief virtue is obedience to an external authority. The practice of that virtue does not, however, fit children for a self-governed life among their equals. The qualities needed for such a life are acquired unconsciously in the kindergarten by participation in cooperative play. That institution is based upon the principles of democracy. It has, in fact, been called "the republic of childhood." It seeks to form correct habits of social action in children, but to do even more, -- to lead them upon the basis of their own social experiences to a comprehension of and a recognition for the need of social laws. As a result of an insight into this truth the school has recognized that the development of self-governing power in children may be made an organic part of its procedure, and that such development is quite as important an educational end as the teaching of the school arts. It is, therefore, progressively organizing its work upon a cooperative and self-governing basis, and is becoming, like the kindergarten, a miniature society in which the laws underlying social coordination and control are learned by practice.

These are a few of the more important lines in which the kindergarten has influenced general education. It is difficult to trace that influence, however, since the doctrines of Froebel have become interwoven with allied doctrines derived from other sources. Dr. Monroe says: "The Froebelian movement is characterized by an emphasis upon the importance of the child, upon his interests, experiences, and activities as the starting point and means of introduction, and by an improvement in the spirit, purpose, atmosphere, and morale of the schoolroom. Whenever the emphasis in school work is placed upon the activities of the child rather than upon the technique of the process of instruction, and whenever development of character and personality is sought rather than mere impartation of information and training of intellectual abilities, there the Froebelian influence may be recognized."

**Modern Tendencies.**—The effort to apply the doctrines of the kindergarten to general education had an effect upon the kindergarten

itself that was hardly anticipated. Upon its adoption by the school the kindergarten was brought to the test of present-day knowledge of the child's development, — a knowledge far greater than that possessed by Froebel himself.

That test revealed the fundamental truth which the kindergarten embodies, but it revealed also defects hitherto unrecognized — the result either of Froebel's inadequate knowledge of the facts of child development or of his interpretation of these facts in a manner not sanctioned by modern scholarship. The smallness of the kindergarten material and the lack of adequate activity in the games resulted from Froebel's inadequate knowledge, the symbolic basis in the gifts grew out of his belief that the children have anticipations of universal truths in advance of experience, and that they may become conscious of these by means of play with materials which symbolize them. This challenging of kindergarten theory and practice caused considerable hostile feeling among kindergartners who had thus far accepted the Froebelian doctrines without question, and considered the doctrine of symbolism as not only sound because sanctioned by rational psychology, but of especial importance. It was in fact regarded by many kindergartners as the keystone in the arch of kindergarten education and the justification for the exaltation of kindergarten instrumentalities. In time the differences between the theory and practice of those holding these different attitudes became more clearly defined and the terms "conservative" and "liberal" were adopted to designate them. The work of the two schools which have thus grown up shows considerable divergence. That of the conservative school follows quite closely the traditional lines, although it shows that the criticisms have not been without effect. In consequence the size and quality of the materials has improved in even the most conservative kindergartens; the games are better adapted to the children's physical needs, and the "occupations" are used with a better appreciation of the principles that underlie art education.

The theory and practice of the liberals has not been fully worked out as yet. They recognize the need for an interpretation of the universe such as philosophy gives as a basis for education, but they maintain that in the nature of the case no such interpretation can be final. Any interpretation implies an adequate basis of facts, and thus the inductive science alone can furnish. Although the end of education must be found in the interpretation of the facts, they agree with the educational expert in believing that the method of education cannot be deduced from philosophy but must be found in the observed facts of child life, i.e. in the sciences. Basing their method upon genetic psychology, the liberals interpret education according to Froebel, as the progressive organization of the impulses that have

educational significance, — the impulses to communicate, to dramatize, to represent, and to construct. They value the kindergarten instrumentalities chiefly because of their power to satisfy and thus to organize these various impulses, and consider that the Froebelian ideal of education has been realized when the children's responses to the stimuli of the materials have been guided to a higher plane than they could themselves reach. The liberals, therefore, use the kindergarten material "on a basis of selection and elimination rather than as a related whole whose value is lost if the charmed circle of unity be broken." Thus the whole tendency of the liberal movement is away from the formalism into which the work of the kindergarten has fallen and which has brought it into disfavor, and in the direction of that for which it was originally created, — the child's natural development. The movement has already had an appreciable effect in lessening the mechanical work against which criticism has been directed and in bringing back into the kindergarten the childlikeness that prevailed there in Froebel's own day. The liberal kindergartners believe that the reconstruction of kindergarten thought and practice, which they are attempting to effect, will not only make the kindergarten a more perfect instrument for its mission to the world's little children, but a more perfect one likewise for the dissemination of the doctrines which it embodies, — the doctrines of the new education. N. C. V.

See FROEBEL, FRIEDRICH, and articles on the various National Systems of Education; also INFANT SCHOOLS, INFANT EDUCATION

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**KINDERGARTEN AND THE ELEMENTARY SCHOOL.** — See KINDERGARTEN.

**KINDERGARTEN, HYGIENE OF THE**

— The physical characteristics of the child of three to six are such that the primary aim of the kindergarten should be healthful development and protection from disease. Not only is the child at this period growing rapidly and its brain undeveloped, but its organism is poorly protected from contagious disease. The constituents of the blood are different in case of the child and in case of the adult. The number of white blood corpuscles in the blood, whose function is to destroy invading germs, *i.e.* the leucocytes with bactericidal power, according to some investigators, is much less. In other ways the child's protection seems to be inferior. Experiments upon animals have shown that young animals are likely to be more susceptible to contagion than mature animals, and the statistics of the ordinary children's diseases show that most of them occur in the early years of childhood. The mortality, also, is usually greater in the early years. It has been estimated that more than 90 per cent of the mortality from the ordinary children's diseases, scarlet fever, diphtheria, measles, and whooping cough, occurs before the age of ten. (See **CONTAGIOUS DISEASES, MORTALITY AMONG SCHOOL CHILDREN**.)

Most of these diseases not only occur more frequently, but are more fatal in the early years. Infantile paralysis is perhaps the only marked exception. In case of this disease it is said that, while children are more frequently attacked, it is more fatal to adults. Extended studies of measles have given emphatic evidence of the importance of protecting children at the kindergarten age. Studies in Munich and Graz indicate that the mortality among children between two to five years of age is between 26 per cent and 5 per cent, while among children from five to ten years of age it is only from .1 to 4 per cent. In other words, if an epidemic of measles occurs in the kindergarten, out of a thousand cases forty children are likely to die, while, if it is possible to postpone the epidemic, even to the primary school age, there are likely to be only three or four fatal cases in a thousand. (See **CONTAGIOUS DISEASES**; and articles on separate diseases, *e.g.* **COLDS; DIPHTHERIA**, etc.)

Hence, the first duty of the kindergarten is to protect the children. It should never become the breeding-place for the school diseases. For this protection of the children the kindergartners must have an intelligent training in hygiene, and special records of the health condition of the kindergarten children should be kept. It should be possible for the teacher and the higher school officials to know at once from adequate records just how many unprotected children there are, or how much inflammable material is present in the class whenever a case of contagious disease occurs. Only in this way can rational and effective measures be adopted. If a case of measles,

for example, occurs, and most of the children have not had the disease, the kindergarten should at once be closed. If, on the other hand, the majority of the children have already had the disease, the individual children that are unprotected can be excluded, but closure is unnecessary.

In regard to the schoolhouse for the kindergarten, there is a growing opinion that as far as possible the work should be out of doors, and only in inclement weather should the occupations be in the house. Whether in or out of doors, the ordinary rules of school hygiene should be observed. Care should be paid to the children's eyes, children with defective hearing should have special attention; and cleanliness should be everywhere enforced.

The kindergarten room should be large and well ventilated, the walls plain with simple hospital base without wainscoting, or the like, to catch the dust. The chairs should be arranged for occupation so that the light comes from the left and the rear of the children and none of the children face the sunlight. The blackboards should be low, and in the toilet rooms the bowls and sinks low, individual drinking cups used, or better a fountain of the improved modern type provided. Individual towels, or paper napkins, or the like, should be used, the clay should be disinfected every day, and all kindergarten apparatus disinfected at intervals. Especially to be condemned are dry sweeping, the use of feather dusters, the common towel, and common drinking cup. (See **BLACKBOARDS, CLEANLINESS OF THE SCHOOLROOM, DESKS AND SEATS, DRINKING FOUNTAINS**, etc.)

The air of the kindergarten room should not only be kept clean and be of the proper temperature, probably not more than 65° F., but it should be moistened by suitable devices, if nothing better offers, by a large shallow vessel of water on the stove or radiator. The extreme dryness of the air in many schoolrooms causes discomfort and many colds and sore throats. (See **AIR OF THE SCHOOLROOM**.)

As the kindergarten occupations consist largely of physical exercise and the use of the voice, the best modern methods of cleaning should be used, a vacuum cleaner if possible; if not, sweeping with oil preparations or the kerosene oil brush at night and wiping off the furniture and apparatus with a moist cloth in the morning. (See **CLEANLINESS OF THE SCHOOLROOM**.)

Finally, especial care should be given in the kindergarten to the hygiene of the nervous system. At this period, when the brain is in process of rapid growth and development, when much of the nervous substance is immature, it is important that there should be no undue stimulation either by too complex and too fine occupations, by overstimulating plays, or by unduly exciting stories, and the like.

The interest of kindergarten children can be easily kept by simple occupations, exciting stories and occupations are unnecessary and unwise, and likely to leave the children in a *blasé* condition, unfortunate from the point of pedagogy, as well as that of hygiene. It is maintained by Professor Tyler, President Hall, and some others, that the fundamental nerve centers controlling the large muscles of the different physiological series, and functioning the simpler and larger movements must be developed in the early years, if the normal development and the health of the nerves in later life are to be insured. These fundamental nerve centers form the line of defense for the whole body, and any premature development of the accessory centers, those functioning in the finer and more complex movements, is distinctly to be condemned for hygienic reasons. Thus, the activity in the kindergarten should be spontaneous motor activity, as far as possible the simple plays and games and simple occupations. All of the gifts and apparatus should be large, the occupations and exercises should involve the larger muscles; all fine delicate and complex processes are out of place. For example, the use of a hammer in driving a nail is a more healthful occupation for the kindergarten child than the threading of a needle; for the former involves the use of the large muscles of the hand and the arm, while the latter requires the delicate and complex coordination of the muscles of the eye and fingers. Some kindergartners seem to suppose that if in the finer occupations the work is held at a suitable distance from the eyes, that is all that is necessary, but a great part of the children probably at the kindergarten have hyperopic eyes, and their aims are not long enough, so that it is possible for them to hold the book or the work at the proper distance. The larger occupations are also necessary for their positive value.

The main business of the child at the kindergarten age is physical growth and spontaneous motor activity. Thus the primary aim of the kindergarten should be to protect the child from disease at all cost, to give opportunity for spontaneous normal development, and to develop habits of healthful activity both physical and mental. All scholastic acquisitions are of secondary importance and any formal scholastic training is out of place, and, if obedience be taught, other necessary social training will come spontaneously from association in group activities.

In recent years, improvements have been made in the kindergarten and there is a growing interest in all matters of health pertaining to the kindergarten child. The reforms especially needed at the present time are the following: (1) Clear and emphatic enunciation of health and normal development as the primary aim of the kindergarten. (2) The training of all kindergarten teachers in school and per-

sonal hygiene (3) The adoption of modern methods of scientific cleanliness, which involve the abolition of common drinking cups, common towels, and the like. (4) The organization of the kindergarten out of doors for all occupations at all seasons of the year when the weather will permit (5) Care of the nervous system by the avoidance of all forms of premature stimulation, fine and difficult work, and the like (6) Competent health inspection with an adequate system of health records for each pupil and the adoption of modern methods in the management of contagious diseases  
W. H. B.

See also CHILD PSYCHOLOGY; CHILD STUDY; GROWTH, KINDERGARTEN.

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**KINDERGARTEN MAGAZINE** — See JOURNALISM, EDUCATIONAL

**KINDERGARTEN REVIEW** — See JOURNALISM, EDUCATIONAL

**KINDERMANN, FERDINAND** (1740-1801). — An Austrian educational reformer, born in Königswalde, near Schluckenau, in Bohemia. He studied theology at the University of Prague, where he received the doctor's degree in 1766. In 1771 he was called as pastor to the town of Kapltz in southern Bohemia and there devoted his energies to the improvement of the rural schools. He introduced manual and industrial training, and his work attracted the attention of the Empress Maria Theresa, who was keenly alive to the educational needs of her subjects. She appointed him as general inspector of the German schools of Bohemia, and raised him to the nobility with the title "von Schulstein." In 1790 he was made Bishop of Leitmeritz, where he continued to work for the education of the people until his death.

F M

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**KING, CHARLES** (1789–1867). — President of Columbia College, educated in England and France. He engaged in commercial and journalistic pursuits, but took an active interest in educational matters. From 1825 he was one of the trustees of Columbia College, and was president of the college from 1849 to 1864. Under his administration the school of medicine was reestablished and the school of mines organized. W S M

#### KING'S COLLEGE, LONDON, ENGLAND

— A constituent part of the University of London (*q v*), founded in 1829 "for the purpose of giving instruction in the various branches of literature and science and the doctrine and duties of Christianity as the same are inculcated by the United Church of England and Ireland." The Duke of Wellington was an ardent supporter of the college in its beginnings. Work was begun in 1831, and in 1836, when the University of London was founded, King's College became a constituent body. To the departments of literature and science a medical department was soon added; an engineering department followed in 1838; a hospital in 1839, theology in 1847, evening class in 1856; an oriental section in 1861, the woman's department in 1881. In 1903 the obligation of membership of the Church of England for appointment on the teaching staff was removed completely, except in the faculty of theology. By act of 1908 the departments of theology and advanced medicine were placed under independent boards and King's College and the King's College for Women were incorporated in the reconstituted University of London, with the following faculties and departments: arts, science (natural and medical preparatory), engineering, evening classes, and teachers' training department. The institution has always been well attended and the enrollment in 1910–1911 was 3147 (1402 regular and 1745 occasional students).

**KING'S COLLEGE, THEOLOGICAL DEPARTMENT** — See LONDON, UNIVERSITY OF

**KING WILLIAM'S COLLEGE, I O M** — See COLLEGE, ENGLISH, GRAMMAR SCHOOLS, PUBLIC SCHOOLS

**KINGSBURY, JOHN** (1801–1874) — Leader in the movement for the organization of high schools for girls; was born at Coventry, Conn., on May 26, 1801, and graduated from Brown University in 1826. He taught for two years in the schools of Providence, and in 1828 he organized the Providence Young Ladies' High School, which he conducted for many years. He was one of the founders of the American Institute of Instruction (*q.v.*) and of the Rhode Island Institute of Instruction, and from 1857 to 1859 he was State Superintendent of schools in Rhode Island. W S. M.

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**KINGSLEY, CHARLES** (1819–1875) — The English clergyman, poet, and novelist was born at Holne, Dartmoor, and educated privately and at King's College, London. He entered Magdalene College, Cambridge, in 1838, was ordained in 1842, and in the same year he became curate of Eversley which practically became his home until his death. He was for a year, Professor of English Literature and Composition at Queen's College, Harley Street, London, under F. D. Maurice (*q v*), and in 1860 became Professor of Modern History at Cambridge. In his own parish he took a deep interest in the education of his people and established an adult school, a writing school for girls, and an infant school. He is, however, associated mainly with the Christian Socialist Movement, which he espoused in 1849, stirred by the sufferings of workmen throughout the country. Under the name of "Parson Lot" he wrote "Letters to the Chartist" in *Politics for the People* and the *Christian Socialist Cheap Clothes and Nasty* exposed the evils of the sweatshop, and the novels, *Yeast* and *Alton Locke* placed before a larger public the social questions of the day. His interest centered in "national education, sanitary and dwelling-house reform, the free sale of land and corresponding reform of the land laws, moral improvement of the family relations, public places of recreation." As a member of the Educational League he strongly advocated a national and comprehensive system of education and supported W. F. Forster's Bill (1870). In 1869 he delivered a presidential address on education, "female and male, compulsory and for all charges," before the Social Science Congress at Bristol, which was published and widely distributed. Like his friend, Maurice, he sympathized strongly with the movement for the higher and professional education of women. In *Health and Education*, a collection of various essays (1874) Kingsley dwells on the value of a knowledge of hygiene and sanitation and on the importance of science. *Alexandria and her Schools* (1854), is a collection of four lectures dealing with the rise, development, and decline of different systems of philosophy from the Ptolemaic era onward, and it was with one phase of this that the novelist dealt in *Hyppatia* (1853). It is perhaps in the field of children's literature that Kingsley's contribution has been greatest and will be more enduring. His earliest work for children was *Glaucus or the Workers of the Shore* (1855), which like *Madam How and Lady Why* were intended to interest children in science. *Heroes or Greek Fairy Tales* (1856), *Water Babies* (1863), and *Hereward the Wake* (1866) are beautiful stories which will always continue

to make their appeal to readers both young and old.

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**KINNER, CYPRIAN** -- A Silesian described by Samuel Hartlib as "of a very public spirit to advance that part of learning which is the foundation of all the rest, *i.e.* the right education of children." Kinner was born and educated in Silesia, and married a rich wife, from whose estate £2600 was set apart to develop his educational plans. But the imperial troops entering Silesia, he and his wife were driven into exile in Transylvania and Hungary, where he met Alsted. Kinner then came into communication with Comenius, and went to meet him in Prussia. Comenius was called away to Lessna, and Kinner was left at Dantzic "to depend upon Providence." He was anxious to devote himself entirely to educational plans, but had no funds even for subsistence. Samuel Hartlib translated the Latin draft of Kinner's educational tract, and published it in London c. 1648, under the title *A Continuation of Mr John Amos Comenius's School Endeavours, or a Summary Delineation of Dr Cyprian Kinner Silesian, his Thoughts concerning Education*. The title is interesting as anticipating that of John Locke. He aims at three "marks": Piety, Learning, and Civil Prudence. His main position for early teaching is realistic and is stated as follows: "I show Naturall Things in the living book of Nature, Things Artificiall in the Shops and Work-houses of their Makers, and both of them in the Repositories of their figures and representations, which belong to our School, where I show them either *living* or carved (vet as near the life as may be) or at least painted." Kinner is thus a follower of Lubinus (*q.v.*), as well as of Comenius, and appears to go even farther in the suggestion that "animals should be provided and kept for the purposes of school teaching." F W

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**KIRCHENORDNUNGEN** -- The laws or regulations for the government of the evangelical churches of Germany, issued by the rulers of various states, often with the advice and consent of the orders or estates. While there were *Kirchenordnungen* before the Reformation, the sixteenth century is the period in which most of them appear. Through these

regulations the old laws were modified to meet Reformation ideals, and the maintenance of proper administration of teaching and sacraments was secured. Without some such laws an apparently impossible condition would have had to exist: the free development and administration of church and school laws upon the basis of the Lutheran ideal without the sanction of any responsible and efficient administrative body. While these *Ordnungen* were generally promulgated by the secular authority, they were largely the work of clergymen and teachers. Melanchthon, Luther, Bugenhagen, Joannes Aepin, Urbanus Rhegius, and many other prominent men of the time lent their assistance. Luther was the author of the Wittenberg *Kirchenordnung* of 1523 and collaborator in several others. Melanchthon was concerned in the writing of at least nine *Ordnungen*, beginning with Nuremberg (1526) and the Saxony Visitation Articles (1528). When once a few typical *Ordnungen* had been framed, they were adopted as models. Thus the Saxony Visitation Instructions became the basis of the Brunswick *Kirchenordnung* (1528), and upon the latter were based those of Hamburg (1529), Lubeck (1531), Pomerania (1535), Schleswig Holstein (1542), and many others, including that of Wittenberg (1533). This Wittenberg *Ordnung* in time became the model after which at least seven others were composed.

While the *Ordnungen* are not uniform in their material or arrangement, there is at least a general similarity in subject matter. As a rule there is a first part, called *Credenda*, which is dogmatic in its nature and is an expression, in more or less definite form, of the agreement of the city or provincial church with the general Lutheran confession of faith. This is followed by the *Agenda*, which contains provisions concerning liturgy, appointment of church officers, duties of officers of church and school, organization of church government, discipline, administration of church property, care of sick and poor, baptism, and miscellaneous matters relating to church affairs. C L R

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**KIRKLAND, JOHN THORNTON** (1770–1840). — Fourteenth president of Harvard College and son of the famous educational missionary among the Six Nations of the American Indians, educated at Phillips Andover



Academy and Harvard College, graduating from the latter in 1789. He was instructor at Phillips Andover Academy and tutor at Harvard. He was president of Harvard from 1810 to 1828. His publications include numerous biographical and historical works. W. S. M.

See HARVARD UNIVERSITY.

**KIRKLAND, SAMUEL** (1741-1808) — Educational missionary among the Indian tribes of the Six Nations, educated in Dr. Wheelock's school for Indian youth (subsequently Dartmouth College) and at the College of New Jersey (now Princeton), from which he was graduated in 1765. For nearly forty years he was engaged in educational and religious work among the Indians of the Six Nations. He organized the Hamilton Oneida College (now Hamilton College) an institution for the education of Indian and American youth.

W S M

**KITCHEN GARDEN** — The Kitchen Garden is a method of teaching little children household processes through songs and games with an equipment designed for the purpose. This method was devised by Miss Emily Huntington (d. 1910), who directed a mission school for girls on the East Side of New York City more than thirty years ago. A visit to a kindergarten exhibition gave her the idea that children might be taught housework through games. She wrote the songs and games, which were afterward published in book form. She began by using toys as they were found in the market, and later found manufacturers who made articles designed for this purpose. Classes were formed in the Wilson Mission by a number of young women interested in the work of teaching these children. The Kitchen Garden Association was formed in 1880 to promote the teaching of industrial and domestic arts, enrolling eighty active members and supervising the instruction of nearly a thousand children in and near New York. Classes were formed in the West and South. The Kitchen Garden Association was reorganized as the Industrial Educational Association (See HOUSEHOLD ARTS.) Miss Huntington also devised a series of lessons in cooking taught in the same way and published a volume of these lessons. The toys were copyrighted.

The Kitchen Garden system is still used in Settlement work in New York City to some extent, and for the same purpose in other parts of the country, but it has never become incorporated in the public school system. The work is being continued by Miss Peck of New York, whose method is now being used in Los Angeles, Washington, D C., and New York.

H K

**KLAUSENBURG (KOLOZSVÁR), THE ROYAL HUNGARIAN FRANCIS JOSEF, UNIVERSITY OF.** — The youngest of the

three Hungarian universities (the other two being Agram and Budapest), established in 1872. The university maintains faculties of law and political science, medicine, philosophy, and pure science, there being no school of divinity. The great majority of the students (1497 out of 2116 matriculated students in 1909-1910) are enrolled in the faculty of law, medicine following with 321, and philosophy and pure science bringing up the rear with 298, 191 auditors bring the total attendance of the year in question to 2307. The annual budget amounts approximately to \$415,000. The library, founded in 1872, contains 200,000 volumes. Associated with the university is a Unitarian theological faculty, established in 1556, and a reformed theological academy, founded in 1895. Klausenburg is also the seat of an agricultural school, originally established in 1869 and reorganized in 1906. R T, Jr.

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MÁRKI and PISZTORY *Geschichte der Universität*  
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**KNEIPE.** — This term in the language of the German student may mean (1) the place where drinking takes place, or the tavern, (2) the drinking itself, or (3) by transference, a fraternity house. The *Kneipe*, before the introduction of fraternity houses, a recent movement, afforded the best meeting place for the members of one organization. In the derived meaning of the drinking ceremony the *Kneipe* is less formal than the *Kommers*. In connection with these ceremonies definite codes (*Biercommen*) have been established and are carried out under a presiding officer.

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**KNIGHT, EDUCATION OF THE.** — See CHIVALRIC EDUCATION, GENTRY AND NOBLES, EDUCATION OF, MANNERS AND MORALS, EDUCATION IN.

**KNOWLEDGE.** — A term of the very widest scope, designating, as will presently appear, a variety of operations and of subject matter that, however, possess at least two elements in common, namely, some connection direct or indirect with intelligence (or reflection) and with certainty, security, assurance, settledness. Like many analogous terms, — conception, judgment, thought, for example, — the term has both an active and a passive sense; it designates both an operation or act, that of knowing, and the result, what is known. Like the term "science," however, the word "knowledge" is itself used mainly in a passive sense to denote the content, the subject matter, which is the outcome of the successful performance of the function of knowing. The verb "to know" and the participle "knowing" retain both

senses, designating the act of inquiry, search, finding out, and also the possession of a certain subject matter. The opposite of knowledge is ignorance.

The term "knowledge" covers four distinct connected matters. Of these the two first to be mentioned are the most personal, direct, and practical. They are knowledge in the sense of intelligently acquired skill, and in the sense of acquaintance. We know *how* to walk, talk, skate, etc.; experts know how to weave, dye, work metals, etc. Ability to do things is perhaps the most primary sense of knowledge. The ability is distinguished from instinct only in that it has been intelligently acquired. But even this difference is not consistently maintained, for we speak, popularly, of an instinctive knowledge. The first necessity of a living being is to know how to conduct itself with respect to certain situations; in order to live it must be able to adapt its behavior to the behavior of the things with which its own fortunes are bound up. This necessity includes not only physical needs, but also the fundamentals of social intercourse and the elements at least of some of the social arts. The primary and profound character of this sort of knowledge is seen in the fact that until the rise of philosophy among the Greeks the same word denoted art (technical skill) and knowledge, namely, *τέχνη*. The well-known recourse of Socrates to the analogies of the arts, his appeal to the procedure of the shoemaker, flute player, carpenter, etc., in his logical discussions was witness to the fact that the control of his material evinced by the artisan in reaching the ends appropriate to his art represented at once the most certain and the most intelligent procedure extant.

Familiarity, acquaintance, are closely connected with knowing how to do, and to a considerable extent they result from the latter and measure its extent. So far as we can adapt ourselves readily and successfully in any situation, we are familiar, acquainted. The rough edges of a strangeness, remoteness, the barriers of understanding nothing, are worn away. In their place there is a sense of intimacy, of inner adjustment. When we know how to behave with respect to a thing, we know what it is like; we are on terms with it; there is mutuality of response. Knowledge in the form of acquaintance is not only the outcome and reward of knowing how, or intelligent skill; but it establishes emotional ties—a capacity for appreciation, or apprehending the thing in terms of its worth, its usefulness for a purpose. Acquaintance, familiarity, normally presuppose a certain amount of friendliness, of agreeableness, as well as a sense of power and ease. But excessive familiarity, too long continued occupation with one subject, "breeds contempt", it leads to revulsion, a sense of ennui and constraint.

Our third sense of knowledge covers that

acquired from others, that attained indirectly by learning from others. Communication by means of language carries us far beyond the limits of personal acquaintance with persons and things, leading us to know *of* or *about* many matters which are within the direct acquaintance of other people. By oral tradition and more especially by written and printed language, this second-hand knowledge comes to include much that is not and that could not be within the direct acquaintance of any living. Such knowledge constitutes information (*q v*) and also learning—in the sense of what is learned or is to be learned.

In all the three above-mentioned types of knowledge, intelligence or reflective thought is used, but only secondarily. It is employed as a means of gaining control of things, in enlarging acquaintance with them, in apprehending and understanding things reported by others. It is not, however, used in any sense as a source of knowledge for its own sake. Gradually, however, materials of acquaintance and of information are amassed and systematized not for the sake of increasing familiarity and possession of learning, but for the sake of rational demonstration or of inferential discovery of new knowledge. Men are not contented with the kind of assurance that rests upon personal acquaintance or upon the credit of others, they search for that which opens from rational grounding, from logical sequence and system. Thus a fourth kind of knowledge comes into existence: rational knowledge, science, knowledge *that* so and so is true. Like information, this sort of knowledge is indirect, but it is indirect in the sense of dependence upon logical data and premises, not in the sense of dependence upon the observations and reports of others. From this point of view, knowledge is identical with *science*, and we have no logical right to denominate intelligent skill, matters of acquaintance, of information, *knowledge*, unless they are reduced to general principles and are connected with one another in systematic ways. Otherwise they represent beliefs, opinions, rather than knowledge. This tendency to define knowledge from an exclusively logical point of view has been an important factor in calling out in reaction the philosophy of pragmatism (*q v*), which regards this exclusive view of knowledge as the characteristic error of intellectualism (or rationalism, as it is sometimes termed). The purely technical character of knowledge when defined on a purely logical basis, its aloofness from practical considerations, from the affections and aversions (so important a factor in acquaintance) and from the social processes of learning and transmission characteristic of information, are treated as evidence that scientific knowledge, when isolated, is an abstraction. Thus the other types of knowledge are regarded as not only more primitive genetically and psychologically (which would be generally admitted), but also as more final and

significant. In fact, knowledge as a system of logical propositions is regarded by it as ultimately of value because of the greater control and the greater richness of content that it supplies to the more direct, active, and social types of knowledge

Educationally speaking, there can be little doubt that the order in which the four types of knowledge have been set forth in this article represents the order of their development. The opposition of all modern educational reforms to beginning with so-called "deductive" methods, with systems of definitions, classifications, and laws of explanation, is, in substance, a claim that the logical type of knowledge represents a matured, relatively late specialized development of more basic bodies of knowing, and is consequently meaningless and educationally harmful when presented in isolation or as a starting point. On the other hand, many of the reformers have, in their reaction against abstractions in education, failed to note the operation of a subordinated factor of reflection and interpretation in even the more primitive modes of knowing, and have thus made the mistake of identifying the "concrete" with the bare physical object, instead of with the center of an active experience, or interest.

Many questions of instruction are bound up also with the matter of the relation of information or communicated knowledge, to personal acquaintance. A flavor of the second-handness, derived, and more or less conventional hangs about information. Its subject matter is not so vitally lived through, so intimately appreciated, as that of familiar acquaintance. Any examination of prevailing modes of instruction will show that the mere bulk of matter communicated in books and lectures tends to swamp the native and active interests operative in intelligent behavior and in the acquaintanceship it brings. Then this matter remains unassimilated, unorganized, not really understood. It stands on a dead level, hostile to the selective arrangements characteristic of thinking, matter for memorizing, rather than for judgment, existing as verbal symbols to be mechanically manipulated, rather than as genuine realities, intelligently appreciated. Yet without this communicated matter, the circle of personal acquaintance is very narrow and superficial, and personal activity hardly gets above the place of routine. The solution is found in realizing that social communication is a very real factor in personal doing and acquaintance. The educational aim is not to multiply information for the sake of information, nor yet to try to exclude it or narrow it down as much as possible. It is to fuse the transmitted matter and the matter of direct behavior and emotional response with as intimate union as possible, so that the former will gain force, vivacity, directness from the latter, while the former is insensibly but continually extended and deepened by the latter.

In short, the common error does not consist in attaching great importance to transmitted facts and ideas, but in presenting them in such an isolated way that they are not spontaneously welded with the intense, though narrow, matters of direct concern. J. D.

**KNOWLEDGE, SOCIETY FOR THE DIFFUSION OF USEFUL** — See SOCIETY FOR THE DIFFUSION OF USEFUL KNOWLEDGE.

**KNOWLEDGE, THEORY OF.** — See EPISTEMOLOGY, KNOWLEDGE.

**KNOX COLLEGE, GALESBURG, ILL.** —

A nonsectarian, coeducational institution, incorporated as Prairie College in 1836, had its inception in the plan of the Rev. George W. Gale, a Presbyterian clergyman, to found a college in the Middle West. In 1837 the institution was chartered as the Knox Manual Labor College. The name was changed to Knox College in 1857. The Lincoln-Douglas debate of 1858 was held on the grounds of the college. Distinguished presidents have been Jonathan Blanchard (1845-1856) and Newton Bateman (1876-1893), educational leaders in Illinois, and John Huston Finley, '87, who in 1903 became president of the College of the City of New York (*q.v.*). Knox College is one of the institutions originally accepted by the Carnegie Foundation for the Advancement of Teaching (*q.v.*). The Board of Trustees is a body of twenty-five members selected by a committee of the trustees on whose recommendation the board acts, the term of service is for life. By resolution of the board no denomination can have a majority of trustees.

Knox College maintains undergraduate courses leading to the A.B. and B.S. degrees. The entrance requirements are fourteen units. A conservatory of music was organized in 1883. The degrees of A.M. and M.S. are given for one year's graduate study in residence.

There was in 1910-1911 a faculty of twenty-five members and an enrollment of 616 students, of whom 335 were in the collegiate department. C. G.

**KNOX, JOHN** (1505-1572) — The great leader of the Scottish Reformation, and deviser of the *Book of Discipline*. The date of his birth is uncertain, for though the traditional date is 1505, yet there are implications from contemporaries that seem to point to the limits of 1513-1515. Knox is thought to have been born in Giffordgate, a hamlet adjacent to Haddington in Scotland. It is assumed that he was educated at Haddington Grammar School, and entered St. Andrews University in 1529, where he studied the ancient fathers, particularly St. Augustine (*q.v.*), a fact which explains his "preparedness" for the doctrines of Calvin (*q.v.*) later on. By 1540 he had become a priest of the Church of Rome, exercised

the office of notary, and for a time was a private tutor. It was not till 1545 that he showed any signs of becoming a Protestant. Knox came to England, and was sent by the Privy Council as Protestant Minister to Berwick-on-Tweed, where he stayed for two years, with a congregation consisting of the garrison and citizens. In 1551 he was removed to Newcastle-on-Tyne, and was appointed a royal chaplain, and had the offer of the bishopric of Rochester, which he declined. In 1554, when Queen Mary had already begun her policy of persecution, Knox left England, and after a tour through Swiss Protestant congregations, he reached Geneva and entered into friendship with John Calvin. From 1554 to 1559 Knox remained on the Continent. He became one of the two ministers of the English Protestant refugees at Frankfurt in November, 1554. Here internal dissensions took place with regard to the use of the English Prayer Book, and Knox voluntarily retired to Geneva in 1555. The complete supremacy of Calvin in Church and State made a most imposing object lesson in theoretical government, one not lost on Knox, whose *Book of Discipline* was afterwards closely framed on the Genevan model. His theological views were definitized by his treatise on *Predestination* published in 1560. Knox's permanent return to Scotland was in 1559. He was appointed minister at St. Giles' Church, Edinburgh, and soon became the leader of the Scottish Reformation. In 1560 the Estates demanded a statement of the views of those who opposed Roman Catholic doctrine, and to Knox and five others was intrusted the drawing up of the *Confession of Faith*. Penal statutes were then granted against the saving of mass. In 1560 the organization of the Reformed Church was laid down in the *Book of Discipline*, which was drawn up by Knox and the other five ministers who had composed the *Confession of Faith*, and was translated into Latin, so as to obtain the criticism of Calvin and the Swiss Reformers. Knox brought Geneva and Calvin to Scotland and acclimatized them to Scotch soil. The Ecclesiastical polity carried with it, as was the case at Geneva, the educational system, and this, again, was of the most democratic type.

The chapter in the *Book of Discipline* devoted to schools could not be carried out without a large sum of money, and though the Scottish reformers proposed to appropriate the money for this purpose from the old ecclesiastical revenues, the Scottish nobles, as had been the case with the English nobles, hoped to get a share in the plunder. Their success necessarily deferred the carrying out of such a scheme into immediate execution. The *Book of Discipline*, however, did not receive the sanction of the Scottish Parliament, and Scottish education was not endowed with Roman spoils. Nevertheless, the educational ideals of the *Book of Discipline* mark an important stage

in the history of education, for they suggest a deliberate scheme of organization of national education. The salient educational features of the *Book of Discipline* together with the steps in the actual development of the Scotch educational system are presented in the article on SCOTLAND, EDUCATION IN.

The later years of Knox's life (1560-1572) were concerned with the political and religious questions centering round the names of Mary, Queen of Scots, and (afterwards) of the regent, the Earl of Moray. Politically, in the days of the Tudors, he was prepared to advocate the deposition of tyrants, and thus is a predecessor of the spirit of a Cromwell. Religiously, Knox put Scotland in touch with the religion of Geneva, of the Huguenots, and the Dutch, and thus tended to help forward cosmopolitan sympathies, at least, amongst Protestants in Great Britain and abroad. His democratic tendencies are shown in laying the basis of Scotch Presbyterianism, in the introduction of lay elders and deacons into church government. It is not too much to say that these characteristics, though not technically educational, have had great educational effects.

F. W.

See CALVINISTS AND EDUCATION, SCOTLAND, EDUCATION IN.

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**KNOX, SAMUEL** (1756-1832) — A pioneer of education in Maryland, educated at the University of Glasgow. He was engaged for some years in the ministry of the Presbyterian church. In 1795 he became principal of the Frederick Academy. Subsequently he organized and became the president of Baltimore College. He was active in the attempts to organize a common school system in Maryland and published numerous pamphlets on the subject. Thomas Jefferson (*q.v.*) was keenly impressed with his educational views. Knox's most valuable contribution to the literature of education is his *Essay on the best System of liberal Education adapted to the Genius of the United States* (Baltimore, 1799). W. S. M.

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**KNOX, VICESIMUS** (1752-1821) — English schoolmaster and essayist, born near

London. He was educated at Merchant Taylors' School and St. John's College, Oxford, graduating B.A. in 1775 and obtaining a fellowship. In 1778 he succeeded his father as headmaster of Tonbridge School, a position held up to 1812. He devoted himself to miscellaneous essay writing, *Winter Evenings or Lucubrations on Life and Letters, Essays Moral and Literary, Family Lectures or Domestic Divinity* and several other works of a religious nature. For his school he edited Catullus, Horace, and Juvenal, and *Elegant Extracts, or Useful and Entertaining Passages in Prose, selected for the Improvement of Classical and Other Scholars in the Art of Speaking, in Reading, Thinking, Composing, and in the Conduct of Life* (1785), *Elegant Extracts or Useful and Entertaining Pieces of Poetry selected for the Improvement of Youth* (1789), *Elegant Epistles or a Copious Collection of Familiar and Amusing Letters selected for the Improvement of Young Persons and for General Entertainment* (1790). His treatise, entitled *Liberal Education or a Practical Treatise on the Methods of acquiring Useful and Polite Learning* in two volumes (1781), is a valuable contribution to the history of education. It not only contains sound criticisms of existing practice with suggestions for reform, but a good account of the best textbooks of the period. While insisting on thorough classical curriculum as the only means of educating gentlemen, Knox would admit such studies as English, French, geography, history, and the elements of Euclid. The modern languages are to be taught on the same method as the classics, that is, grammatically, although he recommends broad reading in English literature both in and out of school. Accomplishments and athletics are advocated, provided that they do not become distracting. Examinations are to be held frequently as a method of retaining what has been learned. Knox recognizes that women are intellectually as capable as men and would have them educated privately (for boys the public schools were best) in English and French, the classics being added, if they have inclination and wealth. The second volume deals with the universities and gives a very good insight into the corruption and lack of discipline there prevailing. Knox attacks conservatism, formality in trifles, absence of study, and idleness of the professors and fellows, who regard the universities not as places of education but as almshouses. The remedy according to Knox is greater emphasis on study and less on formalities supervised by the proctors. In 1821 Knox wrote *Remarks on the Tendency of Certain Clauses in a Bill now Pending in Parliament to degrade Grammar Schools, with Cursory Strictures on the National Importance of preserving Inviolable the Classical Discipline prescribed by the Founders*. The pamphlet was called forth by a Bill to introduce into the old foundations

instruction in reading, writing, and arithmetic for poor children.

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**KNOXVILLE COLLEGE, KNOXVILLE, TENN.** — A coeducational institution for the education of negro youth under the auspices of the United Presbyterian church opened in 1875. The following departments are maintained: collegiate, normal, theological, musical, industrial, and common school. The entrance requirements to the college, which offers courses leading to degrees, are about fourteen points of high school work. Of the 404 students enrolled in 1909-1910, only 29 were in the collegiate department. There is a faculty of thirty-four members.

**KOBEL, JAKOB** (1470-1533) — One of the most prominent of the early German writers on arithmetic. His name also appears as Kobel, Kobelius, and Kobilius. He was born at Heidelberg in 1470, and died at Oppenheim, January 31, 1533. He was a fellow student of Copernicus at Cracow. He was a man of varied attainments, meeting with success as a *Rechenmeister*, printer, engraver, woodcarver, poet, and public official. He wrote three works on arithmetic that met with great favor: (1) *Ain New gemdnet Rechenbuechlin*, Augsburg, 1514, (2) *Mit der Kynde od' Schriebsfedern*, Oppenheim, 1520, (3) *Vysierbuch*, Oppenheim, about 1515. The third related to gauging, at that time a very popular subject. The first of these books was purely commercial, and the operations on numbers were performed by means of counters, as was then the custom. Roman numerals are used practically throughout the work, even in writing common fractions, where  $\frac{II^c}{III^c \cdot LX}$  appears for  $\frac{200}{460}$ . His

work showed little Italian influence, and it is one of our best sources of information as to the early German arithmetic. D E S

**KOHLMANN, ANTHONY** (1771-1838) — Jesuit educator, received his training in the schools of Germany. He became superior of the Order of Jesuits in the United States in 1817. He was rector of Georgetown College from 1818 to 1820 and superior of Washington Seminary from 1821 to 1824. He published a number of philosophical and theological works. W S M

**KONIGSBERG, THE ROYAL PRUSSIAN ALBERTUS UNIVERSITY OF** — Founded by Margrave Albrecht, the last knight of the Teutonic Order in Prussia, who in 1541 established a university preparatory school, transformed into a university, of Protestant affiliations, three years later.

the office of notary, and for a time was a private tutor. It was not till 1545 that he showed any signs of becoming a Protestant. Knox came to England, and was sent by the Privy Council as Protestant Minister to Berwick-on-Tweed, where he stayed for two years, with a congregation consisting of the garrison and citizens. In 1551 he was removed to Newcastle-on-Tyne, and was appointed a royal chaplain, and had the offer of the bishopric of Rochester, which he declined. In 1554, when Queen Mary had already begun her policy of persecution, Knox left England, and after a tour through Swiss Protestant congregations, he reached Geneva and entered into friendship with John Calvin. From 1554 to 1559 Knox remained on the Continent. He became one of the two ministers of the English Protestant refugees at Frankfurt in November, 1554. Here internal dissensions took place with regard to the use of the English Prayer Book, and Knox voluntarily retired to Geneva in 1555. The complete supremacy of Calvin in Church and State made a most imposing object lesson in theocratical government, one not lost on Knox, whose *Book of Discipline* was afterwards closely framed on the Genevan model. His theological views were definitized by his treatise on *Predestination* published in 1560. Knox's permanent return to Scotland was in 1559. He was appointed minister at St. Giles' Church, Edinburgh, and soon became the leader of the Scottish Reformation. In 1560 the Estates demanded a statement of the views of those who opposed Roman Catholic doctrine, and to Knox and five others was intrusted the drawing up of the *Confession of Faith*. Penal statutes were then granted against the saying of mass. In 1560 the organization of the Reformed Church was laid down in the *Book of Discipline*, which was drawn up by Knox and the other five ministers who had composed the *Confession of Faith*, and was translated into Latin, so as to obtain the criticism of Calvin and the Swiss Reformers. Knox brought Geneva and Calvin to Scotland and acclimatized them to Scotch soil. The Ecclesiastical polity carried with it, as was the case at Geneva, the educational system, and thus, again, was of the most democratic type.

The chapter in the *Book of Discipline* devoted to schools could not be carried out without a large sum of money, and though the Scottish reformers proposed to appropriate the money for this purpose from the old ecclesiastical revenues, the Scottish nobles, as had been the case with the English nobles, hoped to get a share in the plunder. Their success necessarily deferred the carrying out of such a scheme into immediate execution. The *Book of Discipline*, however, did not receive the sanction of the Scottish Parliament, and Scottish education was not endowed with Roman spoils. Nevertheless, the educational ideals of the *Book of Discipline* mark an important stage

in the history of education, for they suggest a deliberate scheme of organization of national education. The salient educational features of the *Book of Discipline* together with the steps in the actual development of the Scotch educational system are presented in the article on SCOTLAND, EDUCATION IN.

The later years of Knox's life (1560-1572) were concerned with the political and religious questions centering round the names of Mary, Queen of Scots, and (afterwards) of the regent, the Earl of Moray. Politically, in the days of the Tudors, he was prepared to advocate the deposition of tyrants, and thus is a predecessor of the spirit of a Cromwell. Religiously, Knox put Scotland in touch with the religion of Geneva, of the Huguenots, and the Dutch, and thus tended to help forward cosmopolitan sympathies, at least, amongst Protestants in Great Britain and abroad. His democratic tendencies are shown in laying the basis of Scotch Presbyterianism, in the introduction of lay elders and deacons into church government. It is not too much to say that these characteristics, though not technically educational, have had great educational effects.

F. W.

See CALVINISTS AND EDUCATION, SCOTLAND, EDUCATION IN.

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**KNOX, SAMUEL** (1756-1832) — A pioneer of education in Maryland, educated at the University of Glasgow. He was engaged for some years in the ministry of the Presbyterian church. In 1795 he became principal of the Frederick Academy. Subsequently he organized and became the president of Baltimore College. He was active in the attempts to organize a common school system in Maryland and published numerous pamphlets on the subject. Thomas Jefferson (*q.v.*) was keenly impressed with his educational views. Knox's most valuable contribution to the literature of education is his *Essay on the best System of liberal Education adapted to the Genius of the United States* (Baltimore, 1799). W. S. M.

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**KNOX, VICESIMUS** (1752-1821) — English schoolmaster and essayist, born near

London. He was educated at Merchant Taylors' School and St John's College, Oxford, graduating B A in 1775 and obtaining a fellowship. In 1778 he succeeded his father as headmaster of Tonbridge School, a position held up to 1812. He devoted himself to miscellaneous essay writing, *Winter Evenings* or *Lucubrations on Life and Letters*, *Essays Moral and Literary*, *Family Lectures on Domestic Divinity* and several other works of a religious nature. For his school he edited Catullus, Horace, and Juvenal, and *Elegant Extracts, or Useful and Entertaining Passages in Prose, selected for the Improvement of Classical and Other Scholars in the Art of Speaking, in Reading, Thinking, Composing, and in the Conduct of Life* (1785), *Elegant Extracts on Useful and Entertaining Pieces of Poetry selected for the Improvement of Youth* (1789), *Elegant Epistles or a Copious Collection of Familiar and Amusing Letters selected for the Improvement of Young Persons and for General Entertainment* (1790). His treatise, entitled *Liberal Education or a Practical Treatise on the Methods of acquiring Useful and Polite Learning* in two volumes (1781), is a valuable contribution to the history of education. It not only contains sound criticisms of existing practice with suggestions for reform, but a good account of the best textbooks of the period. While insisting on thorough classical curriculum as the only means of educating gentlemen, Knox would admit such studies as English, French, geography, history, and the elements of Euclid. The modern languages are to be taught on the same method as the classics, that is, grammatically, although he recommends broad reading in English literature both in and out of school. Accomplishments and athletics are advocated, provided that they do not become distracting. Examinations are to be held frequently as a method of retaining what has been learned. Knox recognizes that women are intellectually as capable as men and would have them educated privately (for boys the public schools were best) in English and French, the classics being added, if they have inclination and wealth. The second volume deals with the universities and gives a very good insight into the corruption and lack of discipline there prevailing. Knox attacks conservatism, formality in trifles, absence of study, and idleness of the professors and fellows, who regard the universities not as places of education but as almshouses. The remedy according to Knox is greater emphasis on study and less on formalities supervised by the proctors. In 1821 Knox wrote *Remarks on the Tendency of Certain Clauses in a Bill now Pending in Parliament to degrade Grammar Schools, with Cursory Strictures on the National Importance of preserving Inviolable the Classical Discipline prescribed by the Founders*. The pamphlet was called forth by a Bill to introduce into the old foundations

instruction in reading, writing, and arithmetic for poor children.

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**KNOXVILLE COLLEGE, KNOXVILLE, TENN.** -- A coeducational institution for the education of negro youth under the auspices of the United Presbyterian church opened in 1875. The following departments are maintained: collegiate, normal, theological, musical, industrial, and common school. The entrance requirements to the college, which offers courses leading to degrees, are about fourteen points of high school work. Of the 404 students enrolled in 1909-1910, only 29 were in the collegiate department. There is a faculty of thirty-four members.

**KOBEL, JAKOB** (1470-1533) -- One of the most prominent of the early German writers on arithmetic. His name also appears as Kobel, Kobelius, and Kobelinus. He was born at Heidelberg in 1470, and died at Oppenheim, January 31, 1533. He was a fellow student of Copernicus at Cracow. He was a man of varied attainments, meeting with success as a *Rechenmeister*, printer, engraver, woodcarver, poet, and public official. He wrote three works on arithmetic that met with great favor: (1) *Ein New geordnet Rechenbuechlein*, Augsburg, 1514, (2) *Mit der Keyde od' Schriebsedern*, Oppenheim, 1520, (3) *Vyschbuch*, Oppenheim, about 1515. The third related to gauging, at that time a very popular subject. The first of these books was purely commercial, and the operations on numbers were performed by means of counters, as was then the custom. Roman numerals are used practically throughout the work, even in writing common fractions, where  $\frac{II}{III^L}$  appears for  $\frac{200}{460}$ . His work showed little Italian influence, and it is one of our best sources of information as to the early German arithmetic. D E S

**KOHLMANN, ANTHONY** (1771-1838) -- Jesuit educator, received his training in the schools of Germany. He became superior of the Order of Jesuits in the United States in 1817. He was rector of Georgetown College from 1818 to 1820 and superior of Washington Seminary from 1821 to 1824. He published a number of philosophical and theological works. W S M

**KONIGSBERG, THE ROYAL PRUSSIAN ALBERTUS UNIVERSITY OF** -- Founded by Margrave Albrecht, the last knight of the Teutonic Order in Prussia, who in 1541 established a university preparatory school, transformed into a university, of Protestant affiliations, three years later.

The new university secured a good start, notwithstanding financial difficulties, enrolling a considerable number of foreigners, principally from Poland, Russia, and Sweden. Its further development was sadly hampered, however, by the plague of 1549 and still more by the Thirty Years' War in the following century. For two centuries after its establishment its history is replete with theological controversies. The close of the seventeenth and the beginning of the eighteenth century marked an era of healthy growth, for which the Great Elector and the first kings of Prussia were largely responsible. The period of its greatest renown, however, came somewhat later in the days of Kant (*q v*), who became a docent at the university in 1755, and full professor of philosophy fifteen years later (1770-1797). One of his successors was J. F. Herbart (*q v*), who established a pedagogical seminar at Königsberg in 1810.

In 1862 a new main building was erected for the university, and for thirty years after the Franco-German War considerable activity was displayed in the building of laboratories and institutes of various kinds, including laboratories for agricultural chemistry and for dairying, and in 1901 a new library building containing almost 300,000 volumes and about 1500 manuscripts.

Among the prominent former members of the teaching staff may be mentioned Bessel in astronomy, Jacobi in mathematics, Hagen in natural science, Burdach in anatomy, Helmholtz in physiology, physics, and mathematics, Wagner in surgery, Karl Lachmann in Germanic philology, and Simson and Stobbe in jurisprudence. The German Crown Prince is rector of the university, a prorector being elected annually by the faculty. The annual budget amounts to about \$400,000. Through the initiative and financial assistance of Dr. Fritz Lange, a German physician who practiced for a number of years in New York City, the first German student "Union," the Palæstra Albertina, was established by the university in 1898. The building contains a gymnasium and a refectory, clubrooms, fencing rooms, swimming pool, etc., but owing to the lack of sufficient endowment, provision has been made in it since 1905 for several university seminars.

In size Königsberg ranks fifteenth among the twenty-one German universities. In the winter semester of 1911-1912 there were in attendance 1694 students, of whom 199 were auditors. By faculties the matriculated students were distributed as follows: philosophy 701, medicine 432, law 280, theology (Protestant) 92. The teaching staff consisted of 91 professors and 57 docents.

The city of Königsberg is also the site of a royal academy of art, established in 1845 and reorganized in 1901.

The municipal library was founded in 1540

and contains 50,000 volumes and over 600 manuscripts.

R. T., JR.

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KOREA — See JAPAN, EDUCATION IN

**KRAKAU, THE UNIVERSITY OF, KRAKAU, AUSTRIA.** — One of the oldest universities in Europe, the papal bull providing for its establishment having been signed by Pope Urban V on May 12, 1364. No provision was made in the deed of foundation for a theological faculty, and six years after its foundation the university was compelled to close its doors. Permission to establish a faculty of theology was granted by Pope Boniface IX in 1397, and three years later the university was reorganized by King Wladislaw Jagello of Poland, being removed to a new site in the following year. Krakau being the capital of Poland from 1320 to 1610, the university served for several centuries as the center of the intellectual life of the Kingdom of Poland. Gradually, however, after the Polish capital had been transferred to Warsaw at the beginning of the seventeenth century, a decline set in and led finally to another reorganization in 1817. In the meantime, at the last partition of Poland in 1795, Krakau had been turned over to Austria, becoming part of the free state of that name thirty years later. In 1846 Austria again assumed control, and since then the development of the university has been marked by continuous progress. The German language was used in all faculties, with the exception of the theological, from 1853 on, but has been gradually supplanted by Polish, which has reigned supreme since 1870.

The university library was founded in 1400 and contains over 400,000 volumes, over 6000 manuscripts, over 3000 maps, and almost 10,000 engravings and other reproductions. It is housed in the old university building, which was completed in 1497, but altered and repaired at various times between 1839 and 1872. The new main building was erected in 1881-1887. The annual budget of the university amounts to approximately \$225,000. Krakau is the third largest university in Austria, being exceeded in point of attendance only by Vienna and Budapest. In the winter semester of 1909-1910, there were enrolled 3211 students, including 441 auditors, of whom 209 were women. Of the matriculated students, 1307 men were registered in the faculty



## KRAUS

of law, 446 men and 48 women in the faculty of medicine, 701 men and 182 women in philosophy, and 86 men in theology (Catholic)

Krakau is also the seat of an art academy, established as an art school in 1818 and transformed into an academy in 1900. Here, also, Polish is the language of instruction

R T, JR.

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**KRAUS, JOHN** (1815–1896) — Active in American kindergarten work. He was educated in the normal schools of Germany, and after coming to America was engaged in private and public school work, and from 1867 to 1873 he was connected with the Bureau of Education of the United States. In 1873, with his wife (Maria Kraus-Boelte), he organized a training school for kindergartners in New York City. His published writing includes several papers on the kindergarten. W. S. M.

**KRUSI, HERMANN, JR** (1817–1903) — American Pestalozzian, born at Yverdon, Switzerland, on June 24, 1817. He received his education in the cantonal schools at Trogen, the normal school at Gais (conducted by his father), and at the normal school at Dresden, conducted by Dr. Blochmann, afterwards minister of public instruction of Saxony, and at one time an associate of Pestalozzi in the institute at Yverdon. After an additional year of inspection of the normal schools and other institutions of Germany, he returned to Switzerland and taught for five years in the cantonal normal school at Gais under the principalship of his father (1841–1846). In 1846 he received an appointment as instructor in a Pestalozzian school at Cheam, England, organized by Charles Mayo (*qr*). The school was Pestalozzian in name only, notes Krusi, for its methods were relics of the medieval age. At the end of the year he severed his connection with the school at Cheam to accept an appointment in the normal college conducted by the Home and Colonial School Society (*qr*). He had charge of the classes in methods of teaching, mathematics, and drawing, and while here he worked out and published his system of inductive drawing. After five years (1847–1852) in the normal college in London, he returned to Switzerland, but a year later he came to America to accept a post in the private normal school conducted by William Russell (*qr*) at Lancaster, Mass. Here his associate teachers were Dana Pond Colburn and Sanborn Tenney. He was institute lecturer in Massachusetts for two years (1855–1857), having as associates his country-

## KRÜSI, HERMANN, SR.

men Louis Agassiz and Arnold Guyot (*qqv*). For two years he was associated with W. F. Phelps (*qr*) in the newly organized state normal school at Trenton, N. J. (1857–1859). The next three years were devoted to lecture work in Massachusetts, and in 1862 Mr. Krusi accepted an appointment in the state normal school at Oswego, New York, with Dr. E. A. Sheldon (*qr*), where he spent twenty-five active years in the work of training teachers. He was one of the principal figures in the Oswego movement (*qr*) which emphasized oral methods of instruction in primary schools. He resigned his post at Oswego in 1887 and spent his closing years at Alameda, California, where he died on Jan. 28, 1903. His published writings include a *System of Inductive Drawing*, published originally in England and republished in the United States, *Life, Work, and Influence of Pestalozzi*, *Recollections of my Life*, and various essays and addresses on the philosophy and history of education.

W. S. M.

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**KRUSI, HERMANN, SR** (1775–1844) — Swiss educator and first associate of Pestalozzi, educated in the schools of Gais in the canton of Appenzell. He taught in the public schools of Appenzell from 1793 to 1799, when he took charge of an orphan school at Burgdorf. It was here that he made the acquaintance of Pestalozzi. After a short time Krusi united his school with that of Pestalozzi, and he accepted the rank of assistant teacher. Three of Krusi's friends, Tobler, Niederer, and Buss, were called to the Burgdorf institution as additional assistants. The four men had previously arrived at ideas similar to those held by Pestalozzi. They were devoted to, and believed in, disseminating his ideas. They lived under conditions of great poverty, simplicity, and even ignorance, but they lived in an atmosphere of human love. In his *Recollections*, Krusi says that his life at Burgdorf was broadened, deepened, and enlightened. When Pestalozzi transferred his institution to Yverdon in 1805, he was accompanied by Krusi. He continued to labor here until 1816, when there arose serious differences among the associates of Pestalozzi because of the arrogant demeanor of the financial manager of the school, Joseph Schmid (see PESTALOZZI). Krusi, Tobler, Buss, Niederer, and the other trusted associates of the great Swiss reformer resigned in a body, and Krusi organized a private school at Yverdon which he conducted for six years. In 1822 he was called to the

principalship of a higher cantonal school at Trogen. Under his administration the school attained distinction, and pupils were sent to it from different parts of Switzerland and from Italy. In 1833 Krusi was called to the principalship of the new normal school at Gais. The school became well known in Europe, and was visited by many American and English students of education who have left records of their impressions. It was in many important features a replica of the more famous institution at Yverdon. Books, except for reading, were seldom used. The instruction was largely oral, but the pupils had to make their own books, by collecting and organizing the subject matter of class exercises into notebooks. Field excursions for the purpose of studying natural history and local geography occupied considerable time, and walking, climbing, swimming, and systematic exercises in gymnastics formed a part of the physical training of the students. He continued at the head of the cantonal normal school at Gais until his death in 1844. His son, Hermann Krusi, Jr. (q v), was first a student and later an instructor in the normal school at Gais. W. S. M.

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**KYMOGRAPH** — See PSYCHOLOGICAL LABORATORY

**KYOTO, UNIVERSITY OF** — See JAPAN, EDUCATION IN.

**KYPHOSIS** — See SPINAL CURVATURE

**LABOR** — See MANUAL LABOR, SOCIETY FOR PROMOTING MANUAL LABOR, also INDUSTRIAL EDUCATION, GILDS AND EDUCATION; MANUAL TRAINING

**LABOR BUREAUS** — See VOCATIONAL GUIDANCE OF SCHOOL CHILDREN

**LABOR, CHILD** — See CHILD LABOR

**LABOR PERMITS** — For school children. See LEAVING CERTIFICATES

**LABORATORY** (from Lat. *laborare*, to labor) — Originally the term applied to the shop where the alchemist or chemist elaborated his chemical and medicinal products, now used very generally to indicate the buildings or rooms set

apart for conducting practical investigation in any of the sciences. The laboratory furnishes a most important adjunct to any educational institution and is essential in the teaching of any science, and is treated in its various aspects under different captions in the Cyclopaedia. The theory of laboratory work is discussed under EXPERIMENT, EXPERIMENTATION, LOGIC OF, EXPERIMENT IN EDUCATION, EXPERIMENT, TEACHING BY, also PSYCHOLOGY, EXPERIMENTAL, SCIENCE, EXPERIENCE, and EMPIRICISM. The function, equipment and operation of laboratories is discussed under each of the natural sciences, as BOTANY, CHEMISTRY, PHYSICS, etc. Of special educational interest is the treatment under EXPERIMENTAL PEDAGOGY, PSYCHOLOGY, EDUCATIONAL, PSYCHOLOGICAL LABORATORY. In a broader, less technical sense, the term is sometimes used to refer to such work as is described under EXPERIMENTAL SCHOOLS and STATISTICAL METHOD. The literature of the subject will also be found in connection with the articles mentioned above. The historical development of the laboratory is outlined in the historical sections of the articles on the various natural sciences.

**LABORATORY METHODS IN MATHEMATICS** — See MATHEMATICS, LABORATORY METHODS IN

**LABORATORY, PSYCHOLOGICAL** — See PSYCHOLOGICAL LABORATORY

**LACE MAKING** — See HOUSEHOLD ARTS

**LA CHALOTAIS, LOUIS RENÉ DE CARADEUC DE** (1701-1785) — French magistrate and statesman. He was a striking figure during the pre-revolutionary period, and one who exerted a noteworthy influence on the educational thought of his time. His *Two Reports on the Constitutions of the Jesuits* submitted in December, 1761, and May, 1762, to the Parliament of Brittany, of which he was Attorney-general, were largely instrumental in bringing about the suppression of the order in France (1764). Falling into disfavor, he was thrown into prison, and there in solitary confinement wrote a remarkable defense, closing with these words: "Written with a pen fashioned from a toothpick and in ink made from a mixture of chimney soot, vinegar, and sugar, on the paper wrappings of packages of chocolate." "The writings of La Chalotais," said Voltaire, "will live forever." The most important work of his life was probably his *Essai d'Éducation nationale ou Plan d'Études pour la Jeunesse* (1763), whose significance has unfortunately been almost completely overshadowed by Rousseau's *Émile*, which appeared in the previous year. This memoir, looking to the reform of the secondary education of his time, was almost immediately translated into Dutch, Russian, and German. He proposed to sub-

stitute for an educational scheme that was primarily adapted for purely school purposes, one that should fit the individual to discharge the duties that devolved upon him as a citizen. After a general introduction on the function of education, the inadequacy of the existing institutions, and the characteristics of the teacher, he laid down general principles for fixing the number of colleges (*i.e.* secondary schools), discussed some general considerations of method, and closed with a carefully elaborated curriculum for the secondary schools. In many of his arguments, especially those on the importance of the place occupied by physical education, on the practical value of modern language study, and on substituting lay teachers for the omnipresent clerical teachers, he was unquestionably far in advance of the prevailing practices of his time. F E F

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**LACHMANN, KARL** (1793–1851) —

German scholar and critic, born at Brunswick. He was educated at home and in the local gymnasium, and in 1809 proceeded to the University of Leipzig with the intention of studying theology. He transferred, however, to classical studies which he pursued under Heyne (*q.v.*) at Göttingen, and under Beneke's influence he took up German philology. He took his degree at Halle. After teaching for a time at Berlin and Königsberg, he became professor extraordinary at the University of Königsberg and lectured on German philology. In 1825 he was called to Berlin, and in 1830 became a member of the Academy of Sciences. He edited numerous works in Greek, Latin, and German literature, and introduced new conceptions and new standards in textual criticism. The text, the author, the content and spirit of the work, were all to receive consideration. It was, however, on the purity of the text and the restoration of the original which claimed his chief attention. Among the chief of his editions are those on Propertius (1816), Propertius, Catullus, and Tibullus (1829), *Fables of Avianus and Babrius, Lucretius* (1845–1850), Greek Testament (the introduction containing an exposition of his views on textual criticism, 1850). Lachmann also wrote on meter in Greek poetry, on the dialogue in Greek Tragedy, and edited many early German works. Applying the principles of Wolf's *Prolegomena*, he tried to prove that *Die Nibelungen Not* could be dissected into twenty original lays, and later he divided the *Iliad* into eighteen distinct lays. Of Lachmann's influence Munro says, "Hardly any work of merit has appeared in Germany since Lachmann's *Lucretius* in any branch of

literature without bearing on every page the impress of his example."

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**LACROSSE** — A game which had its origin with the American Indians under the name of "Baggataway." It was played by two sides, each consisting of a whole tribe, often numbering hundreds of players. The match was started at dawn and continued until one side had scored 100 goals, this often required several days of play from dawn until sunset with a few short periods of rest. From this crude game of battle, the Indians and the white inhabitants of Canada developed the modern game. The number of players was limited to twelve on each team, the size of the playing field decreased to about 125 yards by 50 yards, the goal posts lowered to six feet, the size and shape of the "crosse" or playing stick fixed, and the old buckskin ball replaced by a hard, rubber ball. From Canada the game spread to the United States in 1867 and to Great Britain in 1877. Harvard was the first college to adopt lacrosse when a team was organized in 1881. Princeton, Columbia, New York University, and Yale soon followed, and the game has gained steadily in popularity with college and preparatory school students.

Lacrosse is a splendid game, the running, dodging, catching, and throwing the ball, serve to develop vitality, speed, agility, and self-control in a large measure. Few games offer as many opportunities for individual skill and team play as lacrosse. Students who are too small for football or rowing often develop into skillful players, for agility and skill are more desired than weight or strength. The game is intensely interesting to spectators and in every way is one of the best games played in the colleges and schools. G L M

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**LACTANTIUS FIRMIANUS** (c. 250–325)

— The last of the Latin apologists, a pupil of Arnobius (*q.v.*). He made Cicero his literary and philosophical model with such success that he was known amongst the humanists as "the Christian Cicero." He attained such eminence as a teacher of rhetoric that Diocletian made him official professor of eloquence in his new capital of Nicomedia, which he intended to make the intellectual and political equal of Rome. Constantine chose him to preside over the education of his hen-apparent, Crispus, in which occupation he spent his closing years as

## LADY MARGARET HALL

**Trier** He was in no sense an original thinker, but is distinguished for his sound judgment and elegant literary style, the milky softness of which procured for him the name Lactantius. He was a thoroughly consistent example of a Christian philosopher and his writings contain much valuable information as to the ancient systems of Philosophy. His *Divine Institutions* was the first attempt at a systematic exposition of Christian doctrine in Latin. The latter part of his *Epitome* of this larger work is an admirable compendium of religious ethics. His treatise *On the Anger of God*, directed against the Stoics and Epicureans, in which he proves the divine character capable of righteous indignation, was highly praised by St Jerome. *The Workmanship of God* is a discussion of the anatomy of the human body and the nature of the soul in opposition to the Epicurean Philosophy. He adopts the Creationist view, affirming that the soul is the immediate workmanship of God without human cooperation. His book on the *Deaths of the Persecutors* is a résumé of the various persecutions from the time of Nero and is of prime importance to the historical student. His treatise on *Grammar* is lost.

W R

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## LADY MARGARET HALL, OXFORD —

See WOMEN, EDUCATION OF; OXFORD UNIVERSITY

## LAFAYETTE COLLEGE, EASTON, PA —

A Presbyterian college opened in May, 1832, under the presidency of Rev George Junkin, D D. A scientific school was established in 1865 through the liberality of Ario Pardee, Esq. The college department now maintains three courses of study, Classical, Latin Scientific, and General Scientific, leading to the degrees of A B, Ph B., and B S., and the technical school courses in civil, mining, electrical, and mechanical engineering, and analytical chemistry leading to the appropriate degrees. The entrance requirements are fifteen units. The faculty (1911) consists of fifty members and the students number 560, — 286 in the college, and 254 in the technical school, with twenty pursuing graduate studies. The college is beautifully located at the junction of the Lehigh and Delaware rivers. The grounds occupy sixty acres. The buildings number fifty. Among those who have given distinction to the college are Professor James H Coffin, LL D, author of *The Winds of the Globe*, whose discoveries as to cyclonic storms are the basis of the forecasts of the Weather Bureau, and Professor Francis A March, LL D, L H D, D C L., who was one of the pioneers in the philological study of the English language. Ethelbert D Warfield, D D, LL D, has been president since 1891.

## LAKE FOREST COLLEGE

**LAGGARDS IN THE SCHOOLS.** — See RETARDATION, AND ELIMINATION OF PUPILS.

**LAKANAL, JOSEPH** (1762-1845) — French statesman, teacher, and, after Condorcet (*qv*), the most important of the educational leaders of the Revolutionary period. He was a member of the National Convention, and of the Council of Five Hundred. His position in educational history rests exclusively upon his activity as member of the Committee of Public Instruction in the former body. The bill, of which he was joint author with Sieyès and Daunou (*qv*), presented to the Convention, June, 1793, provided that the state assume the support of elementary instruction, and that secondary and higher education (barring some few subsidized higher institutions) should be left to private initiative. This bill shared the fate of so many of the projects of the Revolutionary assemblies and was set aside for another (the plan of Lepelletier). It was the report of Lakanal (February, 1795) that resulted in the foundation of the *Écoles centrales* (central schools), which bridged the gap in secondary education between the passing of the old régime and the establishment of the lycées by Napoleon in 1802. Lakanal's most distinctive work was his report (October, 1794) which provided for the foundation of the Normal School (see NORMAL SCHOOL, HIGHER). After the defeat at Waterloo, Lakanal came to the United States, where he spent some twenty-two years among his fellow countrymen in the south, residing at New Orleans for a part of the time. He returned to his native country in 1837, and there spent the remainder of his life.

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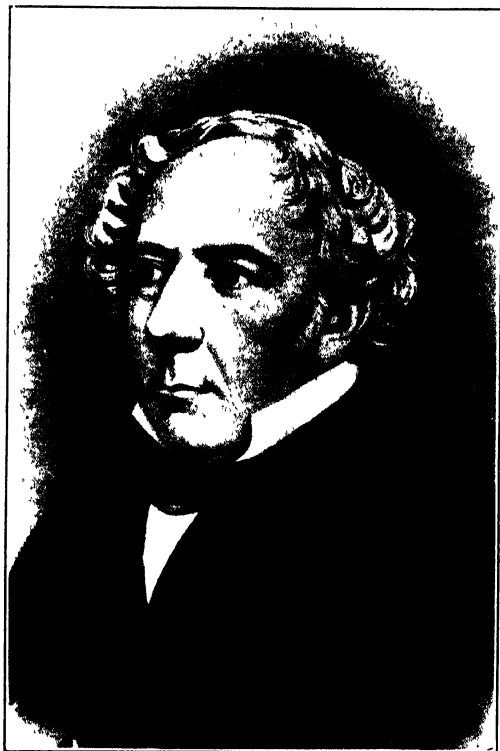
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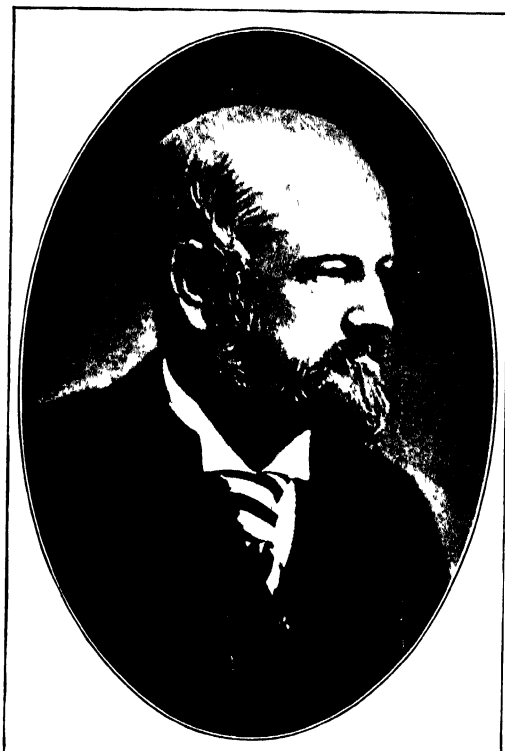
**LAKE ERIE COLLEGE, PAINESVILLE, OHIO** — An institution founded in 1847 as the Willoughby Seminary at Willoughby, Ohio, for the higher education of women, and moved to its present location in 1856, where instruction was begun in 1859. The present title was adopted in 1908. The entrance requirements are fifteen units, candidates being admitted by examination or by certificate from accredited schools. The college confers the degree of A B. The enrollment in the college in 1911-1912 was 118. There are thirty members on the teaching staff.

**LAKE FOREST COLLEGE, LAKE FOREST, ILL.** — Founded in 1857 as the Lind University by a company formed for the pur-

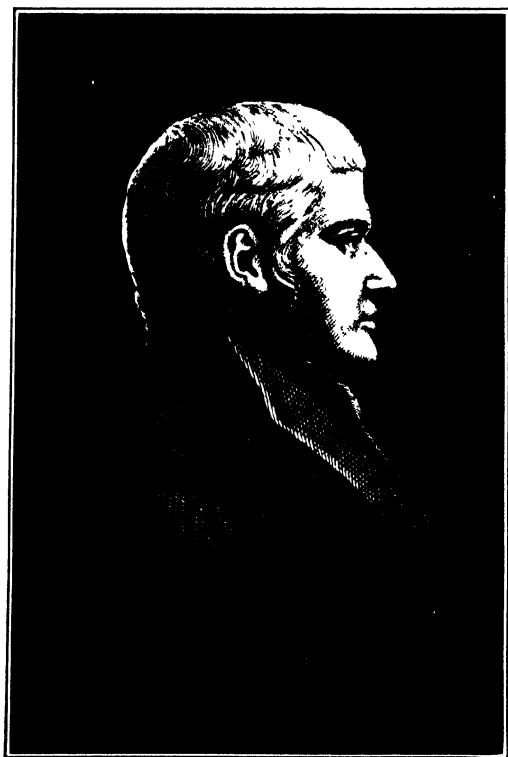




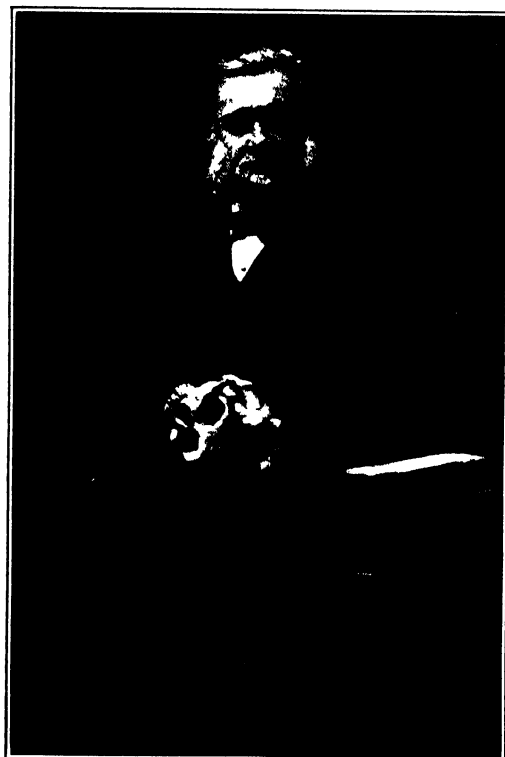
Sir William Hamilton (1788-1856) See p. 213



Quintin Hogg (1845-1903) See p. 300



Joseph Lancaster (1778-1838) See p. 621



Thomas Henry Huxley (1825-1895) See p. 352

A GROUP OF ENGLISH EDUCATORS.

pose of establishing a residence suburb and an educational institution within easy distance of Chicago. In 1865 the legal title of the institution became the Lake Forest University Collegiate work with a four years' course was not begun until 1876, up to that date a secondary education was provided for boys in the Lake Forest Academy, and for girls in Ferry Hall. Attempts were made from time to time to develop professional schools but in 1902 it was decided to confine attention to the development of the academic and collegiate departments only. The entrance requirements are sixteen units. The degree of A B is conferred on students who complete the required courses, which are arranged according to the group system. The A M is granted after a year of residence work and a thesis. In 1911-1912 there were enrolled in the college 185 students. The faculty consists of eighteen members.

**LALOR, THERESA** (1766-1846). — Founder of the first Roman Catholic school for girls in the United States. She opened a school for Catholic girls in Philadelphia in 1797. Two years later she took charge of the girls' school founded at Georgetown and in 1808 she became the mother superior of the Convent and Academy of Visitation. Five convents of her order were established in the United States. W S M

**LAMARCK** — See EVOLUTION, SCIENTIFIC THEORY OF

**LANCASTER, JOSEPH** (1778-1838). — The English educator and advocate of the monitorial system (*q v*). He was born in Southwark (London) on the 25th of November, 1778, the son of a small tradesman. Precocious piety and copious speech seemed to justify his parents' hopes that he would become a Dissenting minister, but he disappointed them by joining the Quakers, a sect without paid preachers. After being occupied for some time as usher, he (probably in 1798) opened a school on his father's premises. His enthusiasm and his natural aptitude for managing children combined with the food and clothes, which the benevolence of some Quakers enabled him to distribute during a severe winter, made his school so popular that it had to be transferred twice or thrice into larger rooms. Lancaster was nearly overwhelmed by his success. His pupils were too many for him to teach alone and he could not afford to pay for help. The idea, therefore, occurred to him of making those who knew a little teach those who knew less. Being entirely ignorant of the history of education, he thought that the idea was new, and he embodied it in a system of discipline and instruction showing considerable ingenuity. As he also invented sundry money-saving devices, such as substitutes for reading books and

copy books, he reduced the cost of maintaining a school.

Lancaster was so proud of his system that in 1803 he published *Improvements in Education as it respects the Industrious Classes of the Community, containing a Short Account of its Present State, Hints towards its Improvement, and a Detail of some Practical Experiments conducive to that End*. The fact that a second edition was published the same year proves the author's success in "pushing it." He had now begun to seek supporters outside the circle of his coreligionists. The earliest of his noble patrons were Lord Somerville and the Duke of Bedford, the most exalted was George III, with whom he procured an interview in 1805. The king listened patiently to a long account of the "System," expressed a wish that every poor child in his dominions should be taught to read the Bible, promised to subscribe a £100 a year, and put down the Queen for £50 and the Princesses for £25 each.

The royal favor expanded both the enthusiasm and the imprudence of Lancaster. He had already, with only a fraction of the cost assured, built a large schoolhouse in the Borough Road, he now added a printing press and a slate manufactory, he started a model rural school, and traveled in state to deliver lectures advocating the establishment of other schools. Toward the end of 1807 his debts were over £6000 and he was arrested. On Jan. 22, 1808, William Coiston, Joseph Fox, and he, meeting at Corston's house on Ludgate Hill, formed themselves into a "Society for the purpose of affording education to the children of the poorer subjects of George III" (See BRITISH AND FOREIGN SCHOOL SOCIETY). In July William Allen (*q v*) and others were added to the Committee. The members made themselves responsible for Lancaster's debts, undertook to manage his financial affairs, and released him for missionary journeys. As these resulted in the establishment of a good many schools, all requiring masters trained in the System, the business gradually grew too big for the original Committee, to which in December, 1810, more than forty noblemen, statesmen, and philanthropists were added.

In 1812 Lancaster, against the advice of his friends, started a boarding school in which his System was to be applied to secondary education. This was a private speculation which in a year brought him to bankruptcy. The institution in the Borough Road was not involved in his ruin, as the Committee, anticipating it, had induced him, for valuable consideration, to relinquish his legal title to the premises. In order to acknowledge his past services and provide for his future needs, the Committee created the post of superintendent of the schools with nominal duties and a liberal salary, but irritable vanity prevented his trying to cooperate with the men who had been

his generous and disinterested supporters, and in April, 1814, having persuaded an unsuspecting foreigner to provide the capital for starting a rival school in a neighboring street, he resigned his appointment. The rival school was a failure and Lancaster, having alienated the sympathies of the public, sank into obscurity and distress.

In 1818 he resolved to abandon his ungrateful country and begin a new life in the New World. Lancaster's System had preceded him and he was warmly welcomed from Albany to Washington. He made his first home at Philadelphia, but "rumors of debt and discreditable pecuniary transactions in England" rendered cordial relations with the Quakers impossible and he moved on to Baltimore. There he opened an "institute," but it does not appear to have been very successful and in 1825 he was glad to accept an invitation from Bolivar, the "Liberator" of South America, to organize schools for the young Republic. In less than two years he fell foul of the President and was compelled to leave Caracas.

Information respecting the remainder of his life is very fragmentary. We catch glimpses of him here and there lecturing or teaching, sometimes enjoying brief prosperity, sometimes sick and poor. In 1827 he was at New Haven, in 1828 the City of New York voted him \$500, in 1829 he went to Canada, where the Parliament made several grants to enable him to carry on his experiments in education, but in 1833, having quarreled with the Speaker, he returned to the United States. From New Haven he issued an appeal for aid pending the first payment of an annuity which the leading members of the British and Foreign School Society were subscribing to buy for their old traducer. In September, 1838, he was arranging to return to England, but an accident in a New York street ended his life on the 23d of the next month.

For about seven years after his interview with the king, Lancaster was the center of an extensive and passionate controversy. He was assailed on personal and on religious grounds. He was accused, quite unjustly, of having stolen his System from Bell (*q.v.*) and said to have invented nothing except its defects. The greatest of these was its catholicity. Lancaster and his supporters maintained that in schools attended by the children of all sects the teaching should not be distinctive of any sect. Bell's supporters maintained that the doctrines of the Established Church should be taught. The personal controversy has long ceased to interest, but the religious controversy is still unsettled in England. A hundred years ago it had one beneficial result, -- it led to the establishment of many schools in emulation or in rivalry. D. S.-N.

For portrait, see p. 621.

See MONITORIAL SYSTEM.

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**LANCELOT, CLAUDE** (1615-1695) — One of the most influential teachers in the schools of Port-Royal (*q.v.*) none contributing more to the fame of the society by his pen than he. His most notable writings were unquestionably a series on learning foreign languages, the first being: *Nouvelle Méthode pour apprendre facilement la Langue latine* (1644). This was intended as an abbreviated form of Despautère, the grammar then in almost universal use, but all its rules were in French verse, whereas those in the older text had been in Latin verse. This was followed by similar texts: Greek (1655); Italian (1660); Spanish (1660).

F. E. F.

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**LANCING ST MARY AND NICHOLAS COLLEGE, SHOREHAM, SUSSEX** — See GRAMMAR SCHOOLS, COLLEGE, COLLEGE, ENGLISH, PUBLIC SCHOOLS.

**LAND GRANT COLLEGES.** — See AGRICULTURAL EDUCATION, NATIONAL GOVERNMENT AND EDUCATION.

**LAND GRANTS FOR EDUCATION** -- See NATIONAL GOVERNMENT AND EDUCATION.

**LAND, SCHOOL** — See SCHOOL FUNDS. NATIONAL GOVERNMENT AND EDUCATION

**LANDERZIEHUNGSHOME.** — See DEUTSCHE LANDERZIEHUNGSHOME, BOARDING SCHOOL.

**LANDER COLLEGE, GREENWOOD, S. C.** -- An institution for the education of girls and young women under the auspices of the South Carolina Conference of the Methodist Episcopal Church, South. The institution was founded in 1872 as the Williamston Female College and was moved to its present location in 1904 under the new title. Sub-collegiate, collegiate, and music and art courses are offered. Ten admission units are requirements. By its charter the college is authorized to grant degrees. The faculty consists of nineteen members.



**LANDSMANNSCHAFT** — The name of one type of Student Association in the German universities originating in the early part of the seventeenth century. They were originally groupings of students according to the district from which they came within each nation (See UNIVERSITIES). For a long time the residence qualification was adhered to, but later, membership was thrown open. When the *Burschenschaft* (*q v*) arose (about 1860), many of the *Landsmannschaften* were dissolved and joined the new movement. When the *Burschenschaften* were suppressed (following the revolutionary period of 1830), the name *Corps* (*q v*) was assumed by many organizations. For a time there was no distinction between *Corps* and *Landsmannschaft*, but since 1888 the latter has a separate central organization, the *Coburger Landsmannschaften-konvent* and a periodical, the *Landsmannschaften-konventzeitung*. In point of organization and exclusiveness the *Landsmannschaft* more nearly resembles the *Corps* than the *Burschenschaft*.

See STUDENT LIFE

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**LANE, ALBERT GRANNIS** (1841–1906) — School superintendent, educated in the public schools of Chicago. He was principal of the Franklin School, Chicago (1858–1869), superintendent of Cook County, Illinois (1868–1873 and 1877–1891), city superintendent of the schools of Chicago (1891–1898) and assistant superintendent (1898–1906). He was active in the National Education Association and was the author of a number of papers on educational subjects. W S M

**LANE THEOLOGICAL SEMINARY, CINCINNATI, OHIO** Established in 1829, organized under the Presbyterian church of the United States to educate young men for the ministry. All candidates must be members in full communion with some evangelical church, and for the admission to the full course should be graduates of a college or university. Diplomas are granted on completion of the full three years' course.

**LANFRANC** (c. 1005–1089) — Archbishop of Canterbury, born at Pavia. He studied law for a time, but on his father's death he went to France, and with a band of scholars opened a school at Avranches in 1039, which attracted many students. Determining to devote himself to a religious life, he went to the monastery at Bee, where he opened a school which was attended by students from France, Germany, and Italy. In 1070 Lanfranc became Archbishop of Canterbury, and in that position did much to promote learning in England by introducing and preferring foreign clerks. Lan-

franc was especially interested in the Cathedral of Canterbury, which was in the hands of monks. The *Constitutions of Lanfranc* deals with the charge and conduct of oblates and young novices, but, except for a reference to reading, no mention is made of their instruction. Lanfranc was the author of many works, the chief of these is the *De Corpore et Sanguine Domini nostri*, a defense of transubstantiation against Berengarius of Tours.

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**LANGDON, SAMUEL** (1723–1797) — Eleventh president of Harvard College, from which he graduated in 1740. He taught at Portsmouth, N H (1740–1745), engaged in the work of the ministry, and was chaplain in the colonial army. He was president of Harvard College from 1774 to 1780, and the author of a number of philosophical and religious works. W S M

**LANGE, FRIEDRICH ALBERT** (1828–1875) — Philosopher, born Sept. 28, 1828, at Wald near Solingen in Westphalia, the son of a pastor who afterward became a well-known professor of theology. After attending the gymnasia of Dunsburg and Zurich, he studied classical philology at Zurich and Bonn, and taught for ten years (1852–1862) in the gymnasia of Cologne and Dunsburg and the University of Bonn. Resigning his position at Dunsburg for political reasons, he became the editor of a liberal paper and secretary of the chamber of commerce of Dunsburg, took an active interest in labor unions and various social reforms (cooperative societies, consumers' leagues, loan societies), and delivered popular lectures on philosophy. His celebrated work on the *History of Materialism* (translated by E. C. Thomas, 3 vols., 1892) first appeared in 1865 (second edition revised and enlarged, 1873–1875, later edition edited by Cohen) and was followed by two able economic treatises, *The Labor Question*, 1865, and *J. S. Mill's Views on the Social Question*, 1866. During this active period he also contributed a number of excellent articles on education to Schmid's well-known *Encyclopedia* and worked on his *Logical Studies*, which was published after his death (1877). In consequence of antagonism to his radical social and political views, Lange resigned his positions (1866) and removed to Switzerland where he devoted himself to journalism, business, politics, and teaching, until 1872, when he was called from his professorship of philosophy at Zurich to a similar chair at Marburg. Here he died, Nov. 21, 1875, in the bloom of his manhood, a victim of his strenuous devotion to work.

Lange endeavored to reconcile the prevailing scientific realism of his age with the traditional idealism by going back to Kantian critical idealism. For him materialism is a legitimate working hypothesis for the mental as well as the physical sciences, but impossible as an ultimate philosophy in view of Kant's criticism and the physiology of the sense organs, while speculative idealism belongs with religion and art to the realm of poetry, which, however, have a high value for the life of man. We cannot reach certain and objective knowledge in religion and metaphysics through reason and understanding; their value lies in their subjectivity, in their being the highest realization of the individual's spiritual self. And though natural science too is merely the product of man's mental organization, its value rests upon the elimination of self, of all teleological, emotional, religious, aesthetic, and moral presuppositions. Natural science must be supplemented by a critical idealistic philosophy, the real world by the world of values, the world of ideals.

In education Lange demanded that we keep in mind both the ethical goal and the psychological factor; pedagogy must employ the political sciences, physiology, and modern empirical psychology, and become an empirical science of national education. He criticized many of the tendencies and methods common in Germany, the mania for centralization and uniformity, the mechanization of instruction, the position of religious instruction in the curriculum, and pleaded for greater freedom and elasticity, for physical training, for training in citizenship, for realistic studies, for better training of teachers, and recommended many reforms which have since been adopted.

F T

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**LANGEN, RUDOLPH VON** — See RENAISSANCE AND EDUCATION

**LANGLEY, JOHN** (d. 1657). Headmaster of St. Paul's School, London, 1640-1657. He was born near Banbury in Oxfordshire, graduated B.A. from Magdalen Hall in 1616, and became schoolmaster at Gloucester in 1617, where he stayed till 1627. In 1643 he was one of the licensers of the press for books of philosophy, history, poetry, morality, and arts. Langley wrote *Totius Rhetoricæ Adumbratio in usum Paulinæ Scholæ* (1644) and an *Introduction to Grammar*. Dr. Edward Reynolds, afterwards Bishop of Norwich, who preached Langley's funeral sermon, 1657, spoke of

Langley as "a learned man, a historian, cosmographer, and a great antiquary in the most memorable things of this Nation." He thus entered into the tradition of the great antiquary-schoolmaster, William Camden (*q.v.*), and marks the growing tendency toward widening the field of interest of schoolmasters beyond the merely classical to the recognition of the claims of England, in its language, history, and literature, to the attention of masters and pupils of English schools. F W

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**LANGUAGE, ENGLISH** — The English language as a clearly differentiated branch of scientific and academic study was not fully recognized until the development of the modern science of philology. In the seventeenth century interest in the antiquities of the English people had led to a certain amount of examination of the language of the older periods, mainly with a view to the translation of Anglo-Saxon texts and then use in ecclesiastical history and polemics (see **ANGLO-SAXON**). Although these earliest investigations were not carried on in a thorough or systematic way, a number of works were then written, e.g. grammars and dictionaries (*q.v.*), which were of some use to later students of the language. In the succeeding century students of language were interested in the subject mainly from a philosophical point of view, and attempts were made, always upon an insufficient basis of fact and observation, to explain language as a universal human activity according to the rules of a systematic logic. Attention being directed mainly to theory, the study of the facts of the speech languished. Of the English philosophical linguists one of the most ingenious was Lord Monboddo, James Burnett, who published his *Origin and Progress of Language* in six volumes, from 1773 to 1792. More representative of linguistic scholarship specifically, and perhaps the most important work of the eighteenth century dealing with the English language, is J. Horne Tooke's *Epæ Proœnta, or the Diversions of Purley*, the first volume of which appeared in 1786. This work, which is concerned mainly with etymology, was undertaken in a casual way as result of a lawsuit in which Tooke was concerned, the decision of which turned upon the meaning of certain English prepositions. Although the book is full of the wildest theoretical derivations of words and of unfounded linguistic generalizations, it nevertheless shows considerable information and even scholarship of

a miscellaneous and unsystematic kind. It serves as a fair index to the state of knowledge with respect to language in its time, and shows also that the lack of a proper method was the main reason why much of the linguistic investigation of the philosophical students of language has proved unsound and valueless.

The historical and scientific study of language according to modern methods begins with the foundation of the science of philology in the early nineteenth century. The scholarly point of view with respect to the study of the individual languages, *e.g.* English, French, German, etc., has in general followed the changes in the theoretical conception of the whole subject of philology (*qv*). Two important and differing conceptions of philology may here be noticed. The first and earlier of the two is that which was formulated by Friedrich August Wolf (*qv*) in his various writings on classical antiquity, especially the literature and art of Greece. It was left to his followers, Boeckh, H. Paul, and others, to extend his conception of philology to other civilizations, especially to the Teutonic civilization of Europe. The greatest achievement of the Wolfian conception of philology has been the production of the *Grundriss der germanischen Philologie* (2d ed., Vol. I, 1896), under the general direction of H. Paul, but with the collaboration of various scholars in special fields. The inherent difficulties of the synthetic Wolfian conception of philology, and the natural tendency of all such studies toward greater differentiation and specialization, prepared the way for the second and more analytic conception of philology, which is the one prevailing to-day, at least in practice, and the one which has been most fruitful of results. This theory of philology makes the subject in many respects coincidental with the science of linguistics, the tendency in this direction being apparent even in Paul's *Grundriss* from the greater relative importance of the fifth, the linguistic section, as compared with the other sections of the book. The founder of the modern science of philology or linguistics, as distinguished from Wolf's imaginative and poetical conception of the subject, is usually assumed to be Franz Bopp (*qv*), born 1791, who chose as his particular subject of investigation the origin of the inflectional system of the Indo-Germanic languages. Bopp's method was comparative, and in the course of his investigations he not only arrived at a theory of his own with respect to the origin of inflection, but a more important result of his work was the detailed proof of the common relationship and origin of the Indo-Germanic languages, a fact which had been guessed before Bopp's time, but never credibly demonstrated. The conclusions of Bopp established the comparative method of linguistic investigation upon a sound basis, and this method has more or less colored all subsequent study of language. Still further

differentiation was brought about by Jacob Grimm (*qv*), who published in the year 1819 the first volume of his *Deutsche Grammatik*. To Grimm belongs the credit of first clearly formulating the methods and the laws of the historical study of language. His procedure, familiar to every novice to-day, was to place the various forms of a special language, English for example, in a chronological sequence from Anglo-Saxon to Modern English, the conclusions drawn being those which arose immediately from the observation of the facts thus arranged. Grimm declared himself hostile to all general abstract and logical ideas in the study of language, thus placing himself squarely in opposition to the philosophical and logical school of linguists, which still flourished in his day. Grimm also regarded language as a purely social product, subject to the laws of natural growth, like all other human institutions, and although this aspect of language was not extensively developed by him, he deserved credit for being one of the first to perceive it clearly. Grimm likewise deserved recognition for being the first student of language to see clearly the importance of the sounds of language, historically considered, and also of the forms of a language other than the standard language, that is, of the popular dialects, for the understanding of the history of the language. One other distinction Grimm also may claim, that of being one of the earliest scholarly editors of Teutonic texts, Anglo-Saxon as well as German. Grimm, with his many-sided activity, may stand, therefore, as a type of the best among historical philologists, and the value of his methods may be inferred from the fact that the results of his investigations are to a large extent accepted to this day.

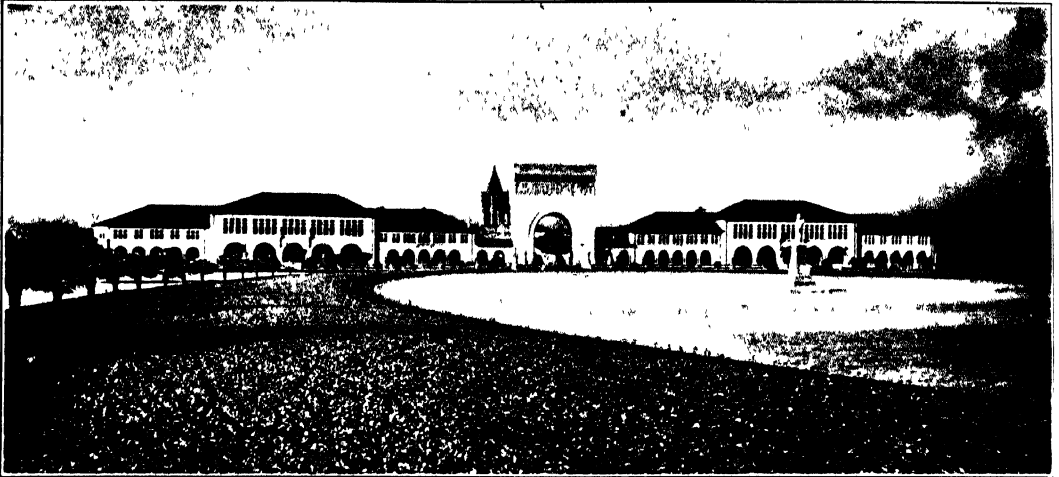
The aim of the historical student of language is theoretically less ambitious than that of either the Wolfian philologist or the comparative student of language, but as his field of observation becomes more restricted in extent, it is covered in a correspondingly more detailed and exact way. The final purpose of the historical students of the English language has been so to search and elucidate the material of the language as to enable them to present a complete picture of it. To this end the student must devote himself to the minute study of all the objective facts of the language, in phonetics, in morphology, in vocabulary, and in syntax. Before such a vast array of facts can be presented in a systematic way for any single language, a great deal of counting, cataloguing, and classifying is necessary, investigation of a more or less mechanical and statistical type, which the modern student, at least of English, thanks to the earlier investigators, to a considerable extent escapes, but which is still sometimes unjustly made the reproach of linguistic specialization by those who are hostile to it, it should not be forgotten, how-

ever, that the present simplicity and system in the history of the language are largely the result of statistical labors, laws in language being nothing more than observation of individual instances. Having thus gathered and classified the facts of his language, the historical student, by placing them in chronological sequence, shows that later usages arise regularly out of earlier, such observations constituting a rule or law of the development of the language. In general the earlier historical students of language concerned themselves but little with the causes or the psychological or physical explanations of the laws which they recorded. They looked upon it as their task to state empirical laws, trusting that when a sufficiently large area of observation had been thus covered, many questions that appeared difficult of solution would be answered of themselves. In this hope they were not disappointed, but obviously a mere descriptive statement of the facts of a language is not all that can be expected of the historical student, and it is now assumed that the descriptive laws are preliminary to the explanation of the meaning of the facts as illustrating general social and psychological processes in language. This fuller realization of the significance of psychological activities and of social custom in language is due to the investigations of Paul, Stenhal, and in general of the contemporary school of linguists, the study of the physical side of language by the flourishing modern school of phoneticians has been productive of particularly valuable results.

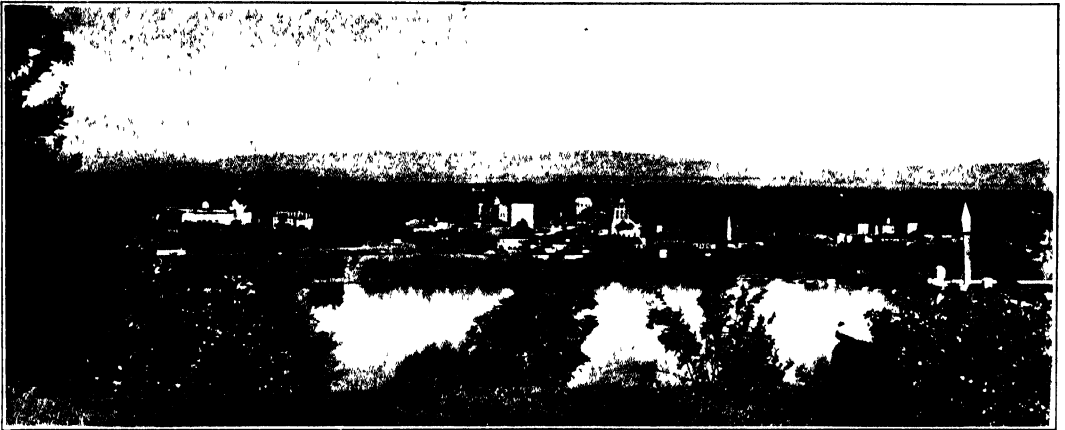
These are, in general, the principles upon which the modern scientific study of language is based, but a brief summary of the more important results of the historical and descriptive study of the English language will best show what has been accomplished and what remains to be done in that particular field. In the first place the duty of the student of language concerning which there would probably be least difference of opinion, that of transferring the early literary monuments of the language from perishable and inaccessible manuscripts to multiplied printed copies, assuring their preservation and general accessibility, has been performed. The important manuscripts have been transcribed and printed, most of them having been published in the volumes of the Early English Text Society. Some of the manuscripts have been photographed, but this method of producing exact mechanical copies of the originals has not as yet been extensively employed, although the time is doubtless not far distant when at least valuable manuscripts will thus be brought within the reach of all libraries. Unless unexpected and startling discoveries are made, there is consequently nothing to be added to the published documents that will, in any material way, alter the conclusions concerning the English language which may be drawn

from those now available. This does **not** mean, however, that the editing of English texts is a closed account. The Early English Text Society publishes lists of unedited manuscripts which should be copied and printed, and new editions, taking account of the results of more recent investigations, of much of the literature of the Old and Middle English periods are greatly to be desired. There is at present no edition of the *Beowulf*, the most important monument before the Conquest, in English or in German, which gives an adequate and comprehensive treatment of the poem. The text has been frequently printed, accompanied by glossaries and textual comment, but there is no modern summing up of the poem in all its aspects as an historical and literary record. With a few notable exceptions, the same is true of the main monuments of Anglo-Saxon literature, verse and prose, and in the preparation of exhaustive editions of the texts now available the English scholar has an important and pressing service to perform. Middle English texts have been, on the whole, more thoroughly edited than Anglo-Saxon, and of recent years some attention has been given to the careful editing, from a linguistic as well as literary point of view, of texts of the Early Modern English period, especially of dramatic texts.

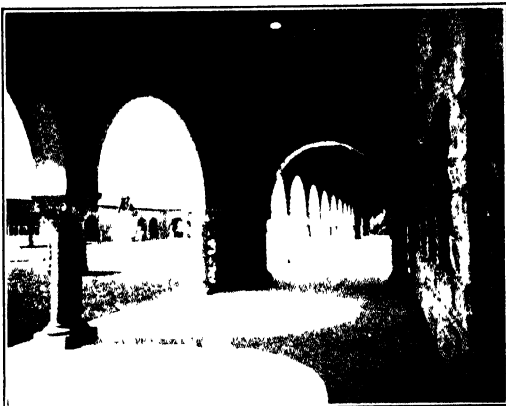
In the study of the sounds, the inflections, the vocabulary, and the syntax of the language, much has also been accomplished. The treatises of Ellis, Sweet, Jespersen, Sievers, and others present a fairly comprehensive history of English sounds. The questions which await solution are more or less minor ones of the limits of dialects, of the values of occasional manuscript symbols, of the individual characteristics of certain writers, etc., besides, of course, many theoretical questions of the origins, the causes, and the processes of sound changes. The study of English inflections has been carried much nearer completion than that of English sounds. The progressive changes in the system of English inflections, from Old to Modern English, their chronological divisions and dialectal variations, are subjects of elementary knowledge to the student of the language, and may be easily observed in the many schematic statements in the various manuals and histories of the language. On the other hand, the growth and development of the vocabulary, from the complex nature of the subject, is less readily presented in historical survey. The outlines of the subject may be followed in the various publications of Professor W. W. Skeat, who has made this field particularly his own; and the material for a comprehensive history of the English vocabulary is being gradually presented in the volumes of the *New English Dictionary*. The syntax of the language, on the other hand, although it has been by no means a neglected field, still presents its main problems unsolved, and, in



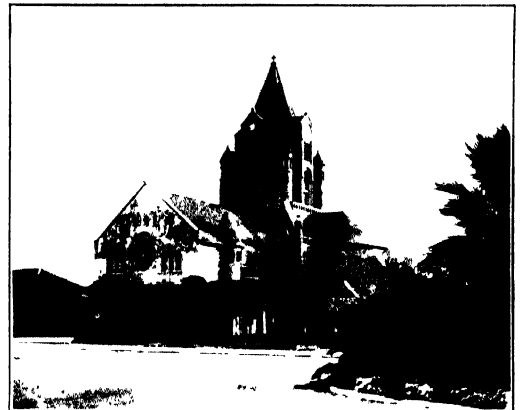
Main Entrance and Façade



Bird's-eye View from Foothills to the River



An Inner Court



Memorial Church

LELAND STANFORD JR. UNIVERSITY



fact, unstated. The results of syntactical investigations in English seem to be out of proportion to the amount of time and application which have been spent on them, and certainly are not equal in importance and generalizing value in their own field to the results of linguistic investigations in other directions, for example, in phonetics or morphology. The reason for this is probably to be found partly in the inherent difficulty of the subject and partly in the lack of an intelligible and generally accepted method. Syntax may be defined as the study of language as it takes form in the expression of thought, that is, of the formation and combination of sentences. It includes thus not only the use of the various cases, tenses, moods, genders, etc., according to the laws of concord, but also all departures from grammatical norms, word order, phrasing and the grouping of complex ideas, perhaps also the use of tones and inflections of the voice, of gesture and facial expression in coloring and assisting the meaning of the phrase. A complete syntax of the language would naturally include not only the written literary language, but also the colloquial spoken language of everyday intercourse, as the dictionary does, for example, in the treatment of words. Such a syntax of the language as is here described may possibly never be written, since the difficulty of reducing the multitudinous facts of observation to systematic statement seems humanly almost insurmountable. Consequently no attempt has ever been made to write a descriptive, historical syntax of the language, parallel to the descriptive statements of inflections, sounds, and vocabulary. In general it would seem that in the study of syntax the historical method must take a secondary place, and must serve as a guide and corrective to the student, rather than as an end in itself. It is possible that by studying all the recorded forms of a past period, for example, the Old English period, an approximately complete norm of Old English syntax could be realized, and by placing beside this norm a transition English, a Middle English, and a Modern English syntax, to mention only the larger chronological divisions, conclusions of far-reaching significance would undoubtedly result. But a complete normal syntax for any one period is still far from realizable, much less a series of syntactical pictures for a group of successive periods. More practicable than such an endeavor to build up a general descriptive and historical syntax of the English language is the attempt to show how and why different specific syntactical forms arose. The historical study of the phenomena thus takes its place as an aid in the psychological explanation of them. Instead of placing before himself the hopeless task of comprehending the whole vast structure of the language, the syntactical student may more profitably limit himself to following out the psychological

principles underlying certain forms or groups of forms that have their principle of unity within themselves. He may thus disregard and free himself of the burden of the obvious and the indifferent, and give his attention to those phenomena which will enable him to gain some insight into the spiritual life which serves as a background for the language, and which carry with themselves results which may be intelligently estimated and valued.

The work which, better than any other, may serve as an index to and a summary statement of the results of the modern scientific and historical study of the English language is the *New English Dictionary*. This work originated from a suggestion of Archbishop Trench, who in the year 1857 proposed the collection of materials for a new dictionary which should be a worthy record of the English language. This collection of references was immediately begun, quotations being taken "from all the great English writers of all ages, and from all the writers on special topics whose works might illustrate the history of words employed in special senses, from all writers whatever before the sixteenth century, and from as many as possible of the more important writers of later times" (Preface to Vol. I, p. 5). The dictionary is, therefore, not a compilation from older dictionaries, but all the material used in it was collected for this specific purpose. "The aim of the Dictionary is to furnish an adequate account of the meaning, origin, and history of English words now in general use, or known to have been in use at any time during the last seven hundred years. It endeavors (1) to show, with regard to each individual word, when, how, in what shape, and with what signification it became English, what development of form and meaning it has since received; which of its uses have, in the course of time, become obsolete, and which still survive, what new uses have since arisen, by what process, and when, (2) to illustrate these facts by a series of quotations ranging from the first known occurrence of the word to the latest, or down to the present day, the word being thus made to exhibit its own history and meaning; and (3) to treat the etymology of each word strictly on the basis of historical fact, and in accordance with the methods and results of modern philosophical science" (Vol. I, p. 6). The first volume of this work, published by the Clarendon Press, Oxford, appeared in 1888, and the whole is now nearing completion, the latest section (1911) coming down to "Tezkere". In its combination of thoroughness with exactness, the *New English Dictionary* represents the highest achievement of modern English scholarship. It is sometimes called the *Oxford Dictionary*, from the place of its publication, or *Murray's Dictionary*, from the name of its general editor.

In the academic development of the subject, the scientific study of the English vernacular

made its way much less rapidly in England than in Germany. In the latter country the study of the modern Teutonic languages, English among others, had already been extensively developed by such scholars as Bopp, Grimm, Schleicher, and others, before it received recognition in England in the appointment of Max Müller to the chair of comparative philology in the University of Oxford, in 1868. The explanation of the fact that German scholars have devoted so much time to the historical study of English is obviously to be found in the practically equal significance of the earlier periods of English for the history of English and German. The main stress in these earlier studies was therefore placed upon the comparative aspects of linguistic history. Only slowly and with difficulty did the study of the English language specifically detach itself from the larger subject of comparative philology. Aside from the Rawlinsonian Professorship of Anglo-Saxon (see *ANGLO-SAXON*), no official provision was made in the University of Oxford for the study of the English language until the establishment of the Merton Professorship of English Language and Literature in 1885. Only within the last twenty-five years, consequently, has the study of the English language received final recognition as a distinct and important part of the curriculum of an English university.

In America specific provision for the study of the English language by the creation of professorships in English philology or English language has also been made only in recent years. Among earlier linguists, for example, William Dwight Whitney was first Professor of Sanskrit in Yale University, after 1870 Professor of Comparative Philology, Francis James Child was Boylston Professor of Rhetoric and Oratory in Harvard University from 1851 to 1876, and after the latter date Professor of English. A pioneer student and teacher of the English language in America is Francis A. March (*qv*), since 1856 Professor of English Language and Comparative Philology in Lafayette College. Within the past generation the study of the English language has grown rapidly in Continental, English, and American universities. Whether or not special provision is made for such work by the appointment of a professor of the English language, courses are now given in all universities which cover the various aspects of the history of the language, at least in the earlier periods of Anglo-Saxon and Middle English. The modern period, for obvious reasons, is much less generally studied than the earlier periods. The historical study of the language remains, however, largely a university subject. Apart from their purely scholarly and scientific significance, university courses in the English language are usually regarded as a part of the preparation of prospective teachers of English in secondary schools or colleges. But in recent

years a number of non-technical manuals of the history of the English language have been written, not from the point of view of rhetorical usage, but from a more purely linguistic position, and with the help of these books the historical study of the vernacular has made considerable progress in the colleges. It is generally assumed that the attitude of students toward their native speech in the secondary and in the lower schools should be practically constructive and not scientific or analytic, and consequently the historical study of the English language has not been introduced to any considerable extent in such schools. The work of the lower grades in grammar and composition (*qv*) is usually placed pedagogically under the head of language, but such "language work" obviously cannot attempt anything systematic or scientific.

The question of the content and the value of the historical study of the English language as part of a liberal education for English-speaking students is one that is frequently discussed and may be most conveniently considered from two points of view, first as to its practical usefulness, and secondly and more disinterestedly, as a subject of knowledge and reasonable curiosity that deserves to be cultivated for itself alone. The practical advantages to be derived from the historical and scientific study of the vernacular are mainly such as arise from the acquisition of a clearer understanding of the nature and the uses of language as a medium of communication, thus enabling the student to become more certain and confident in establishing the principles of his own use of language. The study of the changes which have taken place historically in the language, for example, is likely to beget in the student a more intelligent and less dogmatic attitude toward practical questions of the contemporary speech than is frequently found. He may thus be brought to realize that language at all times has been a social possession, flexible and made up of compromises, and that its forms have always been determined, not by external authority of any kind but immediately by the practical uses to which the language was to be put. In this way the fact of the speaker's or writer's own first-hand constructive power over language is brought home to him. Such a realization is at present particularly necessary and helpful for the American student, whose sense of reverence for the authority of the standard and classic language of literature has been developed at the expense of his own individual feeling for expressiveness by dogmatic instruction in rhetoric and composition. Since the historical study of the language acts usually not as a sedative but as an excitant upon the student, obviously the place for it is not in the early but in the later years of the college course. It would seem best to conduct such study in the college not in a detailed, sys-



tematic way as the science of language, but less technically by calling attention to particularly suggestive and illuminating examples of the way in which language reveals the activities of the mental life which lies back of it. Perhaps the most simple and effective avenue of approach to the study of language for the non-professional student is through etymology and the study of vocabulary in general. The study of phonetics is rendered unusually difficult for younger students because of their inability to objectify and observe their own speech sounds as distinguished from the arbitrary and inconsistent symbols of the English language, but the subject is one that cannot very well be neglected, and students should be trained at least to observe contemporary use and to understand the meaning of phonetics as applied to the explanation of etymological forms. It is perhaps easy for university-trained instructors to make the mistake of attempting too much in elementary linguistic courses, often doubtless from a feeling of the dignity and importance of the science of philology. But with all due reverence for the science of philology, one should realize that the college is hardly the place for scientific linguistics, and that the purpose of the instruction should be to extend the area of the student's interests and to shape his powers of linguistic observation rather than to present an organized science of the language. The discussions of contemporary, especially of divided, uses are particularly instructive, and the students may thus be led to form the habit of analyzing and passing judgment for himself on the linguistic facts which he observes.

A certain amount of the study of language is obviously necessary to the reading and appreciation of whole periods of English literature. The main question for decision here is, just how much training in language is necessary before a student may be said to be able to read Shakespeare or Chaucer or the literature of the periods before the Conquest. Opinions will doubtless vary, but it seems certainly a safe rule that the student should give as much attention to language as is necessary to enable him to understand the meaning of his author exactly. If early texts require what seems an excessive amount of preliminary linguistic preparation, they might better be omitted altogether than read carelessly and inaccurately. The student who does not understand the syntax or the special meanings of words in Shakespeare, who misses three or four out of every ten words in Chaucer, and is never sure of his grammar, may blunder through the texts and come out at the end with some sense of enjoyment, and of exhilaration, even though confused, imagination; but he can never have any feeling of assurance that he has read his author aright. English literature as early as Shakespeare or earlier should not be read with the same attitude of mind toward its language as is maintained

in reading Pope or Scott or Tennyson. If one wishes to treat with justice the language in which the earlier literature is written, one must assume a questioning attitude toward it, just as one does toward the social and literary traditions which the earlier literature records. In reading the literature of the Old English period the necessity of studying the language is so obvious that it cannot be avoided. It is chiefly in the intermediate period between Old and Modern English, when it is so easy for the careless reader to delude himself into the belief that he can get at the soul of an author without knowing how to define his words or to parse his grammar, that the understanding of literature is likely to suffer from the neglect of the study of language. The only safe rule is to examine every linguistic usage which differs from normal contemporary usage, and, if the burden of such examination is too great in any texts, to defer the reading of such texts until the student is ready to undertake them.

From the second point of view, the amount and the nature of the information with respect to the language which the well-informed student may reasonably be expected to have may be briefly summarized. The grouping of languages into families, which is one of the most important results of the comparative method of linguistic study, presents new and illuminating ideas to the student, and consequently English should be placed among its related languages and some consideration should be given to the general question of the origin and differentiation of dialects. Within the field of English specifically, the three great chronological divisions of Old, Middle, and Modern English should be distinguished, and the peculiar characteristics of each period, especially in sounds and inflections, may be profitably examined in detail. In connection with the study of sounds historically, it is extremely important that the student of the vernacular should receive training in the observation and analysis of contemporary sounds and vocal processes, both in his own speech and in that of others. It is only by persistent practice that the student can become truthfully and exactly observant of the actual phonetic character of speech, that he can, for example, distinguish the audible forms of English words, which are the vital and changing forms, from the visual forms, which in English are usually arbitrary and conventional. In the study of speech sounds, it is advisable, if not absolutely necessary, to make use of some approximately scientific method of sound notation, the most practical being a simple phonetic alphabet in which the symbols differ as little as possible from the standard alphabet, but in which no symbol has more than one value. Such an alphabet is employed in the indications of pronunciations in the *New English Dictionary*. The use of a phonetic alphabet will lead naturally to the consideration of the history of standard English orthog-

raphy and of the principles which should govern the users of the language in their attitude toward spelling. The study of the English vocabulary may be approached from many different points of view; but so far as the history of the language is concerned, attention should be directed at least toward the various elements of which the vocabulary is composed, the sources whence these elements are derived, and the occasion and method of the introduction of borrowed words into the language. It is important that the student should understand the principles upon which the science of etymology is based as a corrective of the popular superficial method of etymologizing. The stylistic value and color of the elements of the vocabulary are matters mainly of rhetoric, but the study of the history of words leads over insensibly and unavoidably to a consideration of their values in use. Finally, the events in the history of the English people which have been important for the development of their language, for example, the Roman mission, the Danish invasions, the Norman Conquest, etc., will indicate the relation which exists between the life of the people and the growth of their language. In general the aim of an introductory course in the history of the English language should be to prepare the student, first, to use intelligently the material contained in the various handbooks, dictionaries, grammars, and other storehouses of information with respect to the language, and secondly, to observe with some degree of accuracy the facts of his own speech and of the speech of his environment. An intelligent understanding of the fluctuating material of the native speech cannot be obtained otherwise than by some such attention to the elementary facts of its history and use.

G P K

See ENGLISH USAGE, LITERATURE, PHILOLOGY, PHONETICS

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**LANGUAGE, PSYCHOLOGY OF.**—Any form of expression by means of which one individual conveys his own emotional or ideational states to some other individual may properly be called language. Thus the cries of the wild animal are very properly referred to under the term "animal language." Gestures have long been recognized as forms of language. The highly developed forms of oral speech and written communication which are characteristic of human beings are merely the final stages of a long evolutionary series of forms of social expression. The earlier writers upon language, not recognizing the relation between the highly developed forms of language and the more primitive forms of expression, devised various theories of the origin of language which assumed a sudden rise of this mode of expression. Thus, it was regarded as a special gift of God to man, as a mark of his superiority to all other animal forms.

Again, it was held that man through his power of imitation of natural sounds suddenly hit upon the device of using these sounds as a means of representing the external objects imitated. The cries of various animals, for example, were supposed to have been repeated whenever man wished to communicate with his fellows that the animal imitated was near at hand. These theories have been superseded in all later discussions by a more comprehensive account of the whole evolutionary series of forms of expression to which human language belongs.

The great work of Wilhelm Wundt, *Völkerpsychologie*, brought out the psychological importance of the study of language. In the first two volumes of this work, Wundt calls attention to the fact that language is nothing more or less than a highly evolved form of emotional expression. In the earliest stages of emotional expression the movements of the vocal cords are not to be distinguished from various other forms of emotional activity. Thus, the infant in distress makes noises exactly as he kicks with his legs and threshes about with his arms and hands. The facial contortions of the infant, including the movements of the organs of the mouth, are purely spontaneous and individualistic modes of behavior. All of these different types of behavior are familiar to the student of the emotions (*q v*).

The first stage of the evolution of language may therefore be described as the strictly individualistic and the emotional stage. A differentiation begins to appear among emotional expressions as soon as the individual becomes a member of the social group. Certain

of the emotional activities of such an individual are of special importance because they induce imitation in his fellows. Thus the facial expressions are of much greater social importance than the internal changes in the circulatory system. A person who is angry experiences a change in the rate of his heart beat, and at the same time shows a fixed contraction of the muscles of his hand and jaw. The expression of the face produces in those who are about the angry person either imitation or a definite protective reaction, while the inner change which takes place in the angry person's circulatory system passes wholly unobserved. This social significance of the observed reaction tends to raise it to the higher level. In the first place it is brought more or less under control by the individual himself, and in the second place it calls for a reply from other members of the social group. It becomes thus a medium for the transmission from individual to individual of emotional states.

The first types of communication are those which transmit purely emotional states. The frightened animal may induce a stampede in the other animals about him through mere social imitation. He cannot at this stage of development indicate in any way the ideas which are in his own mind. He may, however, communicate the emotional state of fear in all completeness. The second stage of language is, therefore, to be described as the stage of emotional imitation. It is at this stage that most animals come to a standstill in the evolution of language. The frightened animal may indicate by its cry or action its internal emotional state, but it never produces a terminology which makes it possible to tell about the objects which it sees.

In human society, and possibly among the higher animals, there develops through expression the ability to communicate ideas as well as emotions. These ideas are at first very simple in character. Thus the hungry animal may go through the movements of taking food. Certainly among primitive human beings this mode of communication through pantomime is very common. The gestures that are involved in such communication through pantomime have been called natural signs. They are natural in the sense that they are partial activities of the type which the individual would perform if he were in the actual presence of the object which he wishes to depict. They are signs in the sense that they do not deal with the actual object, but merely recall the object to the two parties to the communication. Almost any simple human activity can be communicated in this way. Thus, the act of digging or throwing, the act of running or of looking toward some object in the distance, can be made to convey to another human being a very large fund of experience. Attention should be drawn to the fact that even the higher animals do not succeed in carrying this type of com-

munication to any high stage. Indeed, it may be doubted whether they succeed at all except by the mere accidents of emotional expression such as was described in the last paragraph. At all events, such simple gestures as those of pointing are never developed in any conscious way among the animals, whereas, they appear in all races of men. Natural signs, or primitive pantomimic gestures, may be distinguished from forms of emotional imitation as a third stage of language development.

There are certain disadvantages in the use of the hands for social expression. These disadvantages must have made themselves very early felt in primitive society. The use of gestures would interfere with any form of manual occupation. The use of the hands for expression would also be disadvantageous in any parley between enemies, for it would involve going out into the open, and also it would limit the ability to use weapons on the part of the person who was making an effort to communicate with others.

Finally, there is a fundamental fact of development which must have operated to limit the use of the hands for purposes of purely social expression. This fundamental fact appears in a natural tendency of the hand to develop a whole series of habits of movement which are not social in their character at all. The hand evolved in the direction of the manipulation of objects, and in so far as the various arts were cultivated, the hand must have been devoted more and more to forms of skill, and less and less to the incidental forms of emotional expression which are natural in earlier stages of development. This can be seen in the life of the infant. The hands gradually come to be specialized organs for seizing objects and holding them, and just in so far as the hands and arms are trained in the direction of manipulation of physical objects, they are less and less used for purposes of expression. The vocal cords, on the other hand, have no value as organs for the manipulation of external objects. They are very naturally utilized, therefore, as organs of emotional and social expression. They are sufficiently delicate in their musculature to make possible a great variety of acts, and they are under the control of the speaker to such an extent that they become admirable avenues for social expression. No physical medium is needed for oral expression except the air, which is always present, thus the vocal cords are superior to gestures for communication in the dark, and for parley between enemies and friends who are hidden from each other by intervening objects.

Such considerations as these indicate some of the reasons why in later human evolution the vocal expressions are selected from among the observable forms of behavior for the higher uses of human language. Oral expression is, however, not the exclusive means of these higher forms of expression, and we find now

only the vocal apparatus, but also, though to a less extent, the hands, serving the purpose of the fourth stage of language development, to the description of which we may now turn.

The fourth stage of language development differs from the period of natural signs in that the signs which are employed at the higher level have less and less immediate connection with the situations to which they refer. The sign needs now only to symbolize in some manner the situation to which it relates. Thus we find in mature language that there is no traceable connection between many of the sounds which we employ and the objects to which they refer. Indeed, it is doubtful whether such a connection could be traced, even if we had the complete history of the word. One interesting illustration of the purely arbitrary character of language expression is found in the word "gas." This word was invented by the Belgian chemist, Van Helmont. He needed a word to express the state of matter which is denoted by this term, and so employed the term without any historical antecedents. In this example we have an admirable illustration of what is meant by the symbolical character of an expression. The vocal expression is connected in human experience with a certain idea. Once the connection between the sound and the idea has been made, the sound will in all future experiences tend to arouse the idea. There need be no natural connection between expression and idea, provided the connection has been established in some way, and has been commonly accepted. We may describe this stage of language development by saying that associational connections have been substituted for natural connections. Associational connections are frequently established between gestures and ideas as well as between sounds and ideas. Thus the deaf and dumb of our own generation have a symbol for the word "make" and all of its derivatives. This gesture consists in the crossing at the wrists of the two folded fists. It is enough for the purpose of human experience that there should be a connection between this gesture and the ideas. The gesture carries the ideas to any one who is trained in the interpretation of this symbol. It is obvious that associational language requires a high form of mental development, the individual must have a stock of ideas which can be related to the various forms of expression, and he must, in addition, have sufficient mental power to make it possible for him to hold the connection between the mode of expression and the idea.

For purposes of education, it is this final stage of language expression that is of importance. The child in the school finds it necessary to learn a vast body of ideas and the words which go with those ideas. Earlier stages of emotional expression are not of any very great importance in education, although the control of the facial expressions is undoubtedly one of the lessons that must be learned in all social groups.

After the associational stage of language has been reached, further processes of evolution go forward in the changes that take place in the meaning and character of words. Thus, there is a continual development of meanings. This is often illustrated in the English language, as is shown in Trench's *English Past and Present*. The word "villain," for example, which originally meant a laborer about a country place or villa, has gradually modified its meaning until it has the present well-known significance. Furthermore, the sounds of words undergo a change. The history of English shows very plainly, by the different rhymes which are employed at different stages of the development of the language, that there is a tendency for many sounds to grow shorter in their articulation. Qualitative changes also appear as languages evolve. The transition from German to English, or between any two languages, is accompanied by a very notable modification in the quality as well as in the length of the sounds involved. Thus, the German word *Tag* is the same in its origin as the English word *Day*.

More significant than these gradual changes in language is the fact that individual interpretations of words may differ to such an extent that the same sound may be related in two different experiences to wholly different meanings. The ambiguity of words has often been commented upon. Locke, in his *Essay on the Human Understanding*, discusses at great length the dangers that grow out of the ambiguous use of words, and this has been the subject of frequent comment on the part of educators since that time.

With the development of written symbols the means of human communication has been very greatly enlarged. Written symbols appeared much later than oral conventions. In the earliest stages of writing, there was the same tendency to use natural signs that we find in gesture language. The earliest written symbols were diagrammatic sketches of the objects which the writer would call to the mind of the reader. The diagrammatic sketch came to be very much simplified as the power of interpretation increased. Finally, in the occidental world, some Semitic nation, probably the Phoenicians, discovered the possibility of relating directly the written symbols to the sound elements of language. That there is no necessary intellectual connection between the elementary sounds and separate letters is well attested by the Chinese language, where the written symbol is related to the whole word rather than to the single sound. After the association of the written symbol with the single sound had been established, various changes appeared through the gradual modification of the sound connected with the letter, and through various modifications in the form of the letter itself. (See WRITING.)

Language instruction has always occupied

a very important place in the schools. Since it is a highly evolved mode of expression it requires laborious cultivation on the part of the child. Indeed, the school may be described as very largely an institution which introduces the child to this conventional mode of expression, and gives him the necessary meanings with which to interpret language. Reading and writing have, therefore, constituted a very large part of the elementary course of study. From time to time reformers have vigorously advocated a reduction of the amount of energy devoted in the school to the instruction in language, on the other hand, the tendency has often been to enlarge the emphasis upon language by the introduction of foreign languages as well as vernacular. C. H. J.

See **READING, MODERN LANGUAGES**

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**LANGUAGE, TEACHING AND STUDY OF** — See **GRAMMAR, GREEK LANGUAGE AND LITERATURE, LANGUAGES, ARTIFICIAL, LANGUAGE, ENGLISH, LATIN LANGUAGE AND LITERATURE, MODERN LANGUAGES IN EDUCATION, ORIENTAL LANGUAGE AND LITERATURE, etc., READING, TEACHING BEGINNERS, VERNACULAR IN EDUCATION**

**LANGUAGE, USAGE IN** — See **ENGLISH USAGE**

**LANGUAGES, ARTIFICIAL** — The endeavor to fashion an artificial language has a long history, and has assumed many different forms. An imperfect kind of language which appeals only to the eye has been in practical use for half a century and more in the code of signals employed in naval and military communication. Still older are the attempts to construct a universal artificial language which could be both written or printed and spoken. Descartes in 1629 outlined a scheme for a universal, philosophical language. His plan was to establish a system "of all the thoughts which can enter into the human spirit," taking first the simple ideas, and combining these simple ideas in order to form the more complex ideas. Each simple idea was to have its appropriate character or symbol, like the primary numbers of the arithmetical system, and complex and more limited ideas were to be expressed by combinations of these characters in such a way that the elements of a word would

express mathematically its logical content. "The invention of this language," says Descartes, "is dependent upon a true philosophy, for it is impossible otherwise to indicate all the thoughts of the human mind, or to put them in order, or even to distinguish them in such a way that they shall be clear and simple. If the primary ideas which are in the human imagination and of which all things that men think are composed, were thus set forth and generally accepted, I would venture to hope for a universal language easy to learn, to pronounce, and to write, and, most important of all, one which should and the judgment, presenting to it so distinctly all things that it would be almost impossible for it to deceive itself. With the aid of such a language, a rude rustic could better judge of the truth of things than the philosopher can now do."

This theory of Descartes is at the base of a great many attempts to construct a universal philosophical language. It supposes first a systematic program of all logical ideas, classified under general heads with sub-classifications leading to the particular and concrete, and second a set of symbols, numerical or literal, chosen arbitrarily to designate these ideas. The result would be a kind of algebra of language, the meaning of every combination of symbols being absolutely fixed by its place in the philosophical system. Descartes himself never worked out his theory into a practical form, but this was done by others. George Dalgarno, a Scotchman, published in 1661 his *Art Signorum*, a universal and philosophical language, followed in 1668 by Bishop Wilkins' *Essay towards a Real Character and a Philosophical Language*, in which the vocabulary is based upon forty logical categories, supposed to be exhaustive of all general and primary ideas. Leibnitz (*q.v.*) carried further the methods of Dalgarno and Wilkins, against whom he directed the reproach that they were not sufficiently philosophical. Leibnitz drew a close parallel between mathematical and logical processes. Every thought having, as he maintained, as fixed a character as a number, the primary ideas may be designated by primary numbers, and all complex ideas merely as combinations of primary ideas. The combinations of ideas are thus supposed to be analogous to multiplication in arithmetic. They may be expressed by numbers, and the problem of a universal language consists simply in transforming the mathematical formulas into words that may be pronounced. In carrying out this seemingly simple plan, Leibnitz, in common with all the other inventors of philosophical languages, makes use of a system extraordinarily complicated when one looks at it from the point of view of the practical user of language. But it is apparent that the advocates of an artificial philosophical language have paid little heed to questions of practical use. They have been

concerned primarily with the attempt to systematize and then to symbolize all logical ideas, and the discredit which has in general fallen upon the program methods of systematic logic has deprived their efforts of both scientific and practical interest to the modern student of language.

An entirely different point of view is usually assumed by modern theorists in the construction of artificial languages. Instead of a universal philosophical language, they generally advocate an auxiliary international language. The purpose of such a language they assume to be to supplement the mother tongues of the various countries in order to make international scientific and commercial communication easier by the use of one arbitrarily selected language in the place of the present variety of local and national speeches. They assume further that no national idiom, either a dead language like Latin, or a living language like English or French, has any chance of being accepted by a sufficient number of the nations concerned to answer the purposes of an international speech. It is not supposed, except by extreme theorists, that a single artificial language of this practical character will ever supplant native idioms in the familiar intercourse of daily life. The principal aim of these advocates of artificial languages is not "the federation of man" through the imposition of one speech upon all peoples, but the strictly utilitarian end of greater ease of intercommunication. It is apparent that such a language in any case must appeal to a relatively limited number of people, mainly to travelers and to those interested in international science and commerce. It is also apparent that the need of an international auxiliary language is greater in Europe than it is in America, and that the people of relatively small countries like Denmark, or of countries which use a language difficult to learn and not generally known, like Russian and Hungarian, will profit more by an auxiliary language than will the people of Germany, France, or England. But the great advantage of such a language to all nations cannot be denied, and the main difficulty to be met is not a theoretical one, but the practical difficulty of getting one language generally accepted.

The first important experiment of recent years in the manufacture of an artificial language was that of Schleyer, who called his language Volapuk. A Roman Catholic priest, Schleyer perhaps felt in an especial way the need of an international medium of communication. The year 1879 is given as the date of Schleyer's discovery, or invention, of this language, of which he wrote a grammar that has passed through a number of editions. The language employs the Roman alphabet, and bases its vocabulary mainly upon English, because English is the language of the largest number of people who might be supposed to be interested in an artificial language. But inas-

much as the sounds of Volapuk are not the sounds of the English letters, even an English-speaking person would find it difficult to understand the spoken form of a word in Volapuk. As to the grammatical system, Schleyer invents more or less arbitrary inflectional elements to indicate case and tense relations, the parts of speech, etc. He also accepts other arbitrary rules, for example, he excludes the sound and the letter *h* altogether, and to a large extent the letter *r*, since the Chinese find this latter sound difficult to pronounce. Since no word, according to his rules, can end in a spirant, the English-Romance word *rose* becomes *lol* in Volapuk. To avoid the final spirant, the English *sooth* becomes *tut*, English *program* becomes *ploqam*. And since every root must end in a single consonant, English *friend* becomes *flen*. As far as possible, roots must also be monosyllabic, and Schleyer therefore removes initial and final unstressed syllables, with the result that *compliment* becomes *plun*, French *remarquable* becomes *makab*. These few illustrations will indicate the main defect of Volapuk. Although it purports to be based mainly upon the most familiar of European languages, English, French, German, and Latin, the forms of the words are so altered that they cease to be recognizable. Schleyer's method throughout is extremely arbitrary, and though Volapuk is an advance over the older philosophical languages, it develops its relatively sound basic principles in a very uneconomical and unsatisfactory manner. Moreover, in attempting to make his language universal, for example, in introducing modifications with reference to the Chinese, Schleyer has exceeded the limits of practicability. An international European language is a sufficiently difficult achievement, and Schleyer has to a considerable extent sacrificed usefulness to a vain longing for universality. Finally, Schleyer was not sufficiently systematic in establishing his principles and in adhering to them, with the result that his language is often as arbitrary and as exceptional as are the natural idioms.

Perhaps the greatest service of Volapuk to the study of artificial languages was the demonstration it gave of the practicability of such a language. It was followed by numerous other experiments, most of them very short-lived. An important advance was not made until the appearance of *Esperanto* in 1887. This language was the invention of a Russian physician, Dr. Zamenhof, whose youth was passed in a village in which four different and antagonistic languages were spoken, Russian, Polish, German, and Hebrew. As a schoolboy Dr. Zamenhof was stirred by the ideal of an inter-language, and *Esperanto*, as it finally appeared, was largely the outcome of these early humanitarian impulses. The interest in *Esperanto* at first spread slowly, but enthusiasts gradually gathered in support of it, and it soon came to have more adherents and students

than any artificial language before it had acquired To-day it shares with its successor and rival, *Ido*, or the Idiom Neutral, the place of eminence among artificial languages

So far as its grammar is concerned, the ruling principles of Esperanto are simplicity and regularity The alphabet consists of twenty-seven letters, five vowels, and twenty-two consonants, each of which has a constant and single value, the vowels being given what is known as their Continental or Italian pronunciation Esperanto is thus phonetically regular The symbols used are the familiar ones of the Roman alphabet, but five consonant symbols are used twice, with the awkward device of diacritical marks placed over the respective letters to indicate their special values Thus *g* = the sound in "good," *ĝ* = the sound in "gem" The accent of words is fixed, and falls always on the penultimate syllable Specific endings indicate the various parts of speech substantives always end in *-o*, adjectives in *-a*, derivative adverbs, *ie* those derived from words which appear also as nouns and adjectives, in *-e* The definite article is *la*, it is indeclinable, but the syntactical rules for its use are somewhat complicated The language has no indefinite article, the indefinite idea being assumed from the lack of definition

Nouns are inflected for the plural number by adding *-j* (= *-y*) to the singular, and for the accusative case by adding *-n* to the singular or plural form of the nominative Adjectives are inflected like nouns The nominative singular, therefore, of the phrase "the good father" would be *la bona patro*, the accusative *la bonan patron* The plurals, nominative and accusative, would be *la bonaj patroj*, and *la bonajn patrojn*, the adjective agreeing with the noun in inflection Comparison of adjectives is expressed analytically by means of separate words of comparison, like English *more*, *most*

The personal pronouns are *Mi*, I, *Vi*, thou, *viu*; *Li*, he, *Ŝi* (pronounced like English *she*), she, *Ĝi* (*g* soft as in *gem*) it; *Ni*, we, *Ili*, they The indefinite "one," German "man," is *oni*, and the reflexive pronouns for all genders and numbers is *si* The accusatives of all these pronouns are formed as in the nouns by adding *-n* Possessive pronouns are formed from the personals by making them adjectives, that is, by adding *-a*

There is only one conjugation for the verb in Esperanto, which is therefore completely regular Inflections are used to indicate tense and mood, person and number being expressed only by the subject of the verb The inflection of the infinitive is *-i*, *ami* = to love; of the present tense, all persons and numbers, *-as*, *Mi amas* = I love, *Ili amas* = they love; of the past tense, *-is*, *Vi amis* = you loved, *Li amis* = he loved; of the future, *-os*, *Mi amos* = I shall love, *Li amos* = he will love, of the conditional mood of verbs, *-us*, *Mi*

*amus* = I should or would love, of the imperative, also of the subjunctive, *-u*, *Amu* = Love, *Li finu* = Let him finish, *ke mi amu* = that I may love Three participial forms, *-anta*, present, *-inta*, past, and *-onta*, future, are used for the participles of the active voice, which can be used as nouns, adjectives, or adverbs by taking the proper endings There are also three passive participles, *-ata*, *-ita*, *-ota*, subject to the same rules as the active participle. These participles are used in the formation of verb phrases like those of English grammar

Prepositions are followed by the nominative and not the accusative case Adverbs, prepositions, and conjunctions, *ie* the particles in general, are less reducible to simple type forms than the other parts of speech, and consequently this part of Esperanto grammar is likely to seem more difficult and artificial than the rest Many of the forms also seem strange, *e g krom*, except, without, *kial*, why; *kiam*, when, *tial*, therefore, etc The word order of Esperanto is logical, and very similar to that of modern English

In its vocabulary Esperanto is based upon a relatively small number of root words, chosen according to the sound principle of the maximum of internationality A first group of words is made up of roots which are of the highest degree of internationality among the European people, *e g atom*, *aksiom*, *form*, *flut*, *fosfor*, *teatr*, *tabak*, etc (in the spelling of Esperanto) Another group consists of those which are only partially international, but which are chosen for their places in the international language because they are used by the larger number of European languages. By a similar process of selection the whole vocabulary is thus built up on this principle of the maximum of familiarity or internationality It should be observed, however, that this root vocabulary is not concerned with questions of etymological origins in the various national speeches Thus the English language is assumed to possess the root word *vir-*, "man," because it has the adjective "virile" The guiding principle in the selection of the roots has been their intelligibility, not their etymological history Besides its vocabulary of international roots and its inflectional system, Esperanto also makes use of composition or agglutination in the formation of words Thus the prefix *mal-* indicates the contrary or opposite, *e g amiko*, "friend," *malamiko* "enemy"; the suffix *-in* indicates the feminine, *e g viro*, "man," *virino*, "woman," *patro*, "father," *patrino*, "mother"; *-et* indicates the diminutive, *e g monto*, "mountain," *monteto*, "hill," etc

Esperanto has suffered the usual fate of artificial languages in that it has had to meet with the opposition of a rival language, in this case *Ido*, or Idiom Neutral *Ido* was promulgated by the *Delegitaro por Adopto de Hel-panto Lingvo Internaciona* (Delegation for the

Adoption of an International Auxiliary Language). This Delegation resulted from the Paris Exposition of 1900, and was self-constituted, its purpose being to decide which of the various international languages should be generally accepted as the standard one. Endeavors were made to have the International Association of Academies assume the responsibility of deciding this question, but this organization refused to do so by a vote of twelve to eight. The Delegation then constituted a committee of twelve, which met in 1907, with the distinguished scientist, Professor Ostwald of Leipzig, in the chair. This committee unanimously decided that the best language was a modification of Esperanto, presented by M. de Beaufront and known as *Ido*. Overtures were made to the *Lingua Komitato* (Linguistic Committee) of the Esperantists, looking toward the cooperation of the advocates of Esperanto and *Ido*. The Esperantists, however, refused to join forces with the Delegation, and *Ido* consequently now presents itself as an independent claimant for recognition as an international auxiliary language.

Accepting in general the principles of Esperanto, *Ido* differs from it only in details which its supporters regard as improvements suggested by experience. For example, *Ido* does away with the diacritical marks of the Esperanto alphabet, and uses only the twenty-six symbols of the English alphabet. It likewise dispenses with the accusative case of Esperanto, on the ground that case is sufficiently indicated by word order, as in the English language, which has no case forms except a few survivals in the system of the personal pronoun. It further advocates a number of modifications and extensions of the vocabulary of Esperanto. In general the reforms of *Ido* may be regarded as carrying to a higher degree of simplicity and effectiveness the principles of Esperanto.

Several questions suggest themselves as to the future of international auxiliary languages. It seems at present impossible to say which one, if any, of the languages now competing for the honor will be generally accepted. On the other hand, there seems little reason to doubt that in course of time some one international language will meet with general acceptance and will be used for the purposes to which such a language can be put. Some of the best linguistic thought of modern times has been expended on the subject, and the improvement of such a language as *Ido*, for example, as compared with Volapük, has been very great. An artificial language, being the result of human theory and ingenuity, must necessarily perfect itself gradually, and the reproach of impermanence which is frequently made against all such projects may as justly be urged against international arbitration, or peace, or any other formative idea.

G P K

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**LANGUAGES, MODERN IN THE PRIMARY GRADES** — See MODERN LANGUAGES IN EDUCATION

**LANTERN IN THE SCHOOL** — See VISUAL AIDS TO TEACHING

**LAOS** — See FRANCE, EDUCATION IN THE COLONIES OF

**LA PLATA UNIVERSITY** — See ARGENTINE REPUBLIC, EDUCATION IN THE

**LAPSES** — Inappropriate responses to a given situation, especially in speaking and writing, and occurring in that condition of attention known as absent-mindedness. If attention is regarded as the focal point of consciousness, the lapse may be considered as due to the relationship between the focal point and the margin. Proper adjustment to environment requires not only concentration of consciousness at one point, but a proper relating of the marginal elements. If this is not the case, the result is absent-mindedness. Absent-mindedness may be due to two quite different phases of the attention process. In the first place, the attention may be so concentrated at one point as to neglect to too great an extent the marginal elements (abstraction). In the second place, the absent-mindedness may be due to too little concentration, that is, dividing of the attention (distraction).

In speaking and writing we carry on a number of more or less separated activities at the same time, the attention usually being occupied with the thought of expression, and the expression itself being cared for by the more or less automatic processes controlled by the marginal elements of consciousness. Frequently, when the attention is concentrated or distracted, these two processes interfere with each other, and lapses result. An example is frequently to be found in the schoolroom, when the teacher, in asking a question, inadvertently gives the answer to the question. It is to be noted that the person making the error is frequently unaware of the fact, and never aware of it until after it has occurred. It is the result of involuntary processes, due to the



causes mentioned above. Fatigue, hurry, and nervousness often are inducing causes of lapses, and some persons are much more inclined to make them than others. Lapses have interesting similarities to the phenomena found in aphasia (*q.v.*) E. H. C.

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**LARABEE, BENJAMIN** (1801-1883) — Fourth president of Middlebury College, he graduated from Dartmouth College in 1828 and the Andover Theological Seminary in 1831. He was principal of a manual training school at Springfield, Tenn.; professor and president of Jackson College, Columbia, Tenn., and president of Middlebury College (1840-1866). From 1871 to 1876 he was lecturer at Dartmouth. W. S. M.

**LASALLE COLLEGE, PHILADELPHIA, PA**  
— See CHRISTIAN BROTHERS

**LASALLE, ST. JOHN BAPTIST DE** (1651-1719) — Founder of the Institute of the Christian Brothers (*q.v.*). Born of a noble family at Rheims, he early showed a highly spiritual and devotional temperament, and at the age of eleven received the tonsure. In 1667 he was installed Canon of the Cathedral at Rheims. He studied at the local university, and took his M. A. in 1669, and then proceeded to the Seminary of Saint Sulpice in Paris, where he also attended lectures at the Sorbonne. The students at the seminary were required to help the director in catechizing a large number of children, and the questions of method were frequently discussed. In 1678 Lasalle entered the priesthood. Inspired by the enthusiasm of his spiritual director, Nicolas Roland, he succeeded him in the general supervision of the Congregation of the Sisters of the Child Jesus, which conducted a free school for girls, although on his own confession he was not greatly interested in education. It was almost by chance that he undertook the great educational work which gives him an important place in the history of education. A relative living in Rouen requested him to assist in the opening of a free school in Rheims, of which Adrien Nyel was the master. The success of this school led to the foundation of others, until there were five masters in the town. Lasalle soon discovered that in spite of himself he must take an interest in the welfare of these men, and, acting at first as their adviser, he decided before long to resign his canonry and his worldly possessions and live with them. In 1681 a house was purchased, and the foundation for the Institute of Christian

Brothers was laid. A rule was drawn up, which was the basis of the later rule; new teachers joined the community, and the demand for the *Frères des Ecoles Chrétiennes* rapidly increased. Unable to satisfy any requests but those from towns, he undertook to train boys who were sent to him by the country clergy and who were to return to their homes after their period of training. A novitiate had already been instituted, more by accident than by design. In 1688 Lasalle accepted a call to Paris; in 1691 a house was rented at Vaurigard, near Paris; and in 1693 the Rule was drawn up as now known. In 1695 the *Manual* was issued. Christian Brothers were requested to take charge of the schools of several parishes. The work of Lasalle himself, however, was not confined to the elementary schools. He personally took charge of a Sunday school for young artisans under twenty, and taught them mathematics, mechanics, drawing, and other vocational subjects. After the English Revolution (1689) he was requested by Louis XIV to take charge of a number of Irish and English Catholic boys of good families. But the extension of his work in Paris brought him into conflict with the established order of writing masters and schoolmasters, and as a result of a lawsuit, he was forbidden to open schools in Paris without the permission of the Precentor (1705). Further, he was not immune from ecclesiastical jealousy, and attempts were made to remove him from his position as Superior of the Brothers. In 1705 he opened at St. Yon another house, which was destined to become the mother house of the Institute. In 1712-1714 he traveled in the south of France, visiting the houses of the Christian Brothers and novices. In 1716 he resigned as Superior, and was succeeded by Brother Barthélemy. In 1719 he died at Rouen.

On French education Lasalle and his Institute exercised the greatest influence in introducing a better class of teachers and a better conception of schools and instruction. How far his influence went outside of France it is impossible to say, but many of his reforms in education were certainly reintroduced or rediscovered later. For a detailed account of his educational work and theory, and a list of his writings, see CHRISTIAN BROTHERS and the references there given.

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**LASCARIS, CONSTANTINE** (1434-1501) — A Greek teacher of the Renaissance period. He belonged to a noble family, and until its

capture by the Turks lived in Constantinople, afterwards finding a refuge in Corfu and Italy. He was Greek tutor to the daughter of Francesco Sforza at Milan, taught at Rome with the support of Cardinal Bessarion, and in Naples at the request of Ferdinand I. For a time he was also in Spain. The last thirty-five years of his life he spent as a teacher of Greek at Messina, where he numbered the future Cardinal Bembo (*qv*) among his pupils. His chief work was the *Grammatica Græca sive Compendium octo Orationes Partium* (1476), probably the first Greek work known to have been printed. This *Grammar* was much used in schools. Lascaris also collected and copied many Mss. His collection, which was left to the Senate of Messina, was placed in 1712 in the National Library in Madrid.

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**LATERAL CURVATURE** — See SPINAL CURVATURE

**LATHROP, JOHN HIRAM** (1799–1866) — First president of the University of Missouri. He graduated from Yale in 1819, and taught school in New England for several years. He was professor in Hamilton College (1828–1840), president of the University of Missouri (1840–1849 and 1865–1866), president of the University of Wisconsin (1849–1859), president of the University of Indiana (1859–1860), and professor in the University of Missouri (1860–1866).

W. S. M.

**LATIN LANGUAGE AND LITERATURE, IN EDUCATION.** — **Historical** — The history of Latin in the schools is practically the history of schools, at least of all schools above the most elementary character, from the closing centuries of the Middle Ages until well into the nineteenth century. The secondary school was the dominant school throughout all this period and in almost all cases they were Latin schools. To such an extent was this true that the terms by which they were known, Grammar Schools, Public Schools, Free Schools, Gymnasien, Lycées, Colleges, were practically all synonymous with Latin School. Until the nineteenth century Latin was practically the only subject; that is, all other subjects were studied incidentally and through the medium of the Latin language and literature. Greek might be added, and in some cases in the eighteenth, and quite generally in the nineteenth century, mathematics. Hence the historical aspect of Latin in the schools is treated at length in various articles. The entire scope of the subject is included in the article on GRAMMAR SCHOOLS. The articles on GYMNASIUM and LYCÉES give

other aspects of this subject, as do also in a less direct way those on ACADEMY, COLLEGE, and UNIVERSITY. The article on the RENAISSANCE AND EDUCATION treats of the formulation of the secondary school as it was given the Latin form in which it has dominated throughout the modern period; that on education during the Middle Ages, its place and function in the earlier period. For a detailed statement of the place of Latin language and literature in the educational systems of the nineteenth century, see the sections on Secondary Education in the various articles on the national systems given under the caption of each nation.

The following sections relate to the development of the school material connected with the subject, and the scope and method of the subject in the present.

**Latin-speaking** — As ancient Rome had endeavored to establish a universal Empire, so the medieval ecclesiastics attempted to organize a universal Church, within which there should be the uniformity of dogma, of Church ritual, and along with it uniformity of language in which divine service should be conducted, viz. Latin. With the various dialects into which the Latin was broken up in Spain, France, Italy — there was only one standard to which appeal could be made for intelligibility, viz. the ancient Latin, as contained either in classical authors, in the Vulgate copy of the Scriptures, or in the tradition of spoken Latin, mainly if not entirely centered in the ecclesiastics. When the new enthusiasm of the Renaissance came, with the fresher knowledge of Latin and Greek authors, the need of the Latin speech as felt in the medieval period was emphasized, the real change being the recognition of the necessity to substitute classical Ciceronian language for the old monkish jargon and barbarism which had been developed in the long course of medievalism. So, in 1516, when Bishop Fox founded Corpus Christi College, Oxford, by statute, he required his first lecturer, "the sower and planter of the Latin tongue, to manfully root out barbarity from our garden, and cast it forth should it at any time germinate therein." Besides reading classical authors, Bishop Fox directed his lecturer to read to all who wished to hear him the *Elegantia* of the Latin Tongue, by Laurentius Valla, who had described Latin as the "sacristy of erudition." He had embodied the opinion of all the scholars when he said that since Latin is the treasury of learning and the instrument of conversation, it should be the *one language* in common use amongst all nations. It was clear that all Christians initiated in the same religious duties must use it. It was often pointed out that the diversity of languages was due to sin, and the return to a unity in language seemed therefore to have a certain religious implication. There would be a confusion of all kinds of knowledge if different languages were used, owing to men's ignorance of many languages. The enthusiasm of

the Renaissance led to the ubiquity of students, and Latin followed in their train. Thus it is said that hotel keepers and merchants had to adapt themselves to some sort of Latin speaking and beggars moaned out Latin tags in their appeals to student passers-by.

In the earliest statutes (1274) of an Oxford college, viz. Merton College, it is laid down for scholars "when they speak they must use the Latin language," and in its use defer to the direction and correction of the grammar master. In Queen's College, Oxford (Statutes, 1341), scholars had the choice at table of Latin or French, and only out of politeness to a visitor were they to speak the vernacular. In 1556, Trinity College, Oxford, made the requirement that all public conversation, especially amongst scholars, was to be in "a learned tongue." It may be mentioned that about 1705, when Dr. Woodroffe proposed that Gloucester Hall (afterwards Worcester College) should become a specially Greek College, the requirement was suggested that for two years students should converse in ancient Greek and then learn Latin and Hebrew. Similarly, at Cambridge colleges, Latin was required as the language of conversation, until the great Civil War. Wordsworth (*Scholæ Academicae*, p. 90) points out that though Latin ceased to be used conversationally in college halls, yet it continued to be used as the language of college lectures, disputations, and on official occasions. He further states that Adam Smith was the first to lecture in English at Glasgow University, though it seems probable that Dr. Hutchison had done this in 1727. The registers and annals of the College of Physicians were kept in Latin up to the end of the seventeenth century. Physicians made Latin notes of cases, and still prescriptions in England show marked traces of the old Latin in dealing with the pharmacopæia. The annual Harveian oration in the College of Physicians of England was given in Latin till 1865. As recently as 1874 the retiring proctor at Cambridge gave his speech in Latin. And still, on public occasions, the public orator in the English universities gives his speeches at presentations for honorary degrees in Latin. Fulbecke, in the *Preparative to the Study of Law* (1600) and Doderidge in his *English Lawyer* (1631) expect the lawyer to have ability in Latin "clear and neat style," and to avoid barbarisms. James Whitlocke, a judge on circuit, going to Chester, was met at Whitechurch by many gentlemen of Shropshire and Cheshire, and had a Latin oration made to him at the marketplace. The Council of Trent in 1562 required that preaching should be in the vernacular, which points to a survival of a previous practice of preaching in Latin. In 1564, when Queen Elizabeth visited Cambridge, Dr. Perne preached a Latin sermon before her in King's College Chapel. M. Massebieau quotes from M. Haureau to show that sermons in Latin were frequent abroad. Such a statement does not

hold of England except in university sermons and sermons *ad Clerum*. Candidates for the degree of B.D. in the University of Cambridge were required to preach once in Latin and once in English at St. Mary's Church (George Peacock, *On the Statutes of Cambridge*, p. 12). In 1635 Cornelius Burges preached to his fellow Puritan ministers of London in Latin. William Bedell, while at Venice (1607-1610) as chaplain to Sir Henry Wotton, wrote his sermons in Italian and in Latin. Previously, in the time of the Marian Persecution (1553-1558) the chief English exiles in Strassburg, Frankfurt, and Geneva spoke with foreigners mainly in Latin.

Ambassadors ordinarily spoke Latin, but in 1659 John Pell spoke Latin to a burgomaster, who told him he had given over speaking Latin "these fifty years," though in 1660 Edward Leigh in his *Advice on Travel* states spoken Latin to be a necessary part of the equipment for the Grand Tour of travel. (See *Cambridge History of English Literature*, Vol. VII, p. 314.)

When the Nonconformist Academies (*qv*) were established, lectures were given in Latin, and it is said that Dr. Doddridge was the first to introduce the use of English for the regular lectures in 1730.

But quite outside of the higher institutions of learning, Latin speaking must have been common in medieval and Renaissance times. As Mr. Leach says with regard to pre-Reformation knowledge of Latin: "The diplomatist, the lawyer, the civil servant, the physician, the naturalist, the philosopher, wrote, read, and to a large extent spoke, and perhaps, thought, in Latin." He suggests further that Latin was used by merchants, the bailiffs of manors, town and guild clerks, generals, travelers, architects, all of whom needed a knowledge of Latin as a spoken as well as written language. In other words, before the Reformation England was to a large extent bilingual, every educated man, as it has been said, "knew something of the language in which he said his prayers." The one profession was the Church. This was the democratic outlet, for advance in a Church career was a poor boy's chance, whether he was to become a diplomat, a lawyer, or even a physician. Boys were brought up in the chantry of a church, *i.e.* within the church building itself, and breathed the atmosphere of Latin. The Renaissance intensified the importance of Latin for children, but insisted on pure Latin instead of the medieval barbarism. Erasmus, Vives, Sir Thomas Elyot, regarded Latin as the one language by which a child could become well instructed both in literature and all sciences. (See Sir Elyot's *Governour*, Croft's Edition, Vol. I, pp. 33, 54, 116.) The child should be surrounded by parents, tutors, servants, all of whom should speak to him only in Latin. For an instance of such family training see Cor

derius' *Colloquies* (Bk II, *Colloquy* 50), said to refer to the household of Robert Stephanus, and the well-known case of Montaigne. Latin speaking became at any rate the mark of a gentleman's training, and important for all who contemplated foreign travel. There is the extraordinary case of Robert Gentili (1590-1654), son of the famous Perugian lawyer Alberico Gentili, educated in England. He always spoke to his father in Latin, and his mother in French, and at seven years of age it is said he could speak both languages as well as English. But his after career did not add credit to the educational prodigy.

The Reformation made Latin speaking less important for the ordinary child, because services took place in the vernacular. But for the educated and for the intelligent Protestant, Latin speaking was still essential, for those who read Calvinistic foreign writers, and wished to be in touch with foreign thought. The Exile-Reformers were permeated with the educational views of coreligionists abroad, and the leaders in the reign of Elizabeth introduced the requirement of Latin speaking into the school statutes. In the writer's *Grammar Schools up to 1660* (pp. 316 *et seq.*) are given representative instances of the requirement of Latin speaking in the statutes of English grammar schools from 1524 to 1664.

In Malm's *Consuetudinarium* for Eton College in 1560 a boy was to be named as a *custos* if he was detected talking English in lesson time and for other school lapses. The name was originally given to the boy in each form who had to repeat the lessons first and to answer questions, and it is suggested by Maxwell-Lyte that it came from medieval times by analogy to the *custos chori*, whose duty was to begin the singing in church -- as the school *custos* was to begin the repetition in school. In 1621-1628 the *Consuetudinarium* of Westminster School required monitors, "Two for the Hall, and as many for the Church, the School, the fields, the cloister, which last attended them to the washing and were called *Monitores immundorum*. The captain of the school was over all these, and was named *Monitor Monitorum*. These monitors kept boys strictly to the speaking of Latin in their several commands," it was their duty to present "complaints or accusations" every Friday morning. At Houghton-le-Spring (1574) the boys thus appointed were called *Impositors*, and held duty from Friday to Friday. Custodes, Monitors, and Impositors, as checks on lapses into English speaking, became a frequent institution in schools, and within the memory of those still living there were similar checks against speaking Welsh instead of English in some Welsh schools.

As to the method of training in the speaking of Latin, John Brinsley (*q.v.*) devotes Chapter XIX of the *Ludus Literarius* (1612) to a detailed statement. The criticism there made of Latin speaking in the schools is not that it is

not attempted, but that the boys speak "in barbarous phrase," and do not "utter their minds in Latin easily, purely, and freely." Brinsley objects to the ordinary school practice that Latin speaking should not be delayed, for fear of barbarisms, till the third, fourth, or fifth forms, but should be begun from the first entrance into "construction." The first Latin reading books and authors should be chosen for the purpose of teaching correct Latin speaking. Hence the employment in the school of the *Confabulationum pueriles* or *Children's (Latin) Talk*, and the *Colloquies* of Corderius (see COLLOQUIES). Children "should then begin to practice to use those phrases which they there learn." Brinsley further notes that the reason the Latin grammar is written in Latin and not in English is "only or chiefly to train up scholars to *Deliver* all their Grammar rules and matters concerning Grammar, in Latin." The methods to be employed in teaching Latin speaking are given in full by Brinsley. All examination of grammar rules and reading of authors should be questioned out closely and answered at first in both English and in Latin, until the pupils can answer in Latin alone. What the pupil is unable to answer in Latin, "utter you ever before them, that as the child learneth of the mother or of the nurse to begin to speak, so they may of you and of their author," in Latin. The daily use of the reading of dialogues out of English into Latin, "is nothing but such talking," and may be supplemented by the master "speaking in Latin easily and purely even in ordinary matters." For from the dialogues -- like those of *Confabulationum pueriles* and Corderius, children can speak not only of what is there included but also form talk modeled on them for themselves. In parsing the dialogues, *i.e.* construing and parsing them, they should further "talk" them, uttering every sentence *pathetically*, to one another, first in English, then in Latin. The early stages of Latin speaking thus acquired, Brinsley requires class work in parsing, etc., questions and answers to be in Latin by teacher and pupil, other exercises are grammatical disputations, use of variety of phrases, and further and harder dialogues. But "warrantable and pure phrase," in which lies the solution of Latin-speaking, consists in "practice in a good way," and Brinsley adds, "as in all the rest, is that which doth all."

One of the projects of the seventeenth century in connection with training in Latin speaking was described by Eilhardus Lubinus in 1614 as the setting up in each country of a *Cænobium*, or Community, in which there should be those who had the pure Latin accent and speech, and who should be attended by servants and attendants, even kitchen scullions, who also spoke pure Latin, so that pupils could go and learn no less quickly and perhaps no less certainly than formerly in the Forum Romanum. By residence in such a colony for two or three

years, sound Latinists might be produced, Lubinus thought, "profitable to mankind and in it to the distressed Church of God." Lubinus's views were translated into English, and published by Samuel Hartlib in his *True and Readie Way to Learne the Latine Tongue* (1654). One of the Sloane Mss in the British Museum Library contains a letter of Thomas Horne, written to Samuel Hartlib in 1652. Horne suggests that the charges commonly bestowed on public schools should rather be laid out for the planting of Roman, Grecian, and Hebrew colonies. And Latin-speaking foreigners should be brought to England, Poles, Germans, French, Spaniards, Italians, "who speak Latin well and must be induced to speak no other."

Abroad, Latin was spoken, as Alfred Frankhn says: "Le Latin était la seule langue reçue 'au pays Latin,'" and he quotes a letter of Gui Patin, of May 24, 1650, in which the writer says: "J'ai été aujourd'hui au pays latin, qui est l'Université."

Another description of the training in Latin speaking may be found in Hoole's *New Discovery of the Old Art of Teaching School* (1660). Latin speaking as a school training gradually declined after the commonwealth period in England, though J. T. Philipps urged enthusiastically more Latin speaking and less grammar teaching in his *Compendious Way of Teaching Ancient and Modern Languages* (1727).

There is now a tendency to return to the direct method of teaching Latin, and, at least to some degree, of Latin speaking. One of the best expositions of the latest English methods in this direction is Dr. W. H. D. Rouse's *Latin and Greek*, Section VII of Professor J. W. Adamson's *Practice of Instruction* (London, National Society's Depository, 1907).

F. W.

**Latin Grammars, Vocabularies, and Teaching Apparatus** — *Dictionaries* — Vocabularies with the English as well as the Latin were an earlier form of teaching equipment in England than the grammar. A collection of vocabularies, word glosses, and glossaries from Mss. extending from the eighth to the fifteenth centuries was made by Thomas Wright and privately printed in 1857. In 1884 this collection was reedited and published by R. P. Wulker. Among the vocabularies thus brought to light by Wright are Alexander Neckam's *Treatise De Utensilibus* of the twelfth century and the *Dictionarius* of John de Garlande of the thirteenth century. Neckam's book consists of Latin terms for all the ordinary avocations and occupations of men and women, with a continuous interlinear gloss of explanations in easier Latin, in French, and in English. It is conjectured that the explanations were for the use of the schoolmasters, whose Latin knowledge might need support and suggestion. The vocabularies with their words grouped round subjects instead of being arranged alphabeti-

cally, were rather lesson books than dictionaries in the modern sense. John de Garlande's *Dictionarius* gives the Latin names for parts of the body, and for trades and manufactures. He then described the house of a Parisian citizen and its furniture, his own wardrobe, the Church and its priest, and various other occupations. Dean Nowell, in the Statutes for Bangor Friar School, in 1568, describes the method for use of vocabularies, which probably had gone on for centuries previously. "The schoolmasters shall every night teach their scholars then Latin words with their English significations." After practicing them, the boys are to appear the next morning with the words and meanings retained in memory. In 1580 the Harrow rules explicitly state that "three words" are to be given each night — but they probably mean the words clustering round each subject, e.g. parts of the body, diseases, virtues, vices, herbs, fishes, trees, etc.

Apparently the earliest printed vocabulary was that of John Stanbridge, c. 1500, and this book continued in use as late as 1630, the latest revision having been made by John Binsley, the author of the *Ludus literarius*. The vocabulary developed into the dictionary form. The first Latin dictionary of Renaissance times was that of Ambrosius Calepinus, published at Reggio in 1502. Calepinus made a great collection of Latin words from Latin writers, and included meanings in Italian and other languages. Eventually the dictionary was not only Latin, but polyglot, containing in its greatest expansion eleven languages. From Calepinus Robert Stephanus adopted a *Dictionarium*, in Latin and French, in 1531. This was the first great Latin dictionary to illustrate the force of words in idioms and to indicate shade of meanings of words as used in various writers. It was quickly followed, in 1535, by *Observationes in M. Tullium Ciceronem*, a dictionary of words used by Cicero, written by Marius Nizolius, generally known as the *Thesaurus Ciceronianus*. Laurentius Valla's *Elegantiarum linguæ Latinæ libri sex* in 1471 and the *Cynecopia sive linguæ Latinæ Commentarii*, 1489, of Nicholas Perotti, though gladly used as dictionaries by happy owners, were rather essays in philological and literary criticism on a large scale. But such crude criticism was overshadowed by Julius Caesar Scaliger in his *De Causis Latinae Linguae*, 1540, in which he claimed to enumerate 634 errors in Valla. Erasmus wrote books which were used for teaching purposes. Of the dictionary kind were the *Adagia*, the first form of which appeared in 1500, the *Copia Verborum* in 1511, the *Parabola sive Similia*, 1513. The *Colloquia*, 1516 (see COLLOQUIES), was perhaps Erasmus's chief schoolbook, but it is not of the dictionary type. The *Adagia* were proverbs in Greek of which he gave a translation and exposition. The *Copia Verborum* supplied variety and fullness of language for composition instead of the old barbarisms

and inelegancies. The *Apophthegmata* of Erasmus was not published till 1531. It was not till 1538 that in England was produced a Latin dictionary, that of Sir Thomas Elyot. Elyot states his indebtedness to the old collections of words of Festus, Varro, Nonius, Nestor. Of the moderns, he had taken from Laurentius Valla, Perotti's *Cornucopia*, the Italian "trial," Calepin, the Spanish Antonius Ælius Nebrissensis (*Dictionary latinus-hispanicum et hispano-latinum*, 1532), the French Guillaume Budé (*Lexicon græco-latinum*, 1530). In 1565 Thomas Cooper, at one time Bishop of Lincoln, compiled his *Thesaurus* based on Elyot and on Stephens. This was followed by the Latin dictionaries of E. Grant, 1581, based on Jean Crespin (Geneva, 1562), Rudolph Waddington, grounded on Stephens and Véron, 1584. John Minsheu's *Ductor in linguas*, a polyglot dictionary including Latin, followed in 1599. John Rider and Francis Holyoke produced their notable Latin dictionary in 1617, in which Philemon Holland helped. This was improved upon by Holyoke in 1633, in his *Dictionary Etymologicum Latinum*. But it was in 1677 that Holyoke's son Thomas completed the large dictionary proudly asserted to be "the most complete and useful of any that was ever yet extant in this kind."

But dictionaries were for scholars and schoolmasters, ordinarily not for pupils, though Hoole in 1660 places them among reference books to be kept for use by the scholars. There was published, however, a *Short Dictionary for Young Beginners* by John Withals, the earliest edition of which is traced to 1556. This was essentially an English-Latin vocabulary, arranged according to subjects, giving the names of objects clustered together under heads of the sky, elements, winds, birds, the sea, fishes, etc. This book was revised by Dr. Evans, Abr. Fleming, and last by William Clark (in 1634). The later editions confessedly obtained material from the well-known Hadrian Junius's *Nomenclator* (1567). The last editor explains that the order is not alphabetical, because another method enables the grouping of helpful expressions around any object. Thus with the words "night" and "day" can appear the expressions "it is dark," "it is clear," and other sentences, proverbs, and sayings which relate to these topics. The object is to provide the young scholars with materials for Latin conversation. (See above on LATIN SPEAKING.) It is probable, however, that no work in this field was so important in the history of language teaching as the *Janua Linguarum* (1611) of William Bathe or Bataeus (1564-1614), an Irish Jesuit on the staff of the Irish College at Salamanca. The Spanish *Janua* consisted of some 1150 (sentences 1042 to 1100 being omitted) sentences or *centuriæ* in Latin, with a Spanish translation on opposite pages, an *Appendix de Ambiguis*, defining nouns and verbs with various meanings, and an *Index* containing

about 5300 words, based on Calepinus, and giving a translation in Spanish and reference to their use in the sentences. The centuries of sentences are grouped around some central topic, thus, the first five centuries deal with the cardinal virtues, the sixth with human activity, the seventh with peace and strife, and so on, only the last century is built on a different plan. The *Janua Linguarum* was at once accepted as a model, and many other works in different languages appeared, following the lines of Bathe's work, the best known of these is the *Janua linguarum reserata* (1631) of Comenius (*qv*). (See Corcoran, T., *History of Classical Teaching*, Dublin, 1911.) From what has been said of vocabularies, nomenclators, and such dictionaries as this of John Withals, it will be seen that there was plenty of previous material for John Amos Comenius (*qv*) when he came to compile his *Janua linguarum reserata* (which is a vocabulary arranged in topics and sentences about them) in 1631 and his *Orbis pictus* in 1657.

*Grammar* — All through the Middle Ages the instruction had been "direct," for pupils could not afford Mss books, and in many cases even the teachers did not possess them. Ælius Donatus, a grammarian of the fourth century A.D., wrote the one elementary Latin grammar which was in use for a thousand years. For a full account, see C. Thurot, *Extraits des manuscrits latins* (Paris, 1869). But with an oral system of teaching, and with a paucity of Mss even of Donatus's Accidence, teaching material and methods became traditional, and teachers taught largely according to the practice or "use" of the teachers under whom they were themselves taught. The famous school attached to the hospital of St. John at Banbury under the régime of John Stanbridge seems to have established a prestige in method of Latin grammar, and the phrase "after the manner of Banbury School" perpetuated Stanbridge's fame and his method. The other grammars of the middle ages were not simple like Donatus's. Priscian and his subtleties gave way to the still more abstract, metaphysical, and fantastic speculation of Alexander de Villa Dei, and other textbooks, or traditions of them, such as those held up to scorn by Erasmus, e.g. Florista (Ludolf of Luchow), Papias, Hugutio, Michael Modista, and Eberhard of Béthune. Grammar had become a "speculative," not a practical study, and one of the keenest desires of the Renaissance teachers became the unification and standardization of grammar. The earliest printed grammar in England was that of 1481 at Oxford. The next to claim attention is John Holt's *Lac Puerorum*, 1497. Stanbridge and Whyttington supplied many forms of the Latin Accidence, but this made the case still stronger for a uniform grammar. The later most important names connected with the evolution of the authorized Latin grammar of 1540 are William Lily,

Thomas Linacre, John Colet, Erasmus, and Cardinal Wolsey

Lily had been at work on an elementary Latin grammar as far back as 1509, and a letter of Colet in 1520 speaks of the book as an accomplished fact, and as Lily's book, to be used by him as first master of St. Paul's School. A further letter of Colet dated 1513 refers to it as Colet's own gift. The earliest printed copy is that of the *Absolutissimus de octo orationis partium instructione libellus*, published at Basle in 1515, and at Strassburg in 1515. It consists of twenty-one leaves, and contains a preface by Erasmus, disclaiming the authorship, and acknowledging that he had readily made emendations in it, but that it was Lily's composition. The fact seems to be that Colet made the first draft, Lily supplied emendations and probably wrote the syntax, and was commissioned by Colet to mark any further examples for inclusion as they occurred in the reading of classic authors with the boys. Lily meantime sent the little book to Erasmus for suggestions, and the report arose that it was entirely Erasmus's own work. It is to be noted that William Lily died in 1522, so the title of Lily's Grammar is only correct for the part composed before that date. In 1523 Thomas Linacre composed his *Rudimenta Grammatices* for the use of the Princess Mary. As Juan Luis Vives wrote about the same time a scheme of studies for the Princess, and as the two documents were sometimes printed together, the mistake has been made of regarding them as joint authors of a Latin grammar. Linacre's *Rudimenta Grammatices* is not to be compared with his *De Emendata Structura Latini Sermonis* of 1524, a much more elaborate work. Colet died in 1519, but his *Æditio*, as his *Accidence* is called, was not published till 1527. This Latin title must not be allowed to obscure the fact that Colet's grammar is in English. In it is an emphatic statement of the Renaissance view of grammar teaching, of which the essence is that Latin speech was before, and is before, grammar rules. Colet's *Æditio* contains Lily's Syntax in English and Lily's verses to his scholars *De Moribus*. In 1528 Cardinal Wolsey entered the grammar arena, with his *Rudimenta Grammatices* of thirty-four leaves. Wolsey (? 1475-1530) had been a Fellow of Magdalen College, Oxford, like Lily, and, as is sometimes forgotten, had been a master in the Magdalen College School (1498). In the Preface to his *Rudimenta*, he gives his remarkable sketch of studies and methods to be pursued by the masters of Ipswich Grammar School, and evidently his plans were intended as a model for other schools. The "lytell proheme," and the *Accidence* are borrowed whole from Colet, as also are Lily's contributions to Colet's grammar. Other contributors were pressed into the service of the so-called Lily's Grammar, e.g., Thomas Robertson (from 1524 to 1534), master of Magdalen College School, Oxford,

who gave the *Quæ genus* and versifying rules with it.

With these new grammars and the survival of medieval grammars and grammar traditions there sprang up a great diversity in the course of teaching. In 1540 came King Henry VIII's Proclamation that "As his Majesty purposeth to establish his people in one consent and harmony of pure and true religion so his tender goodness towards the youth and childhood of his realm intendeth to have it brought up under one absolute and uniform sort of learning." Hitherto, the King goes on to say, every master had his grammar, and every school, diverse teachings, and "the changing of masters and schools did many times utterly dull and undo good wits." Accordingly he commands that Lily's Grammar is to be used and "none other." The first edition traceable is that of 1542 (two years after the Proclamation) and the exact title of what was constantly called Lily's Grammar is *An Introduction of the cyght partes of speche and the construction of the same, compyled and set by the commandement of our most gracious sovereign Lorde the King* (anno 1542). Contrary to the earlier grammars, this official grammar is in Latin. It is now unknown who were the commissioners to determine the exact contents of the authorized grammar, excepting that it is traditional that Dr. Richard Cox, tutor to King Edward VI, was one of them.

Lily's grammar was thus in supreme authority from 1540 onward. In 1758 it was appropriated as the Eton grammar, and its use in Eton College continued till about 1868. From 1758 to the present its authority has quietly declined and vanished, without enactment. As a business monopoly, Lily's grammar was very valuable, considerable sums being paid for it as "rent." It passed through the hands of Francis Flower and John Batterby to John Norton, and in the family of the Nortons it remained for generations, with license to print granted to the universities. Ecclesiastical sanction was given to it by *Articles of Visitation* of the archbishops and bishops, who inquired if any other grammar was being used in any schools to its detriment. Attempts were made unsuccessfully to upset its authority in Convocation in 1664 and in the House of Lords in 1675.

There were many attempts at emendations of the King's or Lily's grammar, by translations of the Latin parts, by various forms of exposition or "elucidation," by "præxes" on it, and by writings which announced themselves as friendly to it, but as supplementary. Among these were Thomas Granger's *Syntagma Grammaticum*, 1616, John Danes's *Light to Lily*, 1631, John Clarke (of Lincoln), *Dux Grammaticus*, 1633, Thomas Hayne's *Compendium*, 1637, James Shirley (the dramatist schoolmaster), *Via ad Latinam Linguam*, 1649, and Charles Hoole's *Latin Grammar*, 1651, his

*Common Rudiments*, 1651, and his *Easy Entrance*, 1659. In addition to these there were the foreign Latin grammars such as those of Peter Ramus, Antonio de Lebriza, Vossius, etc. In 1641 Thomas Farnaby curiously enough obtained a special authorization for his *Systema Grammaticum*, too learned a work for ordinary school use, and, as is not always remembered, Jeremy Taylor in 1647 and John Milton in 1669, wrote short and easy Latin grammars. Two other Latin grammars had some good points, those of John Brookbank, *A Breviate of our King's whole Latin Grammar vulgarly called Lillie's*, 1660, and Richard Lloyd's *Latin Grammar*, 1653.

The diversity of grammars grew apace. In 1726, the particularly good *Grammar of the Latin Tongue* by Solomon Lowe gives a list of 186 writers of Latin grammars whose works had been or were in use in England at that date. Criticism of the authorized grammar culminated in a work of Richard Johnson, master of the Free School, Nottingham, entitled *Grammatical Commentaries, being an Apparatus to a new National Grammar, by way of Animadversion upon the Falsities, Obscurities, Redundancies and Defects of Lilly's system now in use in which also are noticed many errors of the most eminent Grammarians, both ancient and modern*, 1706.

But controversy was carried further than the question of an authorized grammar. Dr. Joseph Webbe (d. c. 1633) was a physician-grammarians, who enthusiastically urged that Latin as a language was to be learned entirely from Latin authors, independently of systematic and elaborate grammars, authorized or unauthorized. Other writers wished grammar to be taught by an appeal to realistic teaching, a method which Comenius's *Orbis pictus*, 1657, greatly stimulated. The whole history of Lilly's grammar affords the most striking instance of the failure to maintain the use of a particular book by giving it special royal authorization.

Besides dictionaries, grammars, colloquies (*q v*), verse making (*q r*), rhetoric (see *Rhetoric*), the Latin apparatus was chiefly concerned with Latin letter writing, theme writing, and other forms of Latin composition. The great desideratum was the material on which the pupil could express himself in Latin speech and writing, good subject matter and elegant and eloquent phrases and idioms.

The *Adagia*, *Copia Verborum*, and *Apophthegms* of Erasmus had succeeded to the old *Vulgaria* of Horman and others, all of which has been drawn up with the purpose of assisting the "making of Latins." The books to help in the writing of letters were numerous. Among the most important were those of Erasmus and Vives, *De conscribendis epistolis*, and of Englishmen, John Clarke's *Epistolographia*. In theme writing, Aphthonius of the fourth century A.D. was reestablished as an ancient authority for method. For

subject matter Reusner's *Symbolæ*, Lycosthenes's *Apophthegmata*, 1555, and all sorts of books of *Flores*, and sayings from the classics and modern writers, especially on the subject of morals, were the hunting ground of boys for their themes. For phrases and elegant expressions, Valla, Erasmus, Aldus Manutius, and the English collections of *Calhoppiana* (1613) and *Bibliotheca Scholastica Instructissima*, 1633, both by Thomas Draxe, were recommended. In addition, in the seventeenth century came John Clarke's *Phrasologia puerilis*, 1638, Hugh Robinson's *Scholar Wintoniensis Phrases Latinae*, 1658, Thomas Willis's *Proteus Vincetus* 1655, and William Walker's *Dictionary of English and Latin Idioms*, 1670. But the largest in this sort was William Robertson's *Phrasologia Generalis*, 1686, consisting of about 1400 closely printed double-columned pages. Solomon Lowe, in his *Latin Grammar*, 1726, not only enumerated the writers of Latin grammars, but also stated the names of 118 authors of these vocabularies, phrase books, examples, and sententiæ, who were or had been used in England.

The tendency of these analytical products of phrases and expressions was toward isolated scraps of knowledge. This tendency was intensified by the use of compends or epitomes into which every solid subject of study was brought. Francis Bacon was led to call these "epitomes," the "corruptions and moths of histories, which had made excellent histories bare and unprofitable dregs." The theory on which epitomes and the collection of phrases had been based was probably the usefulness of the method when the collections were made by the pupil himself. For the use of paper books in the collection of literary phrases, examples, and commonplace extracts was much older than Ascham, who is sometimes thought to be the first suggestor, and remained throughout the seventeenth and even eighteenth centuries a most valuable method. For in the old English grammar schools the processes of classical training depended largely on the active initiation of the pupil to gain such control over what he read in authors that he should be able to use it again, in new form, from his own independent standpoint of free composition and speech. The employment of highly analytical methods for the sake of copiousness and elegance of expression in Latin speech and composition (which brought into the schools the excellent piece of work of William Walker on the *Particles* in 1663) produced a plethora of books to supply pupils both with subject matter and choice expressions for all manner of subjects on which they had to write. The very development of classical learning brought a state of Latin apparatus, which took away the old Renaissance sense of initiative on the part of the learner by offering him full provision ready to hand to meet all his wants, and was joined with a corresponding degeneracy of



especially the weaker schoolmasters and schools, so common in the eighteenth century F W

See COLLOQUIES; COMMONPLACE BOOK, DICTIONARIES; GRAMMAR, VISUAL AIDS TO TEACHING; also DONATUS; PRISCIAN; LILY, and the other grammarians referred to.

**Latin, Teaching of** — The position occupied by Latin in the curriculum of the secondary school is due primarily to tradition. During the Middle Ages and at the Revival of Learning Latin was the medium of communication in science, literature, and politics. Consequently it was the first and most important element in education, supplemented by Greek and mathematics, it formed the whole curriculum (See GRAMMAR SCHOOLS). In the seventeenth century the native tongue began to form a small part of the course of study. This was followed in the eighteenth century by the modern foreign languages, and in the nineteenth by the various sciences. Practically all the time devoted to them was taken from that allotted to Latin and Greek. The process has continued until now Greek is omitted from the curriculum in practically all public high schools and in most private ones, and Latin has been reduced to modest proportions (See GREEK IN THE SCHOOLS). Latin now occupies about one fifth of the total time of the secondary schools, but it has to maintain itself against vehement criticism and opposition. The critics maintain that Latin is not a "practical" subject, and that the results of Latin teaching are entirely disproportionate to the amount of time which it demands. The defenders of Latin urge two main reasons for its retention in at least its present condition: (1) its value as a mental discipline, (2) its value as a practical subject.

The value of Latin, or of any subject in particular, as a mental discipline, has been much impugned in recent years, particularly by the psychologists, but there is a tendency now apparent to recede from the extreme position in this regard, and there is abundant testimony from unprejudiced observers in all walks of life to the value of Latin as a training instrument. For above every other subject it trains (1) the process of observation, (2) the function of correct record, (3) the reasoning power and general intelligence in correct inference from recorded observations. To this should be added its great value in developing the power of voluntary attention.

The value of Latin as a practical subject has to do particularly with the effect of the language in the cultivation of English style. In the English vocabulary a very large proportion of words in everyday use are of Latin origin, and it has been estimated that two thirds of the Latin vocabulary of the classical period has in some form or other come over into English speech. For the correct use of synonyms in English and the habit of expressing one's thoughts clearly, concisely, and cogently, a

discriminating knowledge of Latin is indispensable, and while not every pupil in the school may be expected to develop a good style, nevertheless he should be given the necessary foundation for it.

When we turn to literature, we find that Latin is influential everywhere — particularly in our classical authors — by allusion, by quotation, by actual domestication. Many of our great English writers are permeated with Latin. We cannot expect that all will desire to feed their minds on the works of our greatest authors, however much we might prefer it, but certainly we should not deprive them of one of the most important elements in their enjoyment should they be so minded.

The criticism of the results of Latin teaching has borne more heavily in recent years, and teachers are coming to realize that this criticism has genuine foundation. There has been, therefore, much discussion as to improvement of method, and many suggestions, particularly by editors of textbooks. It may be said in general that the tendency of these suggestions has been toward greater emphasis upon oral teaching and the testing of acquaintance with the language by the ability to read its ordinary forms at sight. It has been too true that the value of the exercise in translation, which, when properly done, should be very great, has been seriously impaired by the very widespread use of English translations, a practice which results in slow progress on the one hand, and dulled moral sense on the other. Then, too, in most of our colleges the classes, particularly in the earlier years, have been so large that adequate personal attention to individual students has been impossible, and this difficulty is becoming more and more serious in secondary instruction with the rapid growth of our public high schools. Administrative officers have shown a curious disinclination to treat languages with the same consideration that is extended to the sciences. While it is accepted without question that scientific instruction without individual laboratory work under the eye of laboratory assistants is impossible, the equally obvious fact that instruction in languages without similar practice can be only haphazard and slipshod, is either not perceived or knowingly neglected.

Naturally in the teaching of any language we should begin with the essentials of grammar, together with sufficient exercises to insure the complete learning of the forms, and enough of the syntax to make the reading of simple sentences possible. This would be followed by easy reading, and then by more difficult reading, until the student acquires sufficient mastery to read with some ease whatever he would naturally come in contact with. And this is practically (with certain restrictions) what has been followed for centuries in the teaching of Latin. The question has been chiefly as to the nature of the instruction in the first year and

the sequence of reading material. In the main the colleges have dominated the high school curriculum in America by their requirements for admission, and thus we find that for a long period the course of instruction in the high schools has been the beginner's book, a certain amount of Caesar, certain orations of Cicero, certain books of Vergil's *Æneid* (See COURSE OF STUDY). When the high school course has been four years in length, as is the case almost everywhere, one year has been devoted to every one of these four subjects. Where the course is five years, or six, teachers have enlarged it by the addition of Ovid, Nepos, Sallust, and in some cases have increased the time devoted to the beginner's book so as to spend upon it a year and a half.

In recent years there has developed a strong feeling that the prescription of so much reading has a deleterious effect upon the teaching in the schools, and that better results could be attained if there were less definite prescription of authors and more insistence on the ability to translate easy Latin at sight.

The first year of Latin is the most important work in the whole high school curriculum. This importance lies in the fact that the pupil is studying not only Latin, but the phenomena of organic speech. In some schools in Germany and in England the pupil makes his first acquaintance with a foreign language in the study of French, but this practice has not taken root in the United States, and there the first serious study of linguistic expression begins in the Latin classroom.

Let us see for the moment what the problems of the Latin student are, what the English-speaking child will find difficult or unusual. First and foremost, he will be struck by the Latin forms. English is practically a formless language, the few terminations remaining are not sufficient to form a foundation for the careful study of the expression of ideas by means of termination. The pupil will now for the first time have to distinguish between the various cases of the noun and the various tenses and moods of the verb. This comes as a shock to the average English-speaking child, and it requires months upon months of careful and insistent drill before the expression of case relations by changes in termination becomes second nature. For example, in an English sentence like, "The boy strikes the dog with a stick," outside of the *s* in the verb no indication of meaning is given by any termination, and the three substantives would suffer no change in form, no matter what change in meaning might be brought about by transposition. On the other hand, in Latin the syntax would be expressed not merely by the sense, but also by a formal difference in every noun. Furthermore, the pupil would be troubled by even the simplest syntactical structure. An English sentence like, "The father gave his son some money that he might buy the book," is com-

prehensible to the child without any serious mental effort, but in the Latin sentence he must become acquainted with the idea of purpose and its expression and the use of mood to take the place of the auxiliary. This difficulty is immeasurably enhanced when "to buy" takes the place of "that he might buy." Another difficulty which is none the less real is that of pronunciation. For the first time the pupil comes into contact with what is essentially the Indo-Germanic system of sound expression, from which English has seriously varied. Then, too, there is word order and its possibilities in an inflected language. With these difficulties staring him in the face, and with progress made exceedingly slow on account of the necessity of accurate thinking along several lines at the same time, the first-year Latin taxes the patience, the ingenuity, and the skill of even the best of teachers. And in the United States in particular, owing to conspicuous administrative incompetence, the work of the first year is usually in the hands of the most inexperienced teacher.

*The Introductory Work, the Customary Method* — The material is provided in the numerous first-year books, which show almost every possible idiosyncrasy of method. It may be said in general that they embody the carefully thought out schemes of the individual authors. They follow two main lines of presentation, one of which may be called the block system, the other the fragmentary system. In the latter — and by far the most influential — the lessons, particularly the earlier ones, are so divided that fragments of declension and fragments of conjugation alternate with each other, thus, either the nominative singular, or the nominative and accusative singular, or the nominative singular and the nominative plural of the first and second declensions are followed by the present indicative, singular number, or third person singular and plural, as the case may be. Subsequent lessons fill out the paradigms of the first and second declensions and the first conjugation, after which the other conjugations and the remaining declensions are taken up. In the mean time elementary rules of syntax, such as the agreement of the subject and the verb, the government of the accusative case, the ablative of instrument, the ablative of place, the dative of possessor, the objective or possessive genitive, the use of *ut* to express purpose, sometimes the use of *cum* in the sense of "when" are scattered along according to the caprice of the author. The object of thus breaking up inflectional groups is to provide early in the course reading material which will have in itself some reason for existence, and thus avoid the aridity of the old-fashioned textbook. In the former class, the textbook gives first the declensions in their order, supplementing them only by so much of the verb inflection as seems necessary to make the construction of sentences possible; then follow the conjugations in their order. The

earlier exercises from English into Latin and from Latin into English are largely confined to the translation of detached forms. The critics of the first system maintain that it divorces things that belong together, those of the second that it makes the early Latin work not merely dull, but practically hopeless, because the pupils see no evidence of progress. As a matter of fact, the superiority of the first method to the second is merely specious, and the fragmentary acquisition of forms carries with it many evils. A third method of presenting forms, advocated by a few, is what one might call the topical treatment. The pupil begins with the study of a case throughout all its formations, and after proceeding through the declensions he takes up the verb similarly. Every one of these three methods requires a live teacher to make it successful, and practically, therefore, none shows any superiority over the other. Theoretically the second method is preferable, supplemented by the third wherever feasible, the first being the least defensible of them all.

The selection of the material of the first book involves the three divisions of forms, syntax, and vocabulary. It is generally agreed that unusual forms should be excluded, on the principle that only those in most common use are vital, while the unusual ones can better be learned (if learned at all) where they occur. Consequently the old apparatus of rule followed by exception has practically disappeared, and the beginner's book lays particular stress upon the normalities of language. This principle, however, suffers some modification in practice. It is frequently easier to learn the complete series, even though some of the elements are rare, than to break it up into fragments, the effort of mind is often much greater in the second case. The terminations are best learned in groups, even though examples of some of them are comparatively infrequent. Principal parts are best learned complete, though in the case of many verbs certain of them are never found. In the main, however, the principle is sound. In the case of syntax the situation is different. Comparatively little syntax should be given in the beginner's books, and this should be not necessarily the most common, but the most simple, for the learning of forms taxes primarily the memory, while the study of syntax exercises principally the reason. Therefore the indicative constructions should appear in the beginner's books, and only those uses of the subjunctive which make but slight demand upon the reasoning power, such as its use in wishes, in expressions of purpose and result, and little else. It is customary in the beginner's books to devote the last few lessons to the more elaborate constructions; but conditional sentences and the whole body of constructions with *dum* and the like, *quam*, *quominus*, and concessive clauses would better be deferred to the second year. The same is true of the more involved relative constructions.

The choice of vocabulary obviously depends upon the aim of Latin teaching in general. If, it is generally argued, we taught pupils to speak Latin as we did formerly, we should naturally require a colloquial vocabulary, but since our chief aim now is to give the means of reading Latin literature, we must choose the vocabulary with this end in view. A number of beginner's books claim to limit the vocabulary to the words in most common use in Cæsar. This practice is sound, because it has been found that these words are also in common use throughout the literature, while birds and animals, furniture and everyday occupations would leave the pupil absolutely helpless before a page of any Latin author. The size of the vocabulary for the first year should be about 500 words, and the textbooks usually show about that number. But no fixed list of words can be learned completely by all the pupils, and a certain margin must be allowed for forgetfulness, consequently the beginner's book would do well to show a vocabulary slightly in excess of 500.

The exercises in translation are usually divided into Latin-English and English-Latin. Some teachers hold that no translation from English into Latin should be expected until very substantial progress in the learning of forms has been secured, perhaps not until the middle of the year, but the weight of opinion inclines to the view that translation from English into Latin should begin with the first lesson. This work, however, is very much more difficult than translation from Latin into English, and the demands in vocabulary and syntax should accordingly be lessened.

*The Oral or Direct Method* — Dissatisfaction with the results of the traditional method have led in recent years to the employment of the oral or direct method. The advocates of the latter insist that Latin should be taught as if it were a modern spoken language, consequently they follow in general the principles of direct teaching as employed in the teaching of modern languages. Almost from the very beginning Latin is the customary language of the classroom. At the outset short commands and questions having to do with the necessary activities and surroundings of the classroom form the means of instruction. The pupils are required to answer every question in Latin and to follow every command with a statement of what they are doing. As they progress the range of vocabulary is enlarged, but still restricted primarily to the ordinary activities of life. After a little time the teacher tells the class short stories in Latin, explaining the meaning of unfamiliar words in the same tongue and requiring the class to give him back the story in such Latin as they can command. In this method translation, whether from Latin into English or from English into Latin, is practically unknown. This is reserved for the period when the pupil, having obtained a ready

command with the fundamental principles of Latin, is ready to begin that comparison of Latin and English idiom which renders translation so valuable an exercise. Drill in syntax is obtained partly by the oral exercises, partly by written work. To provide for this drill the teacher may require his pupils to embody such and such constructions in the written work, while in the oral work he may have the various ideas expressed first in one fashion and then in another, turned from active to passive, or from the independent to the dependent form. Short narratives composed of independent sentences may be rewritten so as to involve various kinds of subordination. The effect of such training is to make the forms of the Latin language second nature to the pupils, and to reduce the strain upon the memory by constant practice. The method requires a great deal of ingenuity and readiness on the part of the teacher, for every opportunity afforded by any chance remark of the pupil must be improved at once, but in the hand of a competent teacher the results are claimed to be vastly superior to those of the old method. After some months the pupils have a greater grasp of the forms and easy syntax of the language, and are then prepared to go on to serious reading with much greater ease. The chief drawback of the direct method is one of time. The earlier stages require a great deal more time than is required by the old method, but the advocates of the new method maintain that what is lost in speed is more than gained in definiteness and quality of knowledge, and that in the subsequent years the previous delay is much more than made up. One of the important results of this method is that pupils feel that they have a certain control of the language and are thus relieved of the temptation to use unfair means in preparation.

Very recently in the United States an attempt has been made to modify the traditional method by adding to it some of the features of the new method. Recent textbooks give more attention to colloquial features, and the vocabulary of the earlier lessons has to do with the ordinary activities of life. But this choice of vocabulary is intended merely to facilitate the colloquial handling of the language by the pupils, and is expected to give way to the normal literary vocabulary as soon as the serious reading of Latin literature is begun.

*Pronunciation* — Whatever method is employed, the initial difficulty is that of pronunciation. The Roman method is commonly employed. Objections are occasionally made to it but its foundation is secure both in knowledge and in intellectual honesty. It is frequently said that we do not know how the Romans pronounced. This is true only to the extent that those who have not actually heard a modern language do not know how it is pronounced. We have a fairly accurate knowledge of the sounds of the Latin letters, and we have

special directions as to the position of the organs of speech in articulation. While some of these directions come from a comparatively late period, — as late, in fact, as the sixth century A.D., — yet the laws of linguistic development show conclusively that the directions of this period involve certain preceding conditions which can be postulated with accuracy. To determine Roman pronunciation we have, besides the directions of the grammarians just alluded to, transliterations of Greek words into Latin and of Latin words into Greek. We have inscriptional evidence as to the length of the vowels, occasional remarks in Latin literature touching upon pronunciation, and the evidence presented by the Romance languages, which modified in transition the Latin sounds after a definite manner. We are able, therefore, to give in the textbooks the sounds of the Latin letters with practically as much certainty as we can the sounds of a modern language in textbooks for foreign use. To the ear of a Cicero a modern Latinist would speak with an "accent" but he would be understood. It is the business of the teacher to show in pronunciation a careful attention to exact enunciation and to require on the part of the pupils the same accuracy. The pupil should never hear a Latin word mispronounced by the teacher. The Latin that is to be translated should if possible be read aloud by the pupil, and such practice should be continuous. A little careful practice every day is better than a great deal at intervals. The teacher should pay attention particularly to the quantities of all the vowels in his own enunciation and to syllabic division, the pupil, however, should not be forced to learn anything but the quantity of terminations and penultimate syllables. The former should be learned in the acquisition of the forms, the later on meeting with the new word. Inasmuch as Latin accent depends upon the length of the penult, it is not necessary to require a careful marking of the earlier syllables in the word, except, where it is an obvious derivative of a form already known. Hidden quantities, so called, should not be required of the pupils, but the teacher should be careful to pronounce them correctly as far as our knowledge extends.

*The Later Reading* — In many of the older English schools and in those American schools with a curriculum of more than four years, the introductory work extends over into the second year, but in the new English schools and in the vast majority of American schools the reading of genuine Latin begins in earnest with the beginning of the second year. The arrangement of the curriculum for subsequent years differs in different countries. In general Nepos and Cæsar are taken up first, and then a mixed combination, composed mainly of selections from Cicero, Ovid, and Vergil, but with possible substitutions of Livy, Sallust, and Terence, has been the habit. In the United States up to very recently the almost universal practice has been

to devote the second year to *Cæsar*, the third to *Cicero*, the fourth to *Vergil*. The amount of *Cæsar* prescribed (four books) has proved to be a very severe task for the ordinary high school class. It has involved a definite advance every day, and it has thus been impossible in many cases to take account of weak students or to linger for the purpose of securing thoroughness. The plan recently adopted decreases the amount of reading specifically required and lays increased emphasis upon reading at sight and the acquisition of additional vocabulary. (See COLLEGE ENTRANCE REQUIREMENTS.)

The transition from the beginner's book to *Cæsar* is difficult, and the pupil is apt to show a weakness entirely unexpected from the work of the previous year. This is due to the complexity of the periodic sentence. Word order and the various devices of subordination give a great deal of trouble. At the outset the teacher must be content with short lessons in which attention is paid particularly to the new constructions and the new words. He should also devote a good deal of attention to working over the Latin sentence into genuine English. The class should be drilled in the difference between Latin and English idiom, and should be required to translate at least the review passage into correct English. The work done during the class hour should be of two kinds: the work of the previous day should first be reviewed, and the rest of the hour should be devoted to a preliminary sight translation of the work of the next day under the guidance of the teacher. As far as possible, the home work should be restricted to the study of syntax (often in written exercises) and vocabulary. Every now and then the pupils should be required to write out in class the translation of a small portion (if only four or five lines) of the day's lesson, and these written translations should then be criticized by the teacher from the point of view of the English expression. One such exercise is worth a dozen oral translations for the appreciation on the part of the pupil of the difference between Latin and English expression. The teacher must never lose sight of the fact that from the beginning of the second year the most important part of the training is the development on the part of the pupil of the sense of style, by which is meant good English as an offset to good Latin. If the advantage claimed for the study of Latin in appreciation of English style is to be secured, it can only be done in this way.

*Cæsar* furnishes particular problems. In the main his narrative is simple, concrete, narrow in range of ideas, and easily followed. In fact, no author in the whole Latin literature is better suited for the reading of the second-year Latin. But *Cæsar* shows a fondness for the insertion of speeches in what is called indirect discourse. These have nothing to do with the narrative, and could be omitted without disturbance. The length of these speeches in the first book has led many teachers to begin

with the second book. Such a practice is faulty in principle, and,asmuch as the speeches are not necessary to the narrative, it is far better to begin with the first book, and for the teacher either to translate or to paraphrase the speeches as they occur in order merely to give the setting of the story. A good deal of stress has been laid upon the ability of the pupil to turn direct discourse into indirect discourse and the reverse, but it should be remembered that *Cæsar* is the only author whose style is characterized by indirect discourse in mass, and that, so far as the learning of Latin is concerned, the time devoted to the intricacies of indirect discourse would much better be devoted to more extended reading. Nevertheless, until we are prepared to give up *Cæsar*, some attention should be paid to the indirect discourse, and the speeches might well be reviewed toward the end of the year, when *Cæsar's* story is being studied as a whole.

In studying *Cæsar* due attention should be paid to the development of his narrative and to the Roman art of war. Pupils might be required after a campaign to write out an account of it, or they might be required to plan or describe a battle. Some attention may be paid to *Cæsar* as a man, his dealings with his troops, his attitude toward the State, the circumstances which led to the Civil War. But of course these studies should be supplemental merely, for after all, while *Cæsar* is history, he is being read primarily to learn Latin. If the plan of preparation indicated is followed, no particular effort need be made to develop the power to translate at sight, but a period may be devoted, perhaps as often as once a week, to sight translation only. The passage read may be merely a further section of the advance narrative, or interesting passages may be selected from the later books or from any other Latin of approximately equal difficulty.

During this year much attention must be paid to prose composition, and as this important exercise is for the purpose of systematic grammatical study, it should be done systematically from the beginning. The exercises should be graded in difficulty, and should follow a definite plan of syntactical development. They should, accordingly, not be merely based upon a small section of the text. All that can be expected is that the vocabulary should be that of the stage of study and that the style should be narrative. If the subject can be made either identical or similar with what the student is reading, so much the better. It is the habit of many to devote one period a week to prose composition. This is theoretically objectionable. It is better that a short exercise should be done every day. Review exercises embodying a number of principles previously studied may occupy the period every now and then, but one period a week devoted to Latin composition involves too long an interval between efforts. Oral composition in connection with the reading

of the day may often be productive of excellent results.

When some of the *Lives* of Nepos are substituted for a portion of the *Cæsar*, the same general principle should be followed in the teaching, but the supplementary work would of course be different. Nepos is, however, not so suitable as *Cæsar* for this stage, because his vocabulary is much wider and involves many unusual words, and many of the conceptions are abstract. Nor does the brevity of the episodes serve to counterbalance the greater complexity of the periodic sentence.

Ordinarily *Cæsar* is followed by *Cicero*. *Cicero* not only represents the highest point of Latin classical style, but he was the greatest Roman orator and an important figure in the death struggle of the Republic. The orations usually chosen are the four against *Catiline*, the one on *Pompey's* command and the one for the poet *Archias*. The orations against *Catiline* are the easiest of all, and have an important political significance. The *Pro Lege Manilia*, in addition to being a comparatively early speech, marks the beginning of *Pompey's* growth as a great figure, and also forms a good opportunity to study the rhetorical elements in the orator's style. The *Pro Archia* is in effect a eulogy of Greek literature and a wonderful example of the panegyric style. Sometimes the teacher prefers to read a different set of speeches for the purpose of focusing the attention of the pupils upon some particular side of *Cicero's* multifarious career, and many teachers like to substitute for some of the speeches mentioned selections from *Cicero's* correspondence, chosen either to show the great orator's human side or to throw sidelights upon the history of the period. Some teachers regard *Cicero* as dull and uninteresting to pupils, and prefer at least to begin the third year with *Vergil*. This apparently unpedagogical practice is defended on the ground that *Vergil*, even if not thoroughly understood, is interesting on account of the narrative, that his style is not difficult, and that outside of the strangeness of the poetical dress, the narrative moves quickly and easily. Moreover, the syntax on the whole is easier than that of *Cicero*, because of the absence of involved sentences. Others begin the third year with *Vergil*, and after a time they take up *Cicero* completing both *Cicero* and *Vergil* in the fourth year. But this is all pedagogically unsound. *Vergil* should be deferred to the fourth year, because his writings are pure literature, and need for proper appreciation and enjoyment as much maturity of mind as can be brought to them. On the other hand, *Cicero* makes but small demands upon the mental maturity of his readers. In teaching *Cicero* it is proper to go more into detail about the history of the later years of the Republic and the condition of parties at Rome. The work of the *Cæsar* year in this regard might well be amplified, and the attempt made to give the pupils some rational

idea of the workings of the Roman constitution, but the main stress should, of course, be laid upon the interpretation of the speeches themselves. The teacher should possess a great deal of imagination because *Cicero* is serious, ironical, humorous, jesting, or playful in turn, and his invective on the one side is offset by the deepest pathos on the other. Very often the point of the passage depends on the order of the words or the application of a particular word. References that seem blind can be lighted up by modern instances. *Cicero's* personal character and the main facts of his personal life should not be overlooked, and the teacher should try to lead his pupils to some understanding of the man whose soul was torn in two directions, who felt always the conflict between inclination and duty, who followed a sinking cause with his eyes open and remained true to his convictions even at the cost of life.

When *Ovid* is read, whether after *Cæsar* or *Cicero*, it serves as an introduction to Latin poetry and to ancient mythology. It also relieves the early study of *Vergil* of the drudgery usually attendant upon the shift from prose to verse, and makes it possible to treat *Vergil* as literature from the beginning. Selections from the *Metamorphoses* are usually chosen, because the narrative is easy. The chief difficulty is one of word order. To relieve this some editions have the earlier selections rewritten in prose order. Scansion also is a serious exercise for most pupils, even when they have been carefully trained in pronunciation from the beginning. Most teachers are content if some appreciation of rhythm is developed, and pay little attention to the conflict between verse and word accent that regularly obtains in the first part of the verse. Others maintain that, as Latin is a language of almost "level stress," the verse will scan itself, if the words are pronounced as they should be pronounced in prose. Few teachers, however, are able to reach this point of perfection, even in their own scanning.

It has been objected that because the works of *Vergil* represent the highest reach of the Roman imagination and the most finished product of Roman literary art, they should be reserved for the later period of study, when the attainments as well as the maturity of mind of the student are greater. If we were sure that our students were going to continue the study of Latin for some years, this objection would weigh, but the great majority of secondary pupils terminate their study of Latin with the high school course, and it seems indefensible that any should give up Latin after four years' study without having had the opportunity to read *Vergil*.

Since most American high schools prepare for the college examinations at the end of their course, it becomes necessary in the last year to devote considerable attention to a review of grammar and syntax. *Vergil*, however, is not well suited for this. His style is in general

very simple; subordination is conspicuous by its absence, the subjunctive constructions that are so common in all Latin prose are comparatively rare. The syntax of the cases can, it is true, be studied with some effect because most of the so-called poetic usages have to do with case constructions, but these are the easiest, after all, and the pupil needs most to review the construction of the verb. This is best accomplished by the careful writing of Latin during the whole of the last year.

The selection usually read is the first six books of the *Aeneid*. This is justified, first, by its extreme interest for all kinds of pupils, secondly by the fact that neither the *Bucolics* nor the *Georgics* treat matters of universal appeal. The subject and the vocabulary of the *Bucolics* were exotic to the Romans themselves. That of the *Georgics* is too specialized to warrant any great attention on the part of high school pupils. The first six books of the *Aeneid* are without question the most important part of this poem, and they have a world interest which is not so much felt in the latter books.

In teaching Vergil the aims are altogether different from those that dominate the teaching of Caesar and Cicero. Here is no place for the study of military operations, the colonial system or method of government, nor is there any occasion for investigation of party feuds and social relations. Since the Roman epic is a purely literary creation, stress should be laid as far as possible upon the literary element. The ancient mythology, the ancient simplicity of life, the ancient morality, all claim attention, but these are subordinate to the far-reaching literary interest which Vergil exercises upon all subsequent authors. Most of the school editions contain copious parallel passages from later literature. In many cases these are not genuine parallels, and the pupil either gets no impression or only a very vague one from reading them. This ought not to be the case. An attempt should be made to focus the attention of the students upon certain important features of English literature and upon certain particular authors who have been under classic influence. With that in view it would be well to treat at greater length the influence of Vergil upon Shakespeare, upon Tennyson, upon Milton, and so forth. This can be done usually with the material provided in the editions. The pupils should also be taught throughout to visualize the scenes, to form their own judgments as to the narrative in its various stages, to become independent in attitude. Here, too, extreme care should be exercised in translation. Poetic language should be rendered poetically. It will be the first experience of most students in distinguishing what is prosaic in expression from what is poetic, and the fact that Latin verse differs from Latin prose will be better understood if the difference between English prose and English verse is also shown. Images and metaphors should not be washed out. Due

attention should be paid to the artistic setting, the picturesque qualities of every scene. The teacher should never lose sight of the fact that in teaching Vergil he is teaching the principles of literature in general, just as in the earlier years of the course he was teaching universal grammar. In this way Vergil ought to be not merely the proper culmination of the secondary Latin course, but also an important element of the pupil's general culture.

With a longer course Sallust's *Catilina* might be read as a foil to Cicero's *Catilinarians*. Variety may also be attained by selections from Terence or Livy, or by more extended anthologies, a large number of which are now available, adapted to the wants of pupils of different grades.

G. L.

See CAESAR; CICERO, NEPOS, SALLUST; VERGIL.

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**LATIN SCHOOLS.** — See GRAMMAR SCHOOLS; PUBLIC SCHOOLS, SECONDARY SCHOOLS, MIDDLE AGES, EDUCATION IN THE

**LATRINES, SANITARY** — Sanitary toilet systems for schools must satisfy the following general conditions (1) They must be situated either in the building or near enough to secure privacy, close supervision, and also to prevent exposure during cold or inclement weather (2) They must have sewer connections and be provided with individual wash-out seats, and urinals In villages and country districts where sewer and water supply systems are not available, the air pressure tank system connected with force pump, manipulated by hand or some form of motor and septic tank disposal ought to be installed (3) Each seat should be furnished with an individual automatic wash-out attachment, in addition to some general flushing system under control of the janitor (4) In all cases where toilets are installed within school buildings, special construction of such rooms is necessary They must have a cement or tiled floor, with outflow connections so that frequent scrubbing and flushing may be secured The walls should be encased with light-colored glazed brick, or tile, both for the sake of cleanliness and the non-absorption of light The ceilings should be furnished with hard cement plaster and painted with a light-colored water-proof paint (5) The seats and urinals should be located along the inner walls of such rooms and faced toward the light (6) Each toilet seat should be in a separate

## LAUD

stall, fitted with doors The custom of building the stalls without doors offends against both decency and modesty These doors ought to be hinged and connected with a spring, so that when the seats are not in use the door will swing back into the stall so as to allow light and if possible direct sunshine to enter The children could then be taught to close and latch the doors when they use the stalls (7) Where toilets are within school buildings, down-draught ventilation through both the seats and urinals is necessary This can be accomplished, when proper plumbing material is furnished, either by an exhaust fan connected with the vent ducts, or by the use of separate exhaust chimneys in which fires are kept burning (8) Urinal stalls should be made with back, sides, and bottoms of white glass Such material is now on the market, and is far better than slate, marble, or transparent glass It is not absorbent, does not discolor, is easily cleaned, and furnishes privacy (9) The flushing of urinal stalls is a matter of importance to prevent odors and insure cleanliness The best form of flushing thus far developed consists in placing a well protected overflow trough on the upper part of the back of the stalls The ordinary perforated pipe is liable to clog and fail in the proper distribution of the water over the entire surface of this part of the stall (10) The bottom of the stall should slope slightly toward the back and deliver into a trough leading to sewer connections This trough ought to be connected in such a manner that rubbish could not enter (11) In large buildings, especially those of more than two stories for high schools or grammar grades, toilet facilities should be afforded on each floor These should open from rest rooms or from secluded halls It is an inexcusable blunder to locate toilets to open into corridors alongside of classrooms (12) In all school buildings where playgrounds are afforded ample toilet facilities must be placed in basements or detached buildings, and these made easily, but indirectly, accessible

The rural school buildings of our country are rarely furnished with even decent toilet facilities, not to mention sanitary matters No reform in sanitation in country life is more to be desired at this time than that connected with sanitary toilet systems Typhoid fever and hookworm disease, not to mention others, will never be eradicated until at every country school and every farmhouse sanitary toilets are available

F B. D.

For references see under ARCHITECTURE, SCHOOL

**LAUD, WILLIAM** (1573-1645) — Archbishop of Canterbury and Chancellor of Oxford University After attending the free school in his native town, Reading, he proceeded to St John's College, Oxford, from which he graduated B.A. in 1589, M.A. in 1598, and D.D. in 1608. In 1611 he became president of his



college, a position which he retained until 1621. He held many preferments, and in 1633 became Archbishop of Canterbury. From 1630 to 1641 he was chancellor of the university. However reactionary Laud may have been in ecclesiastical and political matters, he exercised his position as head of the university to promote its welfare. He insisted on subscription of the three articles in the Thirty-sixth Canon by every candidate for a degree, on attendance at services and sermons, and on obedience to academic regulations, such as the wearing of academic dress, attendance at lectures, and taking examinations for degrees. Through his influence the use of Latin on all occasions was enforced. In 1628 on his inspiration a scheme was introduced for the appointment of proctors by each college in a certain cycle which eliminated the ever-recurring disputes. In 1636 were promulgated the Laudian or Caroline Statutes (*Corpus Statutorum*), which had been so carefully drafted under Laud's supervision that they remained practically until the University Reform Act was passed in 1854. While they destroyed the democratic control of university affairs, the Statutes introduced a good administrative system, at the head of which stood the Vice-Chancellor, appointed by the Chancellor and Convocation from among the heads of colleges. Public oral examinations for both the B.A. and M.A., based on a broad curriculum, were introduced and enforced, and superseded the obsolete disputations. Laud was a liberal benefactor of the university; he himself presented oriental MSS. and secured other literary gifts; he founded and endowed a chair in Arabic, and obtained for the university the privilege of printing Bibles. While his position warranted such action as he took in relation to Oxford, his proposal to visit Cambridge in 1636 to enforce Anglican discipline met with considerable opposition, and although his right as metropolitan was secured to him by royal decision, the threatened visitation never took place.

See OXFORD, UNIVERSITY OF.

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**LAURIE, SIMON SOMERVILLE** (1829–1909). — British educationalist, who held one of the first chairs in education established in Great Britain. In 1876 he was appointed first Professor of the Theory, History, and Practice of Education in the University of Edinburgh, and continued in office until his resignation in 1903. In 1882 an unsuccessful attempt was made to bring Laurie to Columbia University. His principal contributions to educational history and theory were *Primary Instruction in Relation to Education* (1867); *Life and Edu-*

*cational Writings of John Amos Comenius* (1881), *Medieval Education and the Rise and Constitution of Universities* (1886), *Language and Linguistic Method in the School* (1890), *Institutes of Education* (1892), *Historical Survey of Pre-Christian Education* (1900), *Studies in the History of Educational Opinion since the Renaissance* (1903). He is also well known as a writer on philosophy, his principal contributions in this department of knowledge being *Metaphysica, Nova et Vetusta* (1884), *Ethica, or the Ethics of Reason* (1885) and *Synthetica, being Meditations epistemological and ontological* (Gifford lectures of the University of Edinburgh, 1905–1906). Laurie's theory of education is contained in his *Institutes*, first published in 1892, and his conception of the aims and methods of education is largely determined by his philosophical standpoint, and is the practical application of his views on metaphysics and ethics. His philosophy was to a large extent determined by his study of Kant, and to a lesser degree by his reading of Fichte and Hegel. According to Laurie, we may distinguish within experience two grades of knowledge, a sentient experience or knowledge in which facts and events are connected merely by their time and space connections. This kind of experience is found in the life of animals, of the young child, and a very large part of the experience of many men is of this nature. On the other hand, we may have a rational knowledge or experience in which events and facts are connected by means of internal or intrinsic connections. Now man differs from the animals in that he is an active reason, and the whole upward progress of man may be considered as the process by which sentient experience is lifted up or converted into rational experience. Hence on the ethical side, the work of reason is to ascertain the meaning of impulse and to rationalize it, and as a consequence the supreme end of education is to endeavor "to build up" in the mind of the child and youth a system of moral ideas which will constitute a permanent reservoir of motives always ready for use, whether in moral judgment or moral action. For "man is an ethical being only so far as he is a self-regulated being." Similarly, on the intellectual side, method in education is the active will or reason gradually converting this merely given sentient experience into rational knowledge, or it is the passing from the mere particulars of sense to the universals of reason. Hence in education the all-important thing is the evoking of the will or reason to undertake the task of rationalizing the given sentient experience. The difficulties of such a conception of experience are similar to those met with in Kant's philosophy. If we assume at the beginning a dualism within experience, it is difficult to conceive how this can be finally overcome. Of his historical writings the most important is the account of *Pre-Christian Education*. A. D.

## LAUSANNE

See EDUCATION, ACADEMIC STUDY OF.

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### LAUSANNE, THE UNIVERSITY OF. —

One of the oldest institutions of higher learning in Switzerland, having been established as an academy as early as 1536. Its origin is directly connected with the introduction of the Reformation in French Switzerland, the academy serving as a training school for Protestant clergymen. It was not until the beginning of the nineteenth century, however, that the academy was extended, the first step in this direction being the establishment of chairs of philosophy and law. A closer approximation to a real university was secured in 1838, when a reorganization of the institution resulted in the formation of four faculties, — theology, law, pure science, and letters. The technical school (founded in 1853) was added in 1869, and four years later a school of pharmacy, in 1888 an independent medical school was founded, which had existed for several years before this as a special division of the faculty of pure science. The institution was finally raised to the rank of a university in 1890, and consists at the present time of the faculties of Protestant theology, law, medicine (including dentistry), letters (including a special school for the teaching of modern French), and science. The last mentioned is divided into three groups (a) mathematics and natural sciences, (b) pharmacy, (c) engineering.

The language of instruction is French, but eight classes in the faculty of law are given in the German language, there being a fair number of German students at the university. The Cantonal Library contains about 285,000 books and pamphlets. In addition to the theological faculty of the university, there exists in Lausanne a divinity school of the Free Evangelical Church of the Canton of Vaud, established in 1847. Lausanne also possesses an academy of commerce. Both the latter and the university offer vacation courses during the summer months. Connected with the faculty of science is a special institute for agricultural chemistry, while with the faculty of medicine are affiliated a large and a smaller hospital, and a blind asylum with an ophthalmological clinic. In the summer semester of 1910 there were in attendance 1187 students, including 169 auditors, the matriculated students being distributed as follows: theology, 15, law, 267; medicine, 321; philosophy and science, 584. About one third of the students, including the majority of the auditors and almost half of the students in the medical school, are women, the percentage of matriculated women students

## LAVATER

at the Swiss universities being much higher than that at the German universities. R. T., JR.

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### LAVAL UNIVERSITY, MONTREAL, CANADA.

— A Catholic University established at the request of the Bishop of Montreal as a branch of the Laval University in Quebec. Faculties of theology and law were established in 1878, medicine in 1879; and arts in 1887, although the arts faculty has never been developed beyond the definite provision of courses in French. Instruction is in French, except in the faculty of theology, where Latin is used. Connected with the university are the following schools: École Polytechnique (1874); Comparative Medicine and Veterinary Science (1886), Dental Surgery (1894); Pharmacy (1906); Agricultural Institute (1893); Higher School for Young Women. The Montreal institution became wholly independent in the matter of administration in 1889, but the degrees are still conferred only by the Quebec institution. The enrollment of students is about 1000.

### LAVAL UNIVERSITY, QUEBEC, CANADA

— A Catholic university, founded by the Seminary of Quebec in 1852, when the royal charter was obtained. The institution was recognized by a Papal Bull in 1872. There are four faculties: theology, law, medicine, and arts, and schools of surveying and forestry. The Visitor of the university is the Archbishop of Quebec, who appoints the professors in the faculty of theology. The university is administered by a rector, vice-rector, and a council consisting of the directors of the seminary and three senior professors in each faculty. A number of seminaries and colleges are affiliated with the universities. The enrollment of students in 1910-1911 was 421.

### LAVATER, JOHANN KASPAR (1741-1801).

— This passionate and influential Swiss preacher and writer achieved his career in his native city, Zurich. As a Protestant he was a champion of religious liberty, but at the same time narrow in his own theology. Because of his strong enthusiasms and convictions, and of the mystical tendencies in his thinking, he was frequently subject to charges of heresy. He was known also because of the friendships he formed with Fichte, Goethe, Pestalozzi, and others. His lively human sympathy, his keen observations of human faces, and his skill as an artist in sketching them enabled him to produce the memorable work on physiognomy on which his fame rests. In 1775-1778 he published in four volumes the *Physiognomische Fragmente*

zur Beforderung der Menschenkenntniss und Menschenliebe, which has credited him with having founded the art of interpreting human character through expression, chiefly of the face. Without a knowledge of anatomy, he endeavored to frame a few principles to guide this art. The form of a human being is somehow significant of its inner nature. Character is expressed by movement. The mind's qualities are definitely and legibly expressed in the face. The book produced a great and lasting impression, although its scientific merit was limited. E F B

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#### LAVATORIES — See LATRINES

**LAW** — Generally speaking, a law is the statement of an order or relation among the elements of an object or situation, this order or relation being a means of understanding, organizing, and controlling other traits of the object or situation in question, and of reducing other situations or objects, apparently unlike, to a form in which the same, or a closely connected, method of treatment is applicable. A law is thus, logically speaking, a statement of a relation or order which is employed as an effective method of procedure in further dealings with phenomena.

The kind of order that is significant and the kind of procedure that is indicated depends, of course, upon the character of the material dealt with. The fundamental distinction of subject matter is that between acts (or functions) and states (or structures). As the primary human concern is the maintenance of life, and especially of group or associated life, the first type of law to emerge into conscious recognition was the rules of order applicable to the activities of human beings in relation to one another, — laws in the *jural* sense, whether political or moral. Now a statement of an order among *acts*, when employed as a determining method with respect to further acts, is obviously a *rule of action*. It presented itself, accordingly, as having authority over phenomena, as in some sense a *command* or *injunction* to act in certain ways. When attention was directed to natural existences, and the effort was made to discover and state a uniform order among them, the inevitable tendency was to conceive of natural law after the analogy of jural law, as a disclosure of a superior authority which "governed" the particulars which were then conceived after the manner of subjects "obeying" law. The course of the authority to govern was referred to God, Nature, Forces, or Reason, according to the tenets of a philosophical school.

In the eighteenth and nineteenth centuries, the advance of science produced the positivistic movement. According to this movement, a

law is simply a statement of an order of coexistence or sequence among phenomena (as the elements of a phenomenon). The conceptions of authority, of governing power and obedience were eliminated, being simply a formulation of uniformity abstracted from phenomena. This conception makes a complete break between jural and scientific law.

This distinction marked a most important advance in science and culture. Stated in this absolute form, it brought with it, however, its own peculiar difficulties. Jural and moral laws were conceived now only as a command, an imperative. Hence they seemed arbitrary, resting in ultimate analysis either upon mere superiority of force, or else upon purely ideal considerations of what should be, what *ought* to be, lacking positive, existential force and efficiency. In the first case, law meant despotism, in the second, an empty abstract conception of what ought to be, as over against what is. On the other hand, scientific and natural law, being conceived as merely a uniformity among things as they exist, was completely divorced from matters of action, save as action was reduced to the type of given physical existences — to the denial, accordingly, of its significant traits *as action*.

Various tendencies have converged to bring forward a third conception of law, which brings the practical and the scientific senses of the term into working relations with each other, eliminating, however, the sense of superior authority and of coercive command. What makes in any given case a statement of an order (whether physical or social) a law is its *use as a method of procedure* in dealing with further cases, with future possibilities. A scientific law is thus not a mere statement of coexistence, it is such a statement employed as a method of procedure in further inquiries, interpretations, and organizations. It is thus in some sense a rule of action, that is, a way of directing or guiding action in the region of investigation. Moreover, the statement of a uniform order is either limited to the particular cases in which it has been already observed, or else in its extension to new cases is hypothetical — a rule of anticipation, prediction, and probable behavior. In addition, through applied science and the arts such uniformities as are observed and abstracted are embodied in methods of controlling and adapting things to human needs, and thus pass into the realm of overt and social action.

From the side of social and moral concerns, a converse movement has taken place. With the development of democracy and freer intercourse, moral and political laws lose alike the form of rigid imperatives and of empty ideals, and tend to be conceived as a conception of an order of action adapted to securing ends of objective value. From both sides, accordingly, the sharp antithesis between a law of natural existence and one of practical endeavor is

softened down, so that both intellectual and practical elements are included in the concept of law.

J. D.

See GENERALIZATION, HYPOTHESIS; also ACTIVITY; PRAGMATISM.

**LAW.** — See PRINCIPLE

### **LAW, EDUCATION FOR THE. — Historic and Sociological Position of Law** —

Law shares with divinity the distinction of being the first of academic studies. The earliest university was the temple school, in which the divine law, which included the human, was inculcated, and in which the priest, who was also the lawyer, was trained for his sacred calling. Not through all its history, not through the long process of its secularization, not through all its vicissitudes of contempt and esteem, has the law ever quite lost its ancient distinction of a quasi-sacred doctrine to be seriously and reverently studied. Other professional studies, like that of medicine, have arisen, as a necessity of professional development, through the decay of the system of apprenticeship through which admittance to the guarded privileges of the profession was gained. Wherever legal education betrays this tendency, as it has in England, and, indeed, in all common law countries, the result has been due to special conditions, — in England, to a peculiar and distinctive legal development, isolated from the main currents of European thought, in America, to the exigencies of a forced legal development under primitive conditions.

But these facts, which loom large to the student of English and American conditions, must not be permitted to distort his view, of the general and permanent position of law in the scheme of higher education. Considered merely from the historical point of view, the loss of its sacred or religious character may, indeed, affect its prestige, and might conceivably relegate it to a subordinate place in the university curriculum, or even eliminate it entirely therefrom. But with the decay of the conception of law as a branch of divine science there has arisen a recognition of its controlling position among the social sciences. As the concrete expression of the aggregate of social forces which dominate the world and shape its development, it can no more be separated from other social sciences than can the will of man be isolated from the intellectual and moral qualities which set that will in motion and direct its activities. Robbed of all its attributes of divinity, law remains as the will of society expressed in action, and as such its place in the hierarchy of learning is secure.

That law has not as a university discipline suffered an eclipse during this period of transition from the old to the newer conception of its place in the divine human order is due to the fact that the transformation of opinion has been a gradual, almost an imperceptible

one, the modern view coexisting with and gradually supplanting the older, a process which is still incomplete. If the great schools of law which flourished at Pavia, Ravenna, and Bologna in the twelfth and thirteenth centuries have lost their honorable preeminence, the fact is due to no failure of appreciation or of service, but only to the fact that newer foundations more richly endowed or more favorably situated have exercised a more powerful attraction on the aspiring votaries of the science. The 12,000 students enrolled under the law faculties of the German universities in the winter semester of 1911-1912 furnish convincing evidence of the permanence and importance of the law as an academic discipline. (For the history of legal education on the Continent see UNIVERSITIES for its history in England, see INNS OF COURT.)

**United States.** — *Place of Law in American Traditions* — In no community of ancient or modern times has the study of the law been more general or pursued with greater avidity than in the United States. The legal character of the controversies of the American colonies with the mother country drew many of the more ardent patriots of the day to the study and practice of that profession, and gave it unexampled scope and influence. Edmund Burke, in a notable passage, attributed the spirit of resistance to aggression which the colonists displayed to their familiarity with the principles of English law. The "government of laws, not of men," which arose on the ruins of the colonial system, the institution of a federal system based on a constitutional document of a highly legal character, the assumption by the courts of the function of determining the constitutional validity of acts of legislation, all conspired to give to the lawyer and the study of law a high degree of political importance. The result has been not only to enlarge to an unprecedented degree, perhaps to exaggerate, the function of the law as an instrument of social regulation, but to attract to the profession multitudes of young men whose interest lay rather in the political than in the legal sphere of activity.

For nearly a hundred years after the settlements in New England there was no recognized law, no settled procedure, and consequently no need of lawyers. The judges were for the most part laymen, and they decided the causes brought before them on principles of "natural justice," or, in Massachusetts and Connecticut, in accordance with the "Word of God." The first code of laws of the Commonwealth of Massachusetts, prepared under authority of the General Court, or Legislature, was drawn by the Rev. John Cotton, and entitled *A Copy of Moses, his judicials, compiled in an exact method*. There were no English law books in the colonies until the Governor of the Massachusetts Bay Colony, in 1647, imported two copies of *Coke on Littleton* and half a

dozen other volumes "to the end that we may have better light for making and proceeding about laws." It was more than a hundred years later that the first volume of law reports in America appeared (Kirby's *Connecticut Reports*, published in 1789), and not until 1802 that the first book of practice (*American Precedents of Declarations*) issued from the press.

*Education in the Law during the Colonial Period.*—Under these novel conditions—a new body of law slowly taking shape in the customs of an isolated community, a bench composed of ministers, business men, and "gentlemen" having no legal training or experience, with no reported decisions and no indigenous legal literature—it is not to be wondered at that a trained bar was long in appearing. Attorneys there were in plenty in all the colonies, but these were for the most part men of no education and of little character. The first lawyers to appear in the colonial courts were derelicts of the profession in England, and, toward the latter part of the seventeenth century, an occasional barrister of reputation whom fate had exiled from the atmosphere of the Inns of Court. Then early in the new century young Americans of good family began in increasing numbers to resort to London for an experience of Old World life, and not a few of them took advantage of the opportunities there afforded to pursue the study of law. It is significant of the spirit of the time, in England as well as in the colonies, that many of these had no professional aim, and that the law presented itself to them as a branch of polite learning suitable for gentlemen who might reasonably expect to play a prominent part in the public or social life of the time. The instruction afforded in the time-honored universities of the common law, the Inns of Court, was of an insignificant character, but the courts of law and chancery, presided over by such men as Mansfield, Kenyon, Ellenborough, Thurlow, and Eldon, and illuminated by the eloquence of Erskine, Pitt, and Camden, were then real schools and to these they resorted. There, too, were the priceless books of the law and the expanding treasures of the law reports, and these they read with an eager interest which, in this more sophisticated and heavy-laden age, we cannot easily understand. It is said that something like twoscore American-born lawyers were educated in England prior to 1760, and that 115 more were admitted to the Inns of Court (*q.v.*) between that date and the close of the Revolution—more than two thirds of them from the southern colonies.

Apart from private reading of the few accessible English books and the practice of attending court, two courses offering a more systematic training were open to the law student of the revolutionary period. He might secure a position as copyist or assistant in the clerk's office of some inferior or higher court, or, if he had the means, he might enter the office of

some leading member of the bar, preferably one of the few who had good law libraries, "there absorbing, by study, observation, and, occasionally, by direct teaching from his senior, the principles of the law" (Warren, *History of the American Bar*). The latter was a method open only to young men of means, as the privilege of entering the office of a lawyer of reputation could be gained only by the payment of a considerable fee. A promissory note of George Washington is still extant, undertaking "to pay James Wilson, Esq., on order on demand one hundred guineas, his fee for receiving my nephew Bushrod Washington as a student of law in his office." The memoirs of the time show that as a method of legal instruction this system left much to be desired. The lawyer was too apt to regard the fee as compensation for entering the office and for the privilege of reading the law books or the notes and briefs of the office, and not as calling for any personal instruction or advice. In some cases, it is true, the arrangement took on the form of a free apprenticeship, the incumbent being privileged to aid in the preparation of cases and less frequently to assist in their trial. But the system must in all but the exceptional cases have been an unsatisfactory one, and the lawyer gained his education in legal principles after rather than before his admission to the bar. Indeed, even under the most favorable circumstances the education of the student must have been of the most meager character. After all, the books available were few in number, and until the appearance of Blackstone's work in 1769, were all of a highly technical character. Littleton's *Tenures* and Coke's learned but crabbed and unsystematic *Commentaries on Littleton* were the works generally recommended, and to most students they must have proved an obstacle rather than an aid to the mastery of the law. Their artificial, limited, and fragmentary character, as well as their remoteness from the actual conditions and the actual law of the colonies, rendered them peculiarly unsuitable for the use of students. To these must be added one or two books on the technical system of common law pleading of the day and, perhaps, a digest or abridgment of precedents. There was nothing in all this to give a comprehensive view of the law or to enable one to grasp it as a system or to relate it to the social life of the time. A few of the more favored students were more fortunate in the range and variety of their studies. John Adams records that he read the *Institutes of Justinian*, besides other works on Roman Law, and Chancellor Kent added to these the study of Grotius and Puffendorf, Rapin's *Dissertations on the Laws and Customs of the Anglo-Saxons*, and Sir Matthew Hale's *History of the Common Law*. Daniel Webster's reading included all the standard English books, and, in addition, the works of Vattel, Burlamaqui, and Montes-

quieu But these were the exceptional men, in talent as well as in opportunity, and though, through their professional eminence, they exerted a marked influence on the course of legal development, they could do little to affect the general standard of legal education

It is a curious and interesting result of this wide diversity of training and equipment of the lawyers of the formative period in our legal development that both groups—the half educated through their defective grounding in the principles of the common law, the highly educated through their familiarity with the writings of continental jurists of the philosophical sort—contributed to maintain for a considerable time the freedom and flexibility of American law It was not until the bar generally as the result of a more thorough training in the common law had become indoctrinated with the spirit as well as the rules of that system, that our jurisprudence became, like that of the mother country, authoritative and inflexible In the meantime the restricted and technical character of the education of the greater part of the bar had produced the unfortunate effect of imparting to our law a certain hard and technical character which it has never lost Littleton and Coke and Hawkins (*Pleas of the Crown*) and Lilly (*Entries and Doctrina Placitanda*) were not the most desirable teachers for a new society of freemen with a new world to create And we may safely charge to their influence the feudal survivals and the rigid and artificial legal reasoning which have done so much to hamper the free development of life in the western world

*The Influence of Blackstone* — Two events of capital importance in the history of legal education in America marked the latter part of the eighteenth century the appearance of Blackstone's *Commentaries on the Laws of England* and the institution of systematic legal instruction in colleges and schools of law That these two events were not unrelated will appear in the sequel It would be difficult to exaggerate the influence of Blackstone's work on the bar or on the course of legal development in this country Its success was instantaneous, and it became at once the favorite, if not the only, textbook of the American student Two years after the publication of the fourth and concluding volume of the work in England it was republished in Philadelphia, and it is said that 2500 copies of the work were immediately absorbed in the colonies before the outbreak of the Revolution Burke, in a speech delivered in 1775, to which reference has already been made, ventured the assertion that nearly as many copies of the *Commentaries* had been sold in the colonies as in England The reasons for this success are not far to seek The book made a varied appeal—to the sentiments as well as to the needs of the American student. Its panegyrics of Anglo-Saxon liberty and its

denunciations of Norman and Stuart tyranny, however turgid and unconvincing they may seem to the reader of a later date, awakened a responsive chord in the men of that time of revolt That the common law, instead of being the convenient instrument of despotism, was in spirit and in truth the guardian of the ancient liberties of the race, was a welcome revelation to the lay community as well as to the bar, while the legal profession acquired a new dignity as the inheritors of such a tradition, the appointed guardians of its sacred flame The utilitarian merits of the work, as a trustworthy guide to a knowledge of the law, were not less conspicuous Though necessarily somewhat superficial, it was upon the whole an accurate presentation of the common law and equity systems as administered in Westminster Hall Over Coke and Littleton it had the advantage of being modern, untechnical, and readable Its somewhat florid and balanced style did not repel the reader of the time of Gibbon and Burke, and even to-day it can, like them, be read with pleasure as well as profit But the chief merit of the work, and that which gave it instant and complete command of the field of legal education was its comprehensiveness and its systematic character In its pages it was possible for the first time to see the English law as a whole, and, what is more important, as a connected whole, related in all its parts and inspired by a common spirit The law now had unity, reason, a soul, and Blackstone was its prophet But a prophet is more than a teacher, he is also an authority, and so it came to pass that the new book of the law was received not only as an indispensable means of acquiring a knowledge of the law, but as the final and authoritative statement of its rules and principles But in the course of time its inspiration came to be questioned Professor William G. Hammond, perhaps the most learned of the American commentators on Blackstone, tells us in the preface to his edition of the *Commentaries* (published in 1890) that "upon all questions of private law, at least, this work stood for the law itself throughout the country, and at least for a generation to come exercised an influence upon the jurisprudence of the new nation which no other work has since enjoyed and to which no other work can possibly now attain "

But it is rather with his position as a teacher and with the indirect influence which he exerted on the development of the law as the result of forming the mind of the American bar, that we are now concerned, and here his authority was more enduring A knowledge of Blackstone was everywhere accepted as sufficient evidence of fitness for the bar The first effect of this was to set the law student free from the necessity of seeking a master or an office connection There could be no need of a teacher or a library for one who had the entire body of the law

within the compass of a single book, and that a readable, understandable book. It was, perhaps, to be expected that the law school, when it came, would put the *Commentaries* in its proper place, as only one of many books of the law which the student must master, but the contrary was the case. Blackstone may almost be said to have been the father of the American law school. He made it possible, and supplied it with the principal material for instruction. As an illustration of the place actually occupied by the work in the teaching of the schools it is interesting to note that a manuscript volume of the lectures delivered at the famous Litchfield Law School in Connecticut shows numerous citations of authority, but that "the references to Blackstone not only outnumber those to any other book, but may be safely said to outnumber all the rest together."

It is, of course, obvious that the swelling tide of legal literature during the past century, and, still more, the enormous expansion of the law in that period, must have seriously affected the position of Blackstone's work as the principal source of legal knowledge. Law students can no longer satisfy the demands of the bar by the easy process of reading that now venerable classic. But it is certainly no exaggeration to say that by far the greater number of the lawyers now living in this country read the *Commentaries* as an important, if not essential, part of their education for the bar, that in most cases it was the first law book placed in their hands, and that their examination for admission was, at least in part, based on it. It still forms a part of the regular work of instruction in perhaps a majority of the law schools, and is an important part of the recommended reading in nearly all of them, while, of the multitude of young men and women who still come to the bar without a law school training, it is safe to say that three fourths or more read Blackstone in whole or in part. In closing our account with the greatest single influence on education in the western world, let it be noted that we owe to it more than can be estimated in the establishment of a tradition of the unity of the law and a resultant general uniformity and consistency in the law of the several states of the American commonwealth — a priceless boon, inasmuch as it has made for national unity and social solidarity. How much of the eighteenth century that still cumbered the law of the twentieth we also owe to it, it would be vain to inquire. The fault, if fault there be, is due not to Blackstone, but to the undue persistence of the Blackstonean tradition, and for this our law schools are to blame.

*Early Law Schools in America* — It is a disappointment to discover that legal education does not enter upon a new phase with the advent of the law school. Originating as it did, it was of course devoid of any academic

tradition. The great European schools of jurisprudence had scarcely a name in America. The civil law was an alien, and, to the average lawyer, an abhorrent system, bound up in some mysterious way with popery and the imperialistic system of the Continent. It is true that sporadic efforts were made in some of the colleges (at King's College in New York, now Columbia University, in 1773, at the College of William and Mary in Virginia in 1779, at Yale College in Connecticut in 1789, and at the College of New Jersey, now Princeton University, in 1795) to maintain courses of lectures in the law of nature, international law, and the civil law, but these were feeble beginnings, born out of time, and came to nothing. The systematic teaching of the law was to come from the profession, not from the universities, and was to be born of the failure of the apprenticeship system, not of the scientific or historical spirit. Indeed, it could not be otherwise. As has elsewhere been said, academic instruction presupposes a body of organized knowledge, and that was lacking in the law of the period with which we are dealing. There was as yet no system — not even a coherent body — of American law. The common law, then and now a half foreign thing, had indeed grown to be a well articulated, developed system of law, but it had never been rationalized, systematized, and related to other legal systems or to ethics and the social sciences. There was an English law, but no English jurisprudence. Accordingly, neither in England nor in this country was it possible to teach the law of the land philosophically or systematically. The result was that, as soon as the instructor undertook to teach the law as a connected whole, he found himself teaching a single book — Blackstone's *Commentaries*. Now, no system of academic instruction can be based on a single book, however epoch-making. Even the sacred books of the race had to be developed by glossators into a literature before they became fitted for this purpose.

Perhaps the most interesting attempt to make the law a subject of academic instruction at this period was made at Columbia College. As early as 1784 the trustees of the college voted to establish a law school with three professorships, viz. "A professorship in the Law of Nature and Nations, a professorship in the Roman Civil Law, a professorship in the Municipal Law." Lack of means prevented the carrying out of this ambitious project, but in 1793 it was found possible to make a beginning, and James Kent was appointed to the first regular law professorship. This brilliant young man, then at the threshold of his long and distinguished career, took up his duties with energy and in a true scholarly and scientific spirit. His was a noble aim, but was not destined to be realized. In his first course, given in the fall of 1794, he "was honored," he notes, "by the attendance throughout the

course of seven students and thirty-six gentlemen, chiefly lawyers and law students, who did not belong to the college." The next year he gave a more extended course to two students and his own clerk. No students presenting themselves for the third year, he tendered his resignation, which was accepted in April, 1793. In 1823, after twenty-five years of distinguished public service as judge, chief justice and chancellor of the state of New York, he resumed his chair at Columbia, which had in the meantime remained unoccupied. The fame which he brought back with him and the growing importance of New York as a legal center drew to his lectures more students than had been attracted to his previous venture, but he soon wearied of the unaccustomed labor, and, after three years of service, again resigned his chair. But the service of these years was not confined to the influence that the lecturer exerted on the few students who came under his immediate instruction, for they resulted in the production of the first systematic treatise on American law and one which was destined to hold that distinguished place to the end of the century. It was in 1826 and 1827 that Kent embodied in printed form the lectures which he had delivered during his second incumbency of the professorship in Columbia College under the title *Commentaries on American Law*. While this work of the American jurist did not take the legal profession by storm, as that of the great English commentator had done, and while it never took the place of the latter as the favorite textbook for students, it had, nevertheless, an instantaneous and permanent success. Though less systematic and less comprehensive than Blackstone's work, it was at once accepted as a clear, learned, and accurate exposition of the law of the land. As the only work which purported to cover the field of American law, it became the indispensable adjunct of the English work, and its graceful style commended it to the lay reader as well as to the legal profession. The permanence of its influence may be gauged from the fact that it has passed through fourteen editions (the last published in 1896), and that it is still deemed a necessary part of every well equipped law library and is still frequently cited in the courts throughout the nation. It is significant of the rapid growth of a consistent native jurisprudence under the influences above described that, by the end of the first quarter of the century, only forty years after the Revolution, a treatise on American law of a fairly comprehensive and systematic character should have become possible. The foundations of an American legal education were beginning to appear—a consistent body of national law and a legal literature.

The first of the schools which were destined to become the characteristic note of American legal education was founded in 1784 at Litchfield, Conn., by Tapping Reeve, a learned

lawyer, who afterwards became Chief Justice of the Superior Court of Connecticut. It had a brilliant career of thirty-five years, in the course of which it educated over a thousand young men for the bar and carried on its rolls the names of many men who afterwards became famous in political and professional life. Its influence may be measured by the fact that it drew its students from all parts of the country from Maine to Ohio. President Timothy Dwight of Yale College gives a favorable view of the character of the instruction imparted in the school, saying, "Law is here taught as a science, and not merely nor principally as a mechanical business; not as a collection of loose, independent fragments, but as a regular, well-compacted system." This was written in or about 1820, when the school numbered 40 students and was at the height of its influence. It was probably to the rapid rise of the Harvard Law School after 1830 that the decay of the Litchfield school was due. The New England of that day was incapable of supporting more than a single flourishing school of law. The Harvard School, founded in 1817, led a precarious existence until the establishment of the Dane Professorship in 1830. Thus rendered it possible to secure the services of Joseph Story, then a justice of the United States Supreme Court, whose fame, with that of his distinguished colleagues, John Hooker Ashmun and Simon Greenleaf, attracted students from all parts of the country, and soon made the Harvard institution the leading law school in the United States. In the meantime several other schools of temporary fame and of varying influence, perhaps a dozen in all, had come into existence and passed away. These were all small, and made little or no mark on their time. One of the most famous of these, founded by Judge Samuel Howe at Northampton, Mass., is recorded as having "flourished from 1823 to 1829, with a yearly average attendance of ten students." Well might the learned David Hoffman of Maryland say of this period, "In America alone a law student was left to his own insulated and unassisted efforts." The comment of the author of *A History of the American Bar*, that "the legal profession had not yet fully accepted the idea that law could be learned in a law school as well as in a law office" was to hold good for a long time to come.

The character of the instruction given in the schools of this period varied only with the genius and temperament of the instructor. So far as the scanty records of the time show, the methods employed were much the same in all. Generally Blackstone's *Commentaries* was placed in the hands of the students and furnished the basis of instruction in the law as the "regular, well-compacted system" described by President Dwight. This was supplemented by courses of formal lectures



on the several branches of the law as administered in the United States, by weekly or more frequent "quizzes" on Blackstone and on the lectures previously given, and by "moot courts," usually conducted by the instructors. In some instances, as at Litchfield, the whole ground, including the substance of Blackstone, was covered in lectures, which the students were expected to commit to writing. St. George Tucker, an eminent lawyer of Virginia, made his lectures on Blackstone, delivered at William and Mary College, the basis of a well-known edition of the *Commentaries*, published in 1803. The instruction in all of the schools was of a strictly professional and utilitarian character, confined to the law which the student might expect to encounter in his subsequent practice, and included no legal history, general jurisprudence, or civil law. Occasionally international law found a place in the curriculum, and the momentous constitutional decisions of the time were commented on and discussed. Such was the American law school of the period of national expansion, and such it continued to be, in method and in spirit, almost to the end of the century.

*The Nineteenth Century Law School Development.*—But the law school movement was now on. Between 1830 and 1860 numberless schools of the general character of those described above sprang into existence, many of which proved to be permanent. Among these were several of the university foundations which have since become deservedly famous, such as the Law School of Yale College in New Haven, established in 1843, that of the University of Pennsylvania at Philadelphia, in 1852, of the University of Michigan at Ann Arbor in 1859, and, in the same year, the Union College of Law of Chicago, which later became the Law School of Northwestern University and the Columbia Law School in the City of New York. There are no statistics available for this period, but the *Report of the Commissioner of Education for 1871* lists forty law schools as in existence at that date, with a total enrollment of 1722 students. As only one of these was without a university connection, it is obvious that the record is incomplete. There must have been a considerable number of private schools of the type of the Albany Law School (founded in 1851), maintained to satisfy a local need, which failed to attract the notice of the Bureau of Education. This is, perhaps, the explanation of the fact that no law schools are reported for seventeen of the thirty-seven states which then comprised the Union. The number of students was usually small, eight schools having less than a dozen each, and fourteen having twenty-five or less. Only four of the total number had more than 100 students in attendance, the Michigan Law School, which had already assumed the preeminence which it was long to retain in the West, leading with 321

But the movement for systematic instruction in the law had not yet gained the momentum which it was soon to acquire. During the decade from 1870 to 1880 only seven new law schools are reported, though the number of students had risen to 3227. By 1890 the number of schools had increased to fifty-four, with 5252 students. There were now eighteen schools with an attendance of 100 and upwards, the Columbia Law School leading with 625 students and Michigan a good second with 587. The Harvard Law School, which, under the administration of Professor C. C. Langdell, had already entered upon the career which was to make her for a generation the undisputed leader in legal education, had at that time 279 students enrolled. But the period of expansion had now come. The increasing volume and complexity of the law combined with the new and more exacting demands of the profession to demonstrate the inadequacy of the apprenticeship system, if such it can be called, and students flocked in increasing numbers to the existing law schools and demanded new ones. In the decade from 1890 to 1900 the number of law schools nearly doubled (there were now 100), and the number of students increased 160 per cent.

The demand for new centers of legal instruction must have been pretty well satisfied for the time being by the multiplication of schools in the last decade of the century, as only fourteen new law schools have since come into existence. But the swarm of students continues. The 13,642 of 1900 had in 1910 become 19,567, an increase of nearly 50 per cent. The growth in influence of the leading schools is attested by the fact that no less than sixty-five have to-day over 100 students each, that thirty-eight have an enrollment of over 200 each, eighteen of 300 and upwards, and ten of more than 400. The latest available reports give the Michigan Law School a student body of 897, Harvard of 810, the New York Law School of 763, the New York University of 688, and Columbia of 465. Two thousand students are enrolled in the law schools of Chicago, and 2500 in those of New York City.

Impressive as these figures are, it would be easy to exaggerate their significance. They do not indicate that the American lawyer has even yet fully accepted the idea that the law school is a better place than the law office for acquiring a knowledge of the principles of the law, but only that that idea is making its way in the profession. It is safe to say that even to-day not less than two thirds of those who apply for admission to the bar have gained their professional training wholly or mainly in law offices. Nowhere in the United States is attendance at a law school a prerequisite to admission to the bar. The tradition that law, being an art and not a science (for so the tradition runs), can best be acquired in the legal workshop survives with the notion that every

free American, who is a male of full age and not yet convicted of crime, is entitled to make his living by practicing law as well as in any other art or craft. Both these traditions have still enough of vitality in them to hamper the course of legal education, but both are slowly yielding to the pressure of the time.

The same conditions which were driving law students in increasing numbers into the law schools conspired to make the schools more exacting in their demands upon the students who resorted to them. These demands took on two forms — the requirement of a better general education and the raising of the standards of instruction. Down to the middle of the last century students were generally admitted to the schools without examination and without any close scrutiny of their qualifications for the study of the law. The first announcement of the Columbia Law School, published in 1859, provides that "Any person of good moral character whether a graduate of a college or not, may be admitted to either of the classes. No examination and no particular course of previous study is required for admission." It was not until 1876 that the additional requirement was made that the candidate "must be at least eighteen years of age and have received a good academic education, including such a knowledge of the Latin language as is required for admission to the Freshman Class of this College" — a standard which has now come to be general in the law schools of the country. Two influences, emanating from the profession have contributed to this result — persistent pressure from the American Bar Association (which, at its creation in 1878 had provided for a Committee on Legal Education) and the general adoption by the courts of rules for admission to the bar prescribing a minimum of previous academic training for all candidates. Probably the demand of the legal profession on the law schools would have gone no further had it not been for an impulse communicated by the universities.

It is significant of the movement of higher education in America that the law schools have almost from the beginning been university foundations. Of the 114 schools reported for the year 1910, only 20 are without a university connection. It is true that the relationship is in many instances only nominal, but even in such cases it tends to become real. Though for reasons elsewhere given the influence of the university spirit upon the law department has been slow in asserting itself, it is making itself felt in increasing measure. It is from this source that there has come a persistent and wide-felt pressure for a better preliminary education for law students. Harvard led off in 1897 by instituting the requirement of a college degree for admission to the law school of the university. Columbia followed with the same requirement six years later, but has since modified it in favor of a

three years' college course. The movement has gone on steadily, and is still in progress. While Harvard is still alone in requiring a college degree, at least six law schools now require three years, ten or twelve require two years, and a dozen or fifteen one year of college study as a prerequisite to admission.

Coincidentally with this development there has been a marked increase in the length of the law school course. The earlier schools seldom gave more than a year's instruction, but by the year 1880 thirty eight of the forty eight schools then in existence reported a two years' course. Of the 114 schools reported in 1910, only two confess to a course of one year, thirty four having a course of two years and seventy eight of three years. One of the most powerful influences in bringing about this rapid development of the law school course from two years to three was the Association of American Law Schools, organized by a group of representatives of the leading schools of the country in 1900, which after the year 1908 restricted membership in the Association to schools having a course of not less than three years leading to the first professional degree.

But the circumstance that has contributed most powerfully to the lengthening of the law school course, and one which is still operating, has been the general introduction into the schools of new methods of instruction involving a large increase in the time required to cover the ordinary subjects of the legal curriculum. Doubtless the "case system" of legal instruction would have come sooner or later in any event (it is at least as old as the common law), but its introduction at the critical period of legal education in America, which has been described above, was due to the genius of Professor C. C. Langdell of Harvard, who introduced it as the basis of instruction in that school when he assumed the position of dean in 1870. Based on the sound assumption that a system of law which has been developed by reported judicial decisions can best be studied in and through those decisions rather than in the writings of commentators and editors, the new method soon became a leaven which was in a short time to leaven the whole lump of legal education in this country. Properly employed, it became a powerful means of stimulating the interest of the student, and to the admirable use made of it at Harvard is to be attributed the second rise to greatness of that venerable seat of legal learning. Harvard found her first disciple in the Albany Law School, which adopted the "case system" in 1889, and in 1890 it was introduced in the Columbia Law School. Its progress since that date has been rapid, and it is now employed in a considerable majority of the law schools of the country.

The material equipment of the law schools has kept pace with their growth in size and in the intellectual graces. Most of them have separate buildings devoted to their use, and,

though some are still sadly deficient in library facilities, many of them have large and rapidly growing collections of law books. Twenty only are without libraries of their own, though these usually have access to the collections of state or county libraries. Thirty two more have less than 2000 volumes, but forty have libraries of 5000 and upwards, twenty four of more than 10,000, ten of more than 20,000, and eight of more than 30,000. The Harvard Law Library, one of the most complete in the world, contains 125,000 volumes.

It is in the persistently professional character of the law school that we find the chief source of its strength and of its weakness. Created by the profession and, for the most part, even in the university schools, controlled by it, it has kept in close touch with the administration of the law, and has thus been preserved from assuming too much of an academic character. The instruction, still for the most part given by lawyers in active practice, has been of the most concrete, practical character. In many of the schools the hours of instruction are still arranged with a view to permitting the students to carry on their work in law offices at the same time, and it is safe to say that a majority of the students in the law schools avail themselves of the opportunity so to do. This practice has not only militated against the influence of the law school as a seat of legal learning, but has put a premium on methods of instruction which made the least possible demand on the time and energy of the student. Even in schools in which this practice does not obtain, the professional influence has generally been thrown against legal studies of a general or "theoretical" character and against methods involving research. The result is that even to-day the curriculum of the law school seldom includes any subjects except those required for the bar examinations, and these comprehend nothing but those branches of the law which the lawyer is apt to require in his daily practice. Consequently few of the schools have deemed it necessary or proper to offer courses in the civil law, in legal history (even in the history of our own legal system), in general jurisprudence, or even in public law, other than the law of the federal constitution. Even when they are given, such studies are usually regarded as "frills" or "extras," and are apt to be relegated to an additional, postgraduate course which is rarely taken. A few schools, like those of Columbia, Northwestern, and now, perhaps, Harvard, must be excepted from this condemnation, a liberalizing influence, coming from a school of political science or a department of history or economics, having to a degree leavened the professional tradition in those institutions. The statement of the Committee on Legal Education of the American Bar Association contained in its Report of 1892 is as true of conditions to-day as it was of those

twenty years ago. "It is evident that the course of study in the schools is, with a very few exceptions, confined to the branches of practical private law which a student finds of use in the first years of his practice. It is the technical rather than the scientific or philosophic view of law which is taught."

**England** -- In England the house of the law has always been divided against itself. Even yet there is no promise there of that fusion of theory and practice, of academic with technical training, which the universities, through their control of professional education, are promising us in America. We may or we may not believe that the celebrated Lombard jurist Vacarius taught at Oxford in the middle of the twelfth century (the evidence is far from convincing), but certain it is that the study of that Romanized Roman law, which we call the canon law, flourished at both Oxford and Cambridge from an early period until prohibited by Henry VIII, and that the study of the civil law, of almost equal antiquity, was by the same monarch encouraged by the foundation of professorships at both universities. At the time when the Roman law was sweeping everything before it on the Continent, its study was pursued with enthusiasm in England, and there were not wanting those who anticipated a similar triumph for it over the barbarous English law. But the common law was a self-made, independent old body, with a way of its own. The creation of lawyers, who saw nothing good in anything of foreign origin and nothing but evil in anything Roman, it was intrenched in the Inns of Court (*q.v.*), where the members of the bar and their students lived and studied and disputed over the cases in the Year Books together. Thus in England, as later in America, legal education was the work of the active bar, and it is to this fact that Maitland (*English Law and the Renaissance*) attributed that "toughness" of the common law which enabled it to resist and defeat the Romanizing influences emanating from the universities. From that day to this the two streams of legal learning have flowed on without mingling -- from the universities, the stream of legal science, philosophy, and history, from the Inns of Court, the stream of practical training which should fit men for the actual work of the bar. Sir John Fortescue, Chief Justice of the King's Bench in the reign of Henry VI, in his treatise *De Laudibus Legum Angliæ*, raises the question "Why the laws of England, being so good, so fruitful and so commodious, are not taught at the universities, as the Civil and Canon Lawes are," and he answers it, not very convincingly, by saying, "In the universities of England sciences are not taught but in the Latin tongue; and the lawes of the land are to be learned in three several tongues to witte, in the English tongue, the French tongue and the Latin tongue. . . . Where-

fore, while the lawes of England are learned in these three tongues, they cannot conveniently be studied in the universities where only the Latin tongue is exercised" Doubtless the real reason is to be found in the learned Chief Justice's further statement that "the same Lawes are taught and learned, in a certaine place of publique or common studie, more convenient and apt for attayning of them than any other University For this place of studie is situate ne to the King's Courts, where the same lawes are pleaded and argued and judgments by the same given by Judges, men of gravitie, ancient in years, perfit and graduate in the same lawes Wherefore, every day in Court, the students in those Lawes resort by great numbers into those Courts wherein the same lawes are read and taught as it were in common scholes"

The reference is to the Inns of Chancery and the more famous Inns of Court, which together constituted at that period "as it were an university or school of all commendable qualities requisite for noblemen," the charges being so high that "the children onely of Noble men doe studie the Lawes in those Inns" A later writer, Joseph Walton, Esq., Q C in a paper read before the American Bar Association in 1899, speaking of the great activity of corporate life which the Inns displayed during the sixteenth and early seventeenth centuries, says, "The education of the students was not left in the hands of salaried teachers, but the Benchers (the governing body of the Inns) and the Bar alike cooperated in the work" The fact that then as now no man could practice at the English bar unless he had been admitted as a student at one of the Inns of Court and had been in residence the prescribed number of terms furnishes the final and convincing answer to the question propounded by Sir John Fortescue.

But the Inns were to fall upon evil days. As we have learned in America, instruction by "salaried teachers" has some advantages over that imparted by busy members of the profession, and so it came to pass that the bar, which had created the system of legal education, through neglect destroyed its own offspring By 1688 it was possible for Roger North to say. "Of all the professions in the world, that pretend to book learning, none is so destitute of institution as that of the Common Law Academick studies, which take in that of the civil law, have tutors and professors to aid them, and the students are entertained in colleges under a discipline, in the midst of societies, that are, or should be, devoted to study, which encourages, as well as demonstrates, such methods in general as everyone may easily apply to his own particular use. But for the Common Law, however, there are societies which have the outward show or pretense of Collegiate Institution, yet in reality nothing of that sort is now to

be found in them; and whereas in more ancient times there were exercises used in the Hall, they were more for probation than for institution, now even those are shrunk into mere form, and that preserved only for conformity to rules, that gentlemen by tale of appearances in exercises rather than by any sort of performances, might be entitled to be called to the Bar"

After the abdication of its teaching function the corporate bar left the students to their own devices The "lawes of England" were not taught in the universities, and thus the system of an office apprenticeship grew up, the student becoming a pupil for two or three years in the chambers of a conveyancer, equity draftsman, or special pleader The requirement of twelve terms (three years) of residence in the Inns of Court was satisfied by the eating of a certain number of dinners in the Hall This was the state of legal education in England from the middle of the seventeenth to nearly the middle of the nineteenth century, when (in 1832) the great Society of Attorneys and Solicitors was formed, for the purpose, among other things, of providing for the education of its branch of the profession, and when (in 1840) the Benchers of the four Inns of Court established the Council of Legal Education

The modern period of legal education in England coincides pretty nearly with what may be called the second period in the development of the law school in the United States, dating from about the year 1860 There, as here, it was due not to an awakening of the universities to a sense of their duty to the community, but to a conscious effort of the profession to secure a better equipment for the discharge of its increasing responsibilities It is true that the teaching of English law was introduced at Oxford as far back as 1754, when Sir William Blackstone delivered his famous lectures there, but the experiment attracted no professional students, and exerted no direct influence on legal education It was not until the movement inaugurated by the Incorporated Law Society and the Council of Legal Education of the Inns of Court had gained considerable momentum that the universities awoke from their lethargy and established what may be called schools of law These include, besides the venerable studies in the Roman law, upon which the chief emphasis is still placed, courses in general jurisprudence, English constitutional law and history, international law, and in the principal topics of English law. Apparently these attract but few candidates for the bar, and the legal profession, as of old, pursues its own course. The character of the instruction provided by the latter is largely determined by the time-honored division of the professional field between the two distinct orders of solicitors and barristers The honorable societies which constitute the four Inns

of Court are gilds of barristers, and the education provided by them is confined to candidates for the bar in the restricted English sense of that term. It was to meet the demand for more systematic training for the neglected solicitor's clerk that the Incorporated Law Society (now the Law Society of the United Kingdom) has instituted examinations to test the proficiency of students in the principles of law and procedure. Quite recently the society has also opened some courses of instruction. Meanwhile in the Inns of Court the potential barrister may, if he so desires, pursue courses of lectures in the whole field of English law as well as in Roman law, jurisprudence, and international law. But he is not required to do so, and it is reported that he seldom does. The new university foundations in London, and several of the provincial centers — Manchester, Liverpool, Leeds, and Sheffield — have also set themselves, somewhat feebly as yet, to the teaching of the law of the land.

The looseness and lack of consistency of the scheme of legal education in England renders it a difficult task to describe it as a whole, or to characterize it fairly. It seems as yet to be without form and void. The two older universities are still out of the current of professional influence. Their emphasis is still on the law of the dead past rather than of the living present, and they have not sought to establish any relation between the two. Then courses in English law are too general in character to be of much use to the professional student, and it is doubtful if he would avail himself of them if they were perfectly adapted to his purpose. The tradition of the bar still strongly favors a "practical" education, obtained principally in a law office, with enough reading of the standard textbooks to enable the student to pass the prescribed examinations. As it is of no particular advantage to him to attend law lectures, he is in general content to do without them. It is reported that the total number of law students registered in the universities and the Inns of Court does not exceed 2000, a much smaller number than the Inns alone harbored in the sixteenth century. The lectures in the Inns, like those in the universities, are for the most part of the didactic sort, often consisting of dictation. The "case method," which is revolutionizing the teaching of law in America, is spoken of with respect, but is nowhere employed. It may be added that there is no uniform standard of preliminary education for law students, that the courses of instruction are short, — not more than a year being devoted to the English law in most schools, — and that, excepting in the older universities, the instruction is for the most part given by members of the active bar. The only "system" that can be detected is the system of examinations. These are substantially the same in all the universities, in the Inns of

Court, and in the Law Society, and are said to be of a rigorous character.

It is apparent that much remains to be done to make the legal education of England the efficient instrument of legal progress that the times demand. But we are told that there is much ground for encouragement, that the bar is awakening to the need of reform, that the universities and Inns are feeling the influence of the American renaissance of the last two decades, and that a new Society of Public Teachers of Law in England and Wales has recently been formed to organize and push forward the work of legal education in the mother country of the common law. As Professor Hazeltine of Cambridge says, "These are happy auguries for the future."

**The Continent of Europe** — The American law school has for more than fifty years held the admiration of the profession in England, and has received unstinted praise from the leaders of that kindred bar — a fact which a comparison between the conditions of legal education in the two countries serves to explain. But no such acclaim comes from Continental jurists. For them the American system, even at its best, falls lamentably short of that ideal of sound scholarship which informs the legal education of the Continental countries of western Europe. As the inheritors of a tradition of world law, which was itself only the expression of natural law, a law written in the constitution of man, the jurists of Europe cannot regard the study of any isolated legal system, however developed and complete in itself, as in any proper sense a scientific performance. To the French or the German student, who regards his polity as only a fragment of a world order, the self-contained, self-satisfied attitude of the English and American lawyer seems narrow and provincial. It would be as reasonable, as scientific, to study the institution of the family without reference to the society of which it forms a part as to study the law of a given community without reference to the general law. Hence the Continental student refuses to be impressed with our claim that by making the study of the cases the basis of legal instruction we have made our teaching of the law scientific. He answers that a scientific method does not of itself make a science. He insists that the content of a subject of study is as important as the method of investigation employed upon it, and that until we have, through a new birth of scholarship, related our law to that of the rest of the civilized world, past and present, and to the ethical and social sciences, we shall never have a legal education worthy of the name.

This description of the conditions which have formed the ideal of legal scholarship on the Continent and determined the character of the legal education which there prevails points back of the universities to an order of ideas of which they are in part the fruit and

in part the preservers. As his law was the law of imperial Rome, the Continental lawyer, had there been no universities, could not have failed to conceive of the law that he was called upon to administer as only a part of the general European law. The law student acquired a knowledge of his own law through the study of the Roman law. But here the university was a necessary instrumentality. The law to be learned was not an indigenous common law, as in England, but a system handed down and "received," set forth in a language which only the learned know, and expounded in writings of great erudition which only the learned could interpret and expound. And thus, as the only depository of this learning and of the texts and other material on which it was based, the university became the seat of legal instruction. Its instruction was arid enough at first -- the scholastic interpretation of the inspired texts and of the scarcely less inspired gloss which encrusted it. But with the Renaissance a new spirit entered into the teaching of law, as into every other department of university education, and it was broadened and enriched by the study of philosophy and of general principles of jurisprudence. But it was not until the nineteenth century that the despised local law came to be accounted worthy of a place in the university curriculum, and not until the last quarter of the century that it was received as of equal worth and dignity with the Roman law. The new value which, under the reviving spirit of nationalism, has been put on the local common law in all continental countries and especially in Germany has contributed powerfully to this result.

*Germany* — But the European universities are not only the recognized seats of legal learning; they are also, through their relations to the government, the official gateways to the public service. Through them and in no other way is admittance gained to the bench, the bar, the high offices of state. This is pre-eminently true of the universities of Germany, which have long enjoyed the monopoly, and it is not too much to say that they have fairly earned it, through the combined practical and scientific character of the education afforded by them. The student matriculates at the university at the age of eighteen or nineteen on the completion of his course in the secondary school (*Gymnasium*). His studies, which cover the whole range of German as well as Roman law, include also international law, the philosophy of law, comparative jurisprudence, general and German legal history, and political science, and can usually be completed in three years. The instruction is mainly by lectures, with little or no discussion, though these are supplemented by seminars and *practica* for the more advanced and ambitious students. The lectures and other exercises are admittedly of a thoroughly scientific character, involving at every stage the consideration of principles

of a general and fundamental character. The student is encouraged to avail himself of the courses in philosophy (including ethics), logic, economics, and sociology given under the auspices of the faculty of philosophy, and it is said that few of them neglect to do so. On the completion of his course the student is subjected to a rigorous examination covering all the work done by him. If he is a candidate for the doctor's degree, he submits a dissertation on some topic in the law to which he has given special attention.

The course of "theoretical" instruction here outlined is the same for all law students, but there is a further course of "practical" instruction which varies more or less according to the career which the *referendar*, or graduate, intends to pursue. It will be borne in mind that in Germany the law is studied not only as a preparation for legal practice, but for the bench (there a separate profession) and for other branches of the public service. To confine our attention to the bench and bar, it may be said that the candidate for the latter is required to spend not less than four years, and the candidate for the former from eight to nine years, in the service of the state, as an *assessor* or assistant in the courts and in other legal positions, always under supervision and instruction, at the end of which time he again submits himself to an examination to test his fitness for the service for which he offers himself. Then and not until then is the systematic legal education complete.

*France* — The uniformity which, combined with a wide range of freedom in the election of courses and instructors, characterizes the system of university instruction in law in Germany, is lacking in the French universities. The system which there obtains is one of great flexibility, adapting itself to that one of the half dozen or more branches of the legal profession which the student proposes to enter. Nevertheless, as all but a comparatively small number pursue the complete course of study leading to the degree of licentiate in law (*licence en droit*), the more restricted courses which prepare for the lower grades of the profession, (*avoués*, notaries, and *huissiers*) may be neglected. The student who aspires to become an *avocat* or magistrate, or, indeed, to enter any of the higher grades of the public service, matriculates at the university, as in Germany, on the completion of his course in the *lycée* or secondary school. He is a year or two younger than the German student, but is more serious-minded and wastes little or no time in getting down to work. The character as well as the scope of the instruction imparted is well expressed in a paper on "The Teaching of the Law in France," read by Thomas Barclay of the French bar, before the American Bar Association in 1899. The teaching of the professors (of whom there are thirty eight in the law faculty of Paris), he tells us, "is distrib-

uted with a view to enable the student to take the degree of *licence en droit* at the termination of an ordinary three years' course of university study. There is an examination at the end of each year, and no student for the degree of *licence* can enter for either of the three examinations out of their prescribed order.

"The subjects of the first year's study are as follows. *Roman law*—the lectures on this subject embrace the whole of the legal institutions of Rome, with a view to initiating the student into the part which history plays in the development of law. *History of French civil and constitutional law*—here the idea is to awaken in the student that interest in tradition, and at the same time that critical understanding of laws by reference to their origin, which will bring him to respect their character without making him a slave to their form.

"In the same order of ideas there is a course of lectures for the first year's student in *Political Economy*, treated with regard to the current development of legislation, on the assumption that he will be enabled to understand a law better if he sees the reason for it. Lastly is included about one third of the contents of the *Civil Code* in which the lecturer endeavors again to explain why the law is as it is, and, as far as possible, to connect its provisions with the ethical basis upon which it rests.

"The second year's study includes another one third approximately of the matters treated in the *Civil Code*. The study of Roman law continues, but in this year it is treated with special reference to what contemporary French law has borrowed from it. In this year also the student must attend lectures on *criminal law*, *administrative law*, and *public international law*.

"In the third year he takes the remaining one third of the contents of the *civil code*, and *commercial law*, *private international law* and *civil procedure*."

Though this university training, culminating in the *licence en droit*, is a necessary stage in the evolution of the French lawyer, he is not entitled to call himself an *avocat* or to practice as such in the higher courts until he has also devoted three years to "assiduous attendance at the hearings in court" and has carried on practical work and discussions under the direction of the "Order of Advocates."

*Other Countries*—The legal instruction in other continental universities does not differ in important respects from that given in Germany and France. In some more attention is paid to the philosophy of law and to general and comparative jurisprudence than in others, and in the universities of Austria and Italy to economic history and theory, to social legislation or to ecclesiastical law, but the spirit which animates them is everywhere the same. Law is treated as a branch of social science, having its roots in ethics and in the history of civilization, and accordingly as a true university

discipline to be studied in the spirit of scholarship and science. The only conspicuous defect in the continental scheme of legal education is its complete neglect of that great system of the common law which divides the hegemony of the western world with the Roman law.

G W K

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**LAW, WILLIAM** (1686–1781) — English divine and mystic, born near Stamford in Northamptonshire. He graduated at Cambridge in 1705, and was ordained in 1711. Owing to his Jacobite views, he was deprived of his degrees in 1713. As a non-juror he was excluded from preferments in the Church. Law was a prolific writer in the field of theology, and for one work, *Christian Perfection*, he received a gift of £1000, with which he founded a school for girls at King's Cliffe. In 1745, through the help of the widow of one of his admirers and a friend, he founded a school for boys and almshouses at King's Cliffe. Law and his two friends lived as nearly as possible according to the principles laid down in his most important work, *A Serious Call to a Devout and Holy Life* (1728). Here he devotes some chapters to education, and attacks the

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prevailing system as tending to pride, vanity, and ambition. The only basis of education is Christianity; hence humility and meekness are its ends. The method accordingly should be the study of the experiences of men who have led Christian lives. In the same way girls should not be trained up to value nothing but personal beauty, rather should they learn to live for their own sakes and the service of God. And it was along these lines that the *Rules to be observed by Girls* at the King's Cliffe School were drawn up. While Law's works have been neglected, his influence may be measured by the work of the Wesleys, Whitefield, and other evangelical leaders who frequently visited him.

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**LAWN TENNIS** — This game is very modern in its present form, though it had its prototypes in comparatively distant ages. There are records showing that crude games of the lawn tennis type were played in Italy and in France several hundreds of years ago. One of these crude games, *la longue paume* of the French, was carried to England, and was probably the forerunner of modern lawn tennis. In 1874 Major Wingfield introduced a game under the name of *sphairistike*, which was gradually modified and the name changed to lawn tennis, and in 1877 definite rules were drawn up and the first championship contest held. Since 1877 lawn tennis has spread throughout England, the British colonies, America, France, — everywhere, in fact, where two or three Englishmen are gathered together.

The reasons for the great popularity of this game are many. It requires but a small piece of level ground, it is adapted to both sexes, all ages, and various degrees of strength; it is intensely interesting, it may be played by two, three, or four persons, and, like croquet and golf, it is a distinctly social game. One of the most difficult problems in physical education is to teach students in our schools and colleges forms of exercise which may be kept up after graduation. Lawn tennis fulfills this condition in a larger measure than any other game or sport. The popularity of lawn tennis is attested by the fact that it is the most widespread game in the colleges and secondary schools of the United States, 97.6 per cent of the colleges have from one to fifty-two tennis courts.

A tennis court may be laid out on a smooth lawn or a surface of clay and gravel. The dimensions for a single court (for two players) are 27 by 78 feet, a double court (for three or four players) is 36 by 78 feet. It is necessary to have at least 8 feet clear on each side and 20 feet at each end. The directions for laying out tennis courts, the rules of the game, and

## LEANDER CLARK COLLEGE

other kinds of information concerning the conduct of tournaments, etc., are described in detail in the *Lawn Tennis Guide*, published annually (Boston, Mass.).

G. L. M.

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**LAWRENCE COLLEGE, APPLETON, WIS.** — A coeducational institution founded in 1848 as an academy, with the title Lawrence Institute. In 1849 the title was changed to Lawrence University, and in 1908 to Lawrence College. Collegiate music, expression, and art departments are maintained. The entrance requirements are fifteen units. The college offers a four-year course leading to the degree of A. B. A pre-engineering course fitting students to continue a professional course at the University of Wisconsin is also offered. There is a faculty of forty-three members. The enrollment of students in 1911-1912 was 450 in the college.

**LAWS, SCHOOL** — See LEGISLATION, EDUCATIONAL, SCHOOL LAWS AND DECISIONS

**LEACH, DANIEL** (1806-1891) — School superintendent and textbook author, born at Bridgewater, Mass. He received his secondary school training at the Bridgewater Academy, and was graduated from Brown University in 1830. For several years he taught in the public schools. For ten years (1838-1848) he was principal of the Classical High School at Roxbury (Boston). From 1848 to 1855 he was one of the agents (supervisors) of the State Board of Education of Massachusetts, and from 1855 to 1884 he was city superintendent of the schools of Providence, R. I. He was active in the educational associations of New England, and was a frequent contributor to educational journals. He published three textbooks — an arithmetic, a spelling book, and a geography. W. S. M.

**LEANDER CLARK COLLEGE, TOLEDO, IA.** — A coeducational institution founded in 1856 under the auspices of the United Brethren Church at Shueyville and moved to its present location in 1881. It maintains an academy, college of liberal arts, teachers' course, music, business, elocution, and fine arts courses. The entrance requirements are about fourteen units. The college confers the A. B., A. M., and M. S., the two latter on completion of a year's residence and the presentation of a thesis. In 1910-1911 the enrollment was 262 students, of which 78 were in the college. The faculty consists of eighteen members.



**LEARNED SOCIETIES** — See ACADEMIES, INSTITUT DE FRANCE; SCIENTIFIC SOCIETIES, GERMANY, EDUCATION IN, and articles on other national systems

**LEARNING.** — The process whereby experiences are gained which function effectively in meeting new situations. This process may take many different forms, and what is popularly called learning is usually a complex process involving many of these forms. All learning presupposes on the part of the learner a stock of innate dispositions and instinctive tendencies which are the foundation for all acquired responses.

The simplest type of learning is the formation and development of perceptual processes. The stimulation of the sense organs is both logically and genetically the beginning of the learning process. Such stimulation leads to the organization of perceptual experiences. The importance of building upon such a concrete foundation has been frequently emphasized in educational theories, but there is always a tendency to fall back upon the symbolic and formal without a sufficient concrete perceptual basis. True perceptual development demands much more than mere presentation of the objects of the external world to the pupil. It cannot be taken for granted that children will recognize the true character of objects thus presented. Perceptual development demands the careful analysis of objects into their elements through observation and the fusion of these elements into new wholes.

The second type of learning is the acquisition of bodily habits, which frequently goes forward in connection with the progress of perceptual learning just mentioned. Habits may arise directly from instincts, in which case there is little, if any, of the learning processes involved. They may also arise by the method known as that of "trial and success." This method of learning is typical of both man and the lower animals. An unusual situation, or one for which no organized response is already present, calls forth diffuse movements, some of which are accidentally successful and tend, therefore, to be repeated, while the unsuccessful movements are gradually eliminated and an habitual mode of response established. The older education neglected this aspect of the learning process, which is emphasized in the modern subjects of manual training, drawing, etc.

The acquisition of language, written and spoken, is the most important of all human habits, because of its connection with the third type of learning, which belongs essentially to man, namely, the acquisition of power of response through the medium of ideas. Ideas are transmitted by means of language and retained by means of memory; hence, the popular use of the term "learning" as equivalent to memorizing.

In the work of the schoolroom most of these

forms of learning are combined. The process of learning to read, for example, involves the perceptual recognition of words and sentences, the motor responses of eye and voice, and, if the reading is not merely mechanical, the acquisition of ideas. E. H. C.

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**LEAVES OF ABSENCE** — By this is meant leaves of absence for a term, or year, granted to teachers, for good reasons and frequently on partial pay, their positions being held for them until their return. Such leaves of absence are common in the larger universities, where the sabbatical leave is a well-established institution. In such institutions the teacher is allowed to spend each seventh year in absence on one half, two thirds, three fourths, and sometimes on full pay. In a few of our larger institutions the half-sabbatical is also allowed, a half-year on partial pay being allowed after each three years of service. In the smaller colleges and in the state normal schools such leaves on pay are seldom granted, and, when granted, are more frequently granted for long and meritorious service than as a regular privilege for all. As the salary of the instructors in such institutions is usually so small that they cannot afford to take vacations at their own expense, such leaves of absence for study are seldom taken except by young instructors who are trying to complete their studies for a university degree. The result is that these institutions suffer because their instructors lack contact with men in their own lines in other and in larger institutions. The summer session of the larger universities, however, is doing much to remedy this defect.

In the public schools such leaves of absence for study and travel are confined entirely to a few large cities. Many cities are so far neglectful of their own interests that they refuse to grant leaves of absence to their own teachers, even when they are willing to travel and study at their own expense. In a few cities, such as Boston and Rochester, the plan of granting to teachers a year off from time to time for purposes of travel and study has been adopted, but the number of such cities is as yet very small. Both Boston and Rochester provide for vacations for purposes of travel and study after seven years of service, on half pay, and Boston has provided further for years of rest on full pay for long and meritorious service. A few other cities, as for example Omaha, have adopted the plan of granting leaves of absence for study to those teachers who are willing to take them at their own expense, and, in lieu of

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any pay while absent, granting salary increases on the basis of such study on the return of the teachers to the school system. Probably few things would be of greater value to teachers in the elementary schools of our cities than an occasional year off on partial pay for purposes of travel or study, and the extension of the plan of sabbatical leaves is one of much importance. Certainly leaves of absence without pay for any worthy educational purpose ought to be granted cheerfully by Boards of Education.

E. P. C.

**LEAVING CERTIFICATE** — A form of certificate granted to pupils in elementary or secondary schools, carrying with it certain privileges. In elementary schools such certificates indicate that the pupils have completed certain required work, years, or courses, or have been in regular attendance for a certain time, and are usually used as permits to go out to work. Such a certificate has been in existence in France for thirty years, where it is given, on the basis of a public examination, to those pupils who have completed the primary school course and have reached the minimum age of eleven years. The examination covers only the subjects studied in the elementary schools up to the completion of the *cours moyen*, and the certificates awarded (*certificat d'études élémentaire*) are much esteemed by French children and parents, and are almost a prerequisite for employment of any kind. Another certificate marking the attainment of a somewhat higher stage is the *certificat d'étude primaire supérieure*. (See FRANCE, EDUCATION IN.)

In England local authorities may frame by-laws regulating the total or partial exemption of pupils from school attendance, and in addition may insist that such pupils obtain from an Inspector of the Board of Education a certificate of proficiency to the effect that a candidate has attained the standard of the grade which he should have reached by age. No certificate is granted below the fourth standard or grade. The whole matter is now under consideration of the authorities.

In the United States there is no certificate as such, though the elementary school, or grammar school diploma, granted almost everywhere, is in effect a somewhat similar certificate, but much less highly esteemed by both pupils and employers than is the case in France. Diplomas of graduation are commonly granted to those who complete the eighth grade (in some cases still the ninth) of city schools, and generally the ninth grade (though frequently the eighth, and, in some parts of the South, the sixth) in rural schools. In most cases diplomas signed by the city or county superintendent of schools, or the county board of education, are issued to the graduates, and graduating exercises of a somewhat formal character are very frequently held. To many this marks

## LEAVING CERTIFICATE

the completion of their school course, and the diploma thus becomes for them a leaving certificate. The diploma has an academic value almost entirely, and is of use to the pupil only in case he or she desires to enter a high school. In itself it is seldom required or asked for as a prerequisite to employment, and no such importance is as yet placed on its possession as is the case in France.

So far as leaving certificates are granted, they partake of the nature of work certificates, or age and schooling certificates. These are granted in almost all states where a child-labor law is strictly enforced, and they thus become a prerequisite for employment in the case of young persons. A common form is a certificate from the school authorities, stating the pupil's age, and certifying that he is entitled to employment at certain kinds of labor and for certain hours. Pupils from fourteen to sixteen are commonly required to hold such permits, and all illiterate minors, over sixteen, in some states must present evidence of attendance at evening schools to be entitled to employment in the day time. These certificates must be kept on file by the employer, and exhibited, on request, to attendance officers and labor inspectors. Massachusetts presents an excellent example of the employment of this kind of a leaving certificate. Two other forms of such permits, or certificates, are commonly granted. One is a permit to school children, usually between the ages of twelve and fourteen only, granted by the school authorities or the juvenile court judge, on evidence of parental need for the labor of the children, permitting them to engage in certain forms of light labor during certain specified hours. Badges are sometimes used, as in the case of the New York City newsboys. The other form of labor permit or certificate is that permitting children who have been in regular attendance at school during the preceding year to engage in certain forms of labor during the summer or other vacation. Such permits state the age, define the time limits of the vacation, and specify the kind of labor permitted. (See CHILD LABOR, ENGLAND, EDUCATION IN, FRANCE, EDUCATION IN, PART TIME SCHOOL ATTENDANCE.)

Leaving certificates from secondary schools are usually granted to candidates who have reached at least the age of sixteen and have attained a certain standard in secondary school subjects. Most frequently such certificates serve to exempt their holders from other examinations required for entrance into the universities, or certain professions, *e.g.* in England, accounting, medicine, architecture, etc. School leaving certificates may be granted by the State, as in Germany and France, or by universities, as in England and America. In Germany there are two types of leaving certificates, the *Einjährigenschein*, or certificate for admission to one year of military service,

## LEAVING SCHOOL

granted at the end of a six-year course in a secondary school, and the *Abiturenprüfung* (*q.v.*), granted at the end of a full nine-year course. In France the leaving certificate is the *Baccalauréat* (*q.v.*) In England there are numerous examining bodies which grant such certificates; the most prominent are the Oxford and Cambridge Joint Board, the Joint Matriculation Board of the Northern Universities, the University of London, and the College of Preceptors. Each university also conducts its own matriculation examinations and system of school inspection, and in many cases the certificates granted are equivalent to leaving certificates. The tendency to establish some system of interrecognition of certificates is at present being considered under the Board of Education, but there is not much likelihood that any general, state-wide certificate, conducted by the central board, will be introduced (See England, Board of Education, Consultative Committee, *Proposals for a System of School Certificates*, London, 1904, and *Report on Examinations in Secondary Schools*, 1911.) In America school leaving certificates are found commonly in the Middle West and the West, along with the general system of accrediting schools.

See ACCREDITED SCHOOLS, ENGLAND, EDUCATION IN, EXAMINATIONS, FRANCE, EDUCATION IN, GERMANY, EDUCATION IN; and other national systems

**LEAVING SCHOOL** — See COMPULSORY ATTENDANCE; RETARDATION AND ELIMINATION OF PUPILS; LEAVING CERTIFICATES

**LEBANON UNIVERSITY, LEBANON, OHIO** — A coeducational institution organized in 1855 as the Southwestern Normal School. The present title was adopted in 1907, and in 1908 by an act of the Ohio legislature the university became a part of the city school system, supported by city tax. Colleges of liberal arts, of business methods, fine arts, a college for teachers, a school for agriculture, summer school, preparatory school, and a university extension department are maintained. More than 4000 students have received a part of their education in this institution.

**LEBANON VALLEY COLLEGE, ANN-VILLE, PA** — A coeducational institution established in 1866 under the auspices of the United Brethren Church. Academic, college, music, and art departments are maintained. The entrance requirements are fifteen units. Classical, chemical-biological, mathematical-physical, historical-political, and modern language courses are offered, leading to the degree A.B. Of 232 students enrolled in 1910-1911, 119 were in the college department. The faculty numbers twenty-one members.

## LECTURE SYSTEMS

**LECONTE, JOSEPH** (1832-1901) — Scientist, university professor, and textbook author, educated at the University of Georgia, the New York Medical College, and the Lawrence Scientific School of Harvard. He was professor in the University of South Carolina (1856-1869) and the University of California (1869-1901). He assisted Professor Louis Agassiz (*q.v.*) on his scientific expedition to the coast of Florida. He was the author of *Elements of Geology* (1878), *Compend of Geology* (1884), *Comparative Physiology* (1900), and of one hundred and fifty scientific and philosophical papers. W. S. M.

**LECTURE METHOD** — Any use of extended, formal discourse for the presentation of knowledge to students may be included under the lecture method. It has its largest value and its widest use among mature students and in those subjects where an objective method cannot be readily utilized. Hence its wide use in colleges and universities, where almost all fields, save those of linguistics and the natural and applied sciences, employ it as the dominant method of instruction. The lecture method is only slightly used in the high school, and not at all in the elementary school, save in the highly amended form of short and intermittent talks. Its restricted use in the lower schools is due to the obvious limitations of the method. The instructor has no way of knowing as he proceeds that each point and its relation is mastered, and the student himself is not given the opportunity for interruption in case of failure or doubt in grasping the argument, which would be the case where the method of discussion is utilized. The response of students in the lecture room is receptive rather than active, and the impressions, being given by verbal means with little or no chance for objective or other visual demonstration, are likely to be abstract and verbal, if not actually hazy. H. S.

See INFORMATION TALKS, also the section on method in the articles on the various academic subjects

**LECTURE SYSTEMS** — The provision of lectures for the public has become widely ramified and has assumed many forms. The system of free public lectures maintained by school authorities, now one of the most widespread, at any rate in the United States, is of recent origin, and was inaugurated in New York in 1889. Free lectures had been provided by the American Museum of Natural History in 1884, but only for teachers. The total number of lectures given in 1909-1910 was 1654 (literature, history, sociology, art, 854, general and applied science, 318, descriptive geography, 391, Italian, Yiddish, and German, 91). These were attended by 959,982 persons, while 134 local superintendents and 56 stereopticon operators were employed. The

system was adopted by many large cities, *e.g.* Boston (1896), Philadelphia (1898), Chicago (1897), Newark, Cincinnati, Rochester, and many others. Generally the lectures originated from the activity of clubs or associations, *e.g.* at Boston through the Twentieth Century Club and the Home and School Association, and at Philadelphia through the Home and School League, which worked in connection with school authorities, providing lectures and receiving the use of school buildings. This phase of the subject will be treated under the **SCHOOL AS A SOCIAL CENTER**. It is also in connection with the school that some city systems and private schools have instituted special lecture courses to which the parents of scholars are invited, and which are afterwards discussed by parents and teachers (See **PARENTS AND SCHOOLS**). Another form of this activity is found in connection with museums in which popular scientific lectures are given in connection with the exhibits (See **BOTANY; LIBRARIES, MUSEUMS**). In addition to these systems of free public lectures, numerous clubs and associations have provided and continue to provide semi-public lectures and courses. Of these the chief may be mentioned, and will be found treated under separate heads **CHAUTAUQUA, CONCORD SCHOOL OF PHILOSOPHY AND LITERATURE, COOPERATIVE HOLIDAYS ASSOCIATION, LYCEUM, MECHANICS INSTITUTES, Y M C A**. Of a more formal character, and differing from public lecture systems in being specialized and technical, and in most cases consisting of courses of lectures, are those conducted for the training of teachers in service (see **INSTITUTES, TEACHERS, TRAINING OF**), for the improvement of agriculture, conducted by agricultural boards and university departments of agriculture (see **AGRICULTURAL EDUCATION**), for further education of adults conducted by private organizations, public school authorities, and universities, see **ADULT EDUCATION, UNIVERSITY EXTENSION, WORKING MEN'S COLLEGES; WORKERS' EDUCATIONAL ASSOCIATION**.

**LEE, ROBERT EDWARD.** — General Lee's work as an educator only is here considered. Born in Westmoreland County, Virginia, 1807, Lee graduated from the U. S. Military Academy in 1829, with the very unusual honor of a perfect record. Subsequently (1852-1855) he served most ably as superintendent there, gaining an experience useful in his later educational work. At the close of the Civil War, Lee was the idol of the South, and the most respected in the North of all who had been connected with the Confederacy. Bereft of his profession, broken in fortune, he nevertheless declined the offer of an independent estate in England, and refused likewise to lend his name to remunerative financial enterprises. The very esteem in which he was held fixed in him the determination to contribute personally to

the rehabilitation of the South. With neither inclination nor aptitude for statesmanship, he selected the field of education as the one in which he could render his best service. Feeling that he belonged to the whole South, he refused the headship of a denominational college. Fearing political entanglements, he declined overtures from the state university of Virginia. Instead he accepted (September, 1865) the presidency of Washington College (now Washington and Lee University, *q.v.*). This institution had been endowed by Washington, but the disasters of the late war had scattered its funds, while a hostile army had destroyed its equipment and all but wrecked its buildings. To the upbuilding of this college as a social agency Lee gave the remainder of his life. His general policy was to make the college course "practical" in order to meet the pressing needs of the devastated section. Departments of engineering and "applied chemistry" were introduced, and a school of commerce planned. To render these newer courses more accessible, the uniform curriculum gave way to the elective system. The success of the new president was in all respects preeminent. In the words of one of his colleagues, "he found the college practically bankrupt, disorganized, deserted, he left it rich, strong, and crowded with students. . . he gave it organization, unity, energy, and practical success." The influence of his personality on the student body was not the least of his successes.

Upon Lee's death (Oct. 12, 1870) the college, feeling itself justly entitled to the honor, had its name changed to Washington and Lee University (*q.r.*) W. H. K.

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#### LEEDS, UNIVERSITY OF, LEEDS, ENG.

— One of the recently founded English universities. The university had its origin in the Yorkshire College, which was formed in 1884 by the amalgamation of the Leeds School of Medicine (1831) and a college of science (1874). From 1887 to 1903 the college was a constituent part of the Victoria University, together with Owens College, Manchester, and University College, Liverpool, and remained such after the last body obtained a university charter. In 1904 Yorkshire College obtained a charter and became by act of Parliament the University of Leeds, with all the usual power appertaining to such a body, "to do all such things as may be requisite, . . . to cultivate and promote arts, science, and learning." The governing body consists of the Court, which is formed by the Chancellor, Pro-Chancellor, Vice-Chancellor, and Pro-Vice-Chancellor, and representatives of the universities and schools, of local councils, of benefactors, of the Crown,

and others. The Council is the executive body, and the Senate has the general regulation of academic work. The university is maintained by endowments, donations from different sources, government grants, grants from city and county councils in the Ridings of Yorkshire, and student fees. The Clothworkers' Company of London gives an annual subsidy of £4000, and has provided buildings for instruction in dyeing, textiles, and tinctorial chemistry, while the Skinners' Company supports a department for instruction in subjects appertaining to the leather industries. Work is offered in departments of arts, commerce, law, science and technology, medicine, and dental surgery. With the university are affiliated the Huddersfield Technical College, and the College of the Resurrection, Mirfield. Evening classes and extension courses are given. With the aid of the county council of the North, East, and West Ridings the university conducts agricultural courses and experiments, and sends lecturers and dairying instructors to various local centers. While the general cultural work is strong, the applied sciences receive especial attention. Classes and laboratories are open to men and women on the same terms. The university is not residential, but facilities are afforded for the accommodation of students, who, however, are drawn in the majority from a radius of thirty miles of the city. As in the case of the other universities recently established, considerable progress has been made especially in adaptation to local needs and interests. Professor Michael E. Sadler was appointed Vice-Chancellor of the university in October, 1911. The enrollment in 1911-1912 was 901, with a teaching staff of 152.

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**LEFT-HANDEDNESS** — See AMBIDEXTERITY

**LEGAL EDUCATION** — See LAW, EDUCATION FOR THE.

**LEGAL RIGHTS OF CHILDREN** — See CHILDHOOD, LEGISLATION FOR THE CONSERVATION AND PROTECTION OF

**LEGISLATION, EDUCATIONAL** — See COMMISSIONS, EDUCATIONAL, RECENT AMERICAN, SCHOOL LAWS AND DECISIONS

**LEHIGH UNIVERSITY, SOUTH BETHLEHEM, PA** — Founded in 1865 as a result of the gifts and bequest of Judge Packer, amounting to \$2,000,000. The aim of the university is to provide technical, literary, and scientific preparation for the type of work demanded by the resources of the region. The institution is well equipped with large laboratories to give

instruction in civil, mechanical, metallurgical, mining, electrical, and chemical engineering, and in electro-metallurgy, chemistry, and collateral studies. The entrance requirements are fourteen units. The university confers the degrees of A.B. and B.S. and the various degrees in engineering. A special course is also provided for teachers, a psychological laboratory and a practice school being maintained. In 1910-1911 the number of students enrolled was 655. The faculty consists of seventy-three members.

**LEHR- UND LERNFREIHEIT.** — See FREEDOM, ACADEMIC

**LEIBNITZ, GOTTFRIED WILHELM, FREIHERR VON** (1646-1716) — One of the two or three most universal minds in modern history, contributed new ideas and projects of fundamental reform to nearly all the larger provinces of inquiry and practice, education among them. His place in educational history is scarcely comparable to that which he holds in mathematics (as the inventor, simultaneously with Newton, of the calculus), in logic, in metaphysics (theory of monads), and in rational theology (as the chief representative of the eighteenth-century type of optimism). His father, professor of ethics and law at Leipzig, dying early, the boy was largely self-taught, by omnivorous reading in his father's library, he declares that he learned far more than at school. His studies met the opposition of his schoolmaster, who, finding him reading Latin for pleasure, endeavored to arrest this "premature" erudition, and to restrict his pupil to the catechism and the *Vestibulum* of Comenius. This experience left its impress upon Leibnitz's educational theory, he was always strongly convinced of the folly of treating all children by the same rules and of the danger of quenching the child's natural intellectual curiosity by task-work. Leibnitz received his baccalaureate at the University of Leipzig at seventeen, next studied mathematics at Jena, and took his doctorate in law at Altdorf in 1666. A decisive epoch in his intellectual development was a residence in Paris, 1672-1676, interrupted by travel in England, at this time he came into contact with the full stream of new ideas in philosophy, mathematics, and the natural sciences. During part of the same period, he had his one experience in practical pedagogy, acting as tutor to the sixteen-year-old son of his former patron, the Baron von Boyneburg, the subsequent career of the pupil was not discreditable to the teacher. In 1676 Leibnitz took the post of councillor and librarian to the Duke of Hannover (Brunswick-Lüneburg), in this service, save for several extensive journeys, he continued till his death, forty years later. His manifold scientific interests and his endless ingenious plans for the advance-

ment of civilization — which ranged from a scheme of compromise by which he hoped to reunite Protestants and Catholics, to the invention of a calculating machine — involved him in a voluminous correspondence with over a thousand persons, including most of the important scholars, philosophers, statesmen, and sovereigns of Europe. This prodigious epistolary activity prevented him from giving any adequate connected presentation of his philosophy. Convinced of the dependence of public welfare upon the progress of science, and of the dependence of the progress of science upon cooperation and organization, he brought about under royal patronage the creation of the Society (afterwards Academy) of Sciences of Berlin, and sought to persuade Peter the Great and other monarchs to establish comprehensive institutions for research and the diffusion of knowledge.

The general philosophy of Leibnitz, one of the most involved, technical and, at first acquaintance, paradoxical in modern thought, cannot otherwise than misleadingly be set forth in brief space. The part of it most nearly pertinent to educational theory is the epistemological doctrine of the posthumous *New Essays concerning Human Understanding*, 1765 (English tr., Langley, 1896), a polemic against Locke's sensationalistic account of the origin of ideas. Other of the important philosophical writings of Leibnitz may be had in English translations by Duncan, 1890, Latta, 1898, and Montgomery, 1902.

The direct contribution of Leibnitz to educational theory is to be found chiefly in a brief work written in his twenty-first year *Methodus nova discenda docendaeque jurisprudentiae* (pub. 1667). The book is chiefly a treatise on the study of jurisprudence, but the first part of it deals with intellectual education in general. It is characteristic of Leibnitz that he defines both the process and the end of education in terms of activity, its aim is "the acquisition of a permanent readiness for action" of any desired sort (*agendi promptitudinem acquisitam permanentem*). Such acquired power of action, or *habitus*, may characterize anything capable of action, even inanimate things. The process by which it is acquired is "habituation" (*assuefactio*), or a "making accustomed" to the desired activity itself. Education is thus for Leibnitz merely the highest form of a process which is exemplified even in the inorganic, — as when by bending metal rods we accustom them to recoil in a certain way. With animal training, in particular, the training of children is closely related. "Since infants in their early years do not greatly differ from the brutes, their instructors might not unprofitably borrow something from the methods of the teachers of animals." The term *doctrina* covers the process of "habituation" in all sentient beings, animal or human, *institutio* is the special form

of it adapted to the training of the rational animal. At all its levels "habituation" depends chiefly upon two factors: the frequency (*multitudo*) of the impressions made by the practice acts, and their intensity (*magnitudo*). In teaching, the former requires very frequent reviews — not merely "annual reviews, as in the ordinary schools, but daily, weekly and monthly" as well. The latter demands that each repetition have *quamdam vim imprimendi*, i.e. a power of actually making an impression on the child. This may be gained partly by associating the matter taught with vivid sense impressions, preferably of more than one sense. Both can best be realized by a carefully graduated increase in the attainments demanded. Throughout, it is important that the acquisition of the *habitus* be made agreeable (*jucundum*), either by showing its connection with attractive ends, or "by the use of means that are themselves agreeable." That children ought so far as possible *discere ludendo*, "to learn by playing," is one of Leibnitz's most constant and characteristic contentions. Teachers must so act that the pupils "may of their own accord (*sponte*) make themselves more capable of learning." Leibnitz, therefore, recommends the use of alphabetical blocks, pictures, instructive games, and of the *Orbis pictus* of Comenius (*qv*), which pupils should be set to paint in appropriate colors. In order that the maximum instruction may be accomplished with the least possible fatigue of the pupils, only part of the day's lesson should be studied by any one child, then, "while he recites the others will, by listening, learn his portion as if at play."

The course of instruction should be divided into four periods. During the first, that of infancy, the child should learn at home the vernacular, Latin, and some history. If he talk Latin in the morning with his master and fellow pupils, "and the vernacular the rest of the day with the women and servants," it is quite possible for a knowledge of two languages to be acquired simultaneously at an early age. From his sixth to twelfth year the child should attend the public school; "let him not live too much at home, in order that he may learn to care for himself." The studies of this period include a "more special knowledge of history," mathematics, *elegantiae verborum*, and several natural sciences, together with music and various physical exercises. From twelve to eighteen the youth should have more freedom, studying, "not under preceptors, but friends," in the university. Besides learning a number of sciences, French and Italian, and enough Greek and Hebrew to enable him to read the Bible in the original, he should "declaim publicly and act in stage-plays." The fourth period, beginning at eighteen (or twenty, in the case of those who mature slowly), should be devoted to travel and the study of the life, laws, and institutions, and the indus-

trial, commercial, and agricultural methods of foreign countries. To such studious *peregrinato* Leibnitz at this time attached great importance, not only for its benefits to the individual, but also as a means of promoting international good will, and of making the special attainments of each people eventually the possession of all. Later (1696), in his *Projet de l'éducation d'un prince*, he discountsenances early foreign travel for curiously chauvinistic reasons. But the principle *discere ludendo* is still reiterated.

The educational doctrine of the *Methodus Nova* is an extraordinary production for the seventeenth century. It is remarkable not only for what it contains, but also for what it is free from. There is in it none of that use of vague analogies from the "method of Nature" characteristic of Ratke and Comenius (*qq v*). So far as it goes, the method of Leibnitz is purely psychological.

In 1711 Leibnitz wrote to a friend that he had often contemplated a new edition of the *Methodus Nova* and an amplification of the part dealing with education in general. "There are, decidedly, some thoughts in this little book which even now I do not think ill of." This project of revision was never executed. But the book was reprinted in 1748, with a preface by Chr Wolff.

A O L.

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 See also BALDWIN, J M. *Dictionary of Philosophy and Psychology*, Vol III, pt 1, pp 330-338.

**LEIGH, EDWARD** (1642-1671) — Writer on the history of religion and learning, born at Shawell in Leicestershire. He graduated B.A. from Magdalen College, Oxford, in 1620, and M.A. in 1623. He entered the Middle Temple, and in 1625 spent six months in France. In 1640 he was elected M.P. for Stafford. He was a member of the Assembly of Divines, and colonel in the Parliamentary army. In 1656 he published a *Treatise of Religion and Learning and of Religious and Learned Men*, in which he advocates the "Syncretism of Religion or of a friendly reconciliation of the different parties amongst themselves." Of learning he distinguishes three types: (1) that which draws us to itself by its own force, *e.g.* virtue, knowledge, and truth; (2) that which is desired for fruit and profit, as money; (3) that which draws us both by its force and dignity and by profit. He then proceeds to show how learning has always

been appreciated, and points out the value of learning in different professions, especially the clerical. But human knowledge is valuable for practice, not for ornament or pride. In the Scriptures are "all the treasures of natural and moral philosophy, of politics, of poetry, of history, of mathematics, of metaphysics." Leigh still favors the seven liberal arts, and also recommends the study of mathematics, the civil and canon law, and oriental languages. He gives an account of universities at home and abroad, and in the latter part of the work adds a Biographical Dictionary of famous men in religion and learning. Another work by Leigh is *Three Diatribes or Discourses, First of Travel or a Guide for Travellers into Foreign Parts, Secondly of Money and Coins, Thirdly of Measuring the Distance between Place and Place* (1671). He points out the usefulness to society at large from the journeys of travelers, and gives examples of travel for study, and its value for the advance of the knowledge of foreign languages, although he regards the "Latin tongue" as still necessary for the traveler. For Leigh's references to books on travel, see TRAVEL, EDUCATIONAL VALUE OF.

Leigh was also well known for his *System or Body of Divinity wherein the fundamentals of Religion are opened, the contrary errors refuted*, 1654. In connection with scholarship, his most important production was *Critica Sacra or Philologicall and Theologicall Observations on all the Radices or Primitive Hebrew Words of the Old Testament in Order Alphabetically* (final form published 1662). This was "the best Hebrew-English lexicon of the age" (D M Welton, *John Lightfoot, the English Hebraist*, Leipzig, 1878). F. W.

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**LEIGH, EDWARD** (1816-1889) — Educational writer and textbook author, graduated from Brown University in 1835, and three years later from the Andover Theological Seminary. For many years he was engaged in educational work in St. Louis. Author of *Illiteracy in the United States*, and readers, spellers, and other school books. W S M.

**LEIPZIG.** — See GERMANY, EDUCATION IN.

**LEIPZIG, THE ROYAL SAXON UNIVERSITY OF.** — The second oldest university in the present territory of the German Empire, having been established in 1409 by Papal Bull of Alexander V under Frederick the Quarrelsome, Landgrave of Thuringia and Margrave of Meissen, and his brother William, who welcomed the German students on their leaving the University of Prague under their professors Otto von Munsterberg and Johann Hoffmann as a result of university legislation in favor of the Bohemians. The University of Prague served in most particulars as a model. The first year

369 students were enrolled. The details of the early history of the institution are somewhat veiled in mystery, no definite information is available, for example, as to whether the university was composed from the very beginning of the four traditional faculties. Originally there were two "colleges," which served as homes of students and professors, but the student body rapidly outgrew these accommodations. By the close of the fifteenth century, Leipzig could boast of a larger attendance than any other North German university, and soon became for a time the most renowned institution of higher learning in Germany, as it is unquestionably one of the foremost universities of the world to-day. The establishment of a university in the neighboring town of Wittenberg in 1502 made serious inroads on the attendance at Leipzig, but from the close of the sixteenth century on, through the seventeenth century, the institution had a larger enrollment than any other German university. By the beginning of the sixteenth century Leipzig had become thoroughly saturated with the humanistic spirit. It was not until 1539, under the influence of Melancthon, that the principles of the Reformation carried the day, a complete reorganization being completed in the year 1559. At this time Leipzig was the wealthiest university in the land, but shortly afterwards a period of deterioration set in, which lasted for over a century, the institution being characterized by an ultraconservative spirit that looked askance at improvements and innovations. It was as a result of this spirit that Thomasius (*qv*) after his dismissal turned to Halle, and began his lectures in that city in 1690. (See HALLE, UNIVERSITY OF)

It was not until after the Napoleonic disturbances were over that significant internal reforms began to be instituted, in 1830 a complete reorganization was effected, and in the following year the erection of a new university hall furnished an important addition to the material equipment of the institution. Thirteen years later a dormitory and a lecture building were added, and soon after a period of building activity was begun which resulted in the erection of a whole series of institutes and clinics of one kind or another (for illustrated description see the *Festschrift* cited under References), of a splendid library, and of a new main building (completed in 1897), Leipzig in this respect being better equipped than most other German universities. The new *Aula* contains a colossal painting by Max Klinger, representing the development of Greek culture. For several decades large contributions have been made by the state, about three million dollars having been supplied for building purposes between 1878 and 1902. Inasmuch as the kingdom of Saxony has only one university to support, as against ten in Prussia, usually large funds are available for maintenance, the annual budget amounting to nearly one million dollars, a sum exceeded

in Germany only by the appropriations made for the University of Berlin. The library was founded in 1544 by Kaspar Borner, during whose administration as rector of the university (1539-1543) marked advances were made. The new building, which was completed at a cost of over one million dollars in 1891, contains 550,000 volumes and about 6000 Mss. The University of Leipzig is especially well supplied with institutes and departmental libraries, among which may be mentioned the Germanistic institute (11,000 volumes, Sievers), the institute for experimental psychology (Wundt), the pedagogical seminar, the physical-chemistry laboratory, and the *Institut für Kultur- und Universalgeschichte* (22,000 volumes, Lamprecht), of which the last, located in the *Haus zum goldenen Bären* (erected in 1736, and occupied by Gottsched up to the time of his death in 1767), deserves particular mention. The faculty of philosophy includes a department of agriculture with an agricultural institute, and a department of veterinary medicine with a veterinary clinic and a polyclinic.

Among prominent teachers associated with this institution mention may be made of Johann Christoph Gottsched and Christian Furchtegott Gellert in literature, Stobbe and Windscheid in jurisprudence, Cohnheim in pathology, Thiersch in surgery, Weber in anatomy, Curtius in classical, Wulker in English, and Hildebrand, Haupt, and Zarneke in Germanic philology, Wachsmuth in history, Roscher in economics, Overbeck in archaeology, Christian Hermann Weisse and Fechner in philosophy, Johannes Olarius and Julius Franz Dehtzsch in theology, Mobius in astronomy; Leuckart in zoology, and Wislicenus in chemistry. Goethe was a student at Leipzig from 1765 to 1768.

In the winter semester of 1911-12 there were 4900 matriculated students in attendance, Leipzig being the third largest university in Germany, and exceeded only by Berlin and Munich. Of these students 391 were enrolled in the faculty of theology (Protestant), 872 in law, 841 in medicine, 108 in dentistry, and 2816 in philosophy; in addition there were 925 auditors. The teaching staff consisted of 242 instructors, of whom 76 were docents. The King of Saxony is rector magnificientissimus, a rector magnificus being elected annually by the faculty.

The city of Leipzig also contains a commercial college founded in 1898 (about 500 students), a Royal Conservatory of Music, an institute for experimental pedagogy and psychology, established by the Teachers' Association of Leipzig in 1906, the library of the imperial court (159,000 volumes), a city library founded in 1677 (126,000 volumes), and a pedagogical central library founded in 1872 (over 150,000 volumes).

R. T., Jr.

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## LEISURE — See PLAY

**LELAND, CHARLES GODFREY** (1824-1903) — The American poet and author, exercised a profound influence in the movement for the introduction of the industrial arts in schools. In 1881 there was established under his direction the Public Industrial Art School of the city of Philadelphia, maintained from funds appropriated by the school board. Leland himself had charge of design, while all the other arts, modeling, painting, mosaic, pottery, carpentry, woodcarving, cabinet-making, metal work, embroidery, etc., were under the charge of, though not taught by, J. Liberty Tadd. The principle on which Leland based his experiment was that the race has developed the ornamental before the useful. Such work results in mental and moral improvement, forms the foundation for trade preparation, and, if generally introduced in all schools, public and private, would break down false notions about labor. Leland's work attracted considerable attention in America and Europe. The British Home Arts and Industries Association, of which Walter Besant (*qv*) was treasurer, was inspired by Leland's work (*Minor Arts*) and his school. Leland wrote many practical guides and manuals in various fields of industrial arts, his chief work on the general subject is his pamphlet on *Industrial Art in Schools*, contained in the *Circulars of Information* issued by the United States Bureau of Education (No 4, 1882).

**LELAND STANFORD JUNIOR UNIVERSITY, STANFORD UNIVERSITY, CAL** — A coeducational institution founded in 1885 through the gift of Mr and Mrs Leland Stanford in memory of their son. "Its object is to qualify students for personal success and direct usefulness in life." The university is located on the Palo Alto Farm in the Santa Clara Valley, thirty miles southeast of San Francisco. The grounds consist of over nine thousand acres, partly level and partly rising into the foothills of the Santa Cruz Range and overlooking the Bay of San Francisco. The central group of buildings is ranged round

two quadrangles, the one consisting of twelve, the other of fourteen buildings. The buildings of the medical department, which was established in 1908, are located in San Francisco, and are four in number, including the Lane Hospital. Fifteen units are required for entrance. A four-year course leading to the degree of Bachelor of Arts is offered. Tuition is free except in the professional courses of law and medicine. With the exception that English composition is a prescribed study in the first year for those who do not satisfy the matriculation test, the undergraduate work in all departments is elective. Students must select as their major subjects the work of some one department, and as minors some collateral work. Advanced courses are offered leading to the degree of Master of Arts, the professional degree of Engineer, Juris Doctor, Doctor of Medicine, and Doctor of Philosophy. The high school teachers' certificate is granted by state, city, and county boards of education, on the recommendation by the university, to candidates who have fulfilled the requirements of the State Board of Education. The grammar school teachers' certificate is also granted to graduates of the University on fulfilling the requirements. The University library contains 197,000 volumes, including the Hopkins Railway Library, the Thomas Welton Stanford Australasian Library, the Hildebrand Library, mainly of works as Germanic philology and literature, and the Jordan Library of Zoology, consisting of several thousand volumes and pamphlets on fishes. The Leland Stanford Junior Museum contains valuable collections of pictures, antiquities, pottery, laces, and curios. An active fraternity life has been developed among the students, many of whom live in the fraternity houses. The students enrolled in 1911-1912 numbered 1762, distributed as follows: graduates, 208, undergraduates, 1450; specials, 104, summer session, 59. Leland Stanford Junior University is one of the institutions on the accepted list of the Carnegie Foundation for the Advancement of Teaching. It has a productive fund amounting to \$21,000,000, and the income for 1910-1911 was \$886,550. The faculty consists of sixty-one professors, twenty-eight associate professors, thirty-seven assistant professors, and forty-six instructors, and one hundred and forty-seven lecturers and assistants. David Starr Jordan, Ph D, L L D, is the president.

**LELAND UNIVERSITY, NEW ORLEANS, LA** — A coeducational institution for colored students, incorporated in 1870, and owing its existence to the gifts of Mr Holbrook Chamberlain of Brooklyn College and normal departments, each with preparatory departments, music, manual training, and theological departments are maintained. A number of auxiliary schools are under the charge of the university. The entrance requirements are

## LEMBERG

equivalent to a four-year high school course. The college course leads to the degree of A B. The faculty consists of sixty-eight members. The enrollment in 1911-1912 in all departments was 1715.

**LEMBERG, THE IMPERIAL ROYAL FRANCIS UNIVERSITY OF** — This university is situated in the city of that name, the capital of the province of Galicia, Austria, and is the younger of the two Galician universities, the older being Krakow. It had its origin in a Jesuit institution, established in the second half of the seventeenth century, the original charter dating from the year 1661. It was not until almost a century later, however, that this charter received the Papal sanction, the confirmation of King August III in 1758 being followed a year later by a bull of Pope Clement XIII. In 1784 the Jesuit college was transformed into a state institution by Emperor Joseph II, the language of instruction from this time on until 1824 being Latin. In 1805 the institution was again reorganized and given the rank of a lyceum, and eleven years later it was raised by Francis I to the dignity of a university of three faculties, theology (Catholic), philosophy, and law and political science, the medical faculty not having been added until 1891. The faculty of philosophy includes a department of pharmacy. From 1824 until 1871 German was employed as the language of instruction in the faculty of philosophy and in the majority of courses given under the faculty of law. Since that time, however, a number of changes have been instituted, and at the present day Polish holds complete sway. The library of the university contains about 220,000 volumes, over 900 manuscripts, and almost 12,000 coins and medals. The annual budget amounts to approximately \$275,000. In the winter semester of 1910-1911 there were 4704 students in attendance, of whom the majority were registered in the faculty of law.

Lemberg also contains a technical school, founded in 1884, in which the language of instruction is Polish and which was attended by 1745 students in 1910-1911, a college of veterinary medicine, founded in 1881, which grants the degree of Doctor of Veterinary Medicine, and the Ossolinski National Institute, which contains a library of 130,000 volumes, especially valuable for Polish history and literature, and almost 5000 manuscripts, over 2000 maps, 22,000 coins and medals, autographs, engravings, paintings, etc.

R T, Jr.

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## LESSING, GOTTHOLD EPHRAIM

**LENOX COLLEGE, HOPKINTON, IA.** — A coeducational institution opened in 1859; it is under the care of the Presbyterian Synod of Iowa. There are maintained an academy, college of liberal arts, a school for teachers, and schools of commerce, agriculture, music, expression, and art. Two courses are offered, leading respectively to the degrees of A B and B.S. The enrollment in 1910-1911 was 138 students. The faculty numbers fifteen members.

**LEONARD AND GERTRUDE** — The title of Pestalozzi's epoch-making educational romance. See PESTALOZZI.

**LEONARDO FIBONACCI** — See FIBONACCI.

**LEONARDO OF PISA** — See FIBONACCI.

**LESSING, GOTTHOLD EPHRAIM** (1729-1781) — This German critic, dramatist, and philosopher is one of the very few men who, without becoming a teacher or a writer of educational books, have won permanent places for themselves in education. He was born at Kamentz, Saxony, and died at Wolfenbittel, Brunswick. He was the son of a Protestant minister, and was destined for the Church. He early showed ability as a student, but the attempts to give him university training, first at Leipzig and then for medicine at Wittenberg, resulted in failures, because of his growing fondness for the drama. He then decided to make literature his profession. In spite of financial limitations, many disappointments, and frequent change of residence, he became the best expression of the German *Aufklärung*, and gave the Leibnitz-Wolffian philosophy a new impulse by adding a poetical element and by turning it into effective channels of individual culture. He may be credited with having created the art of modern literary criticism, and awakened the national, literary spirit of modern Germany. His greatest work is *Laokoon, or the Limits of the Plastic Arts and Poetry* (1766). His best dramatic writing is *Minna von Barnhelm* (1767), which led the way for a distinctive German literary expression, and in more recent years has been serviceable in American schools as a reading text for students of German. While director of the national theater in Hamburg, he so presented the traits of dramatic art and so struggled for freedom from French standards in the Hamburg dramatics (1767-1769) as to arouse critical opposition to his æsthetic ideals. After being compelled to cease the religious controversy in his later years occasioned by his anonymous publication of Reimarus's *Wolfenbittel Fragments*, he employed the drama as a means of expressing his passion for freedom of thought, writing *Nathan the Wise* (1778-1779).

Lessing's influence on education was in large part directly due to his manner of conceiving and interpreting the problem of the spiritual

nature of man from the pedagogical point of view. The philosophical and religious issues of his age received profound modification because of the singular aid he brought to them from his large and bold conception of education. Education puts nothing foreign into a person, but only anticipates what each one could secure for himself. Its results cannot be attained at once, but depend upon irregular stages of development. It assumes the possibility of the moral perfection of man, which includes the ideals of rationality and freedom. These cannot be obtained by a single individual nor by a single age. Education uses for purposes of discipline and instruction the material that can be gathered only in experience. The most important problem in education is, not an arousing of emotion, but a formation of the will through a construction of a rational field of thought. As each individual appears at a certain level in the total development of humanity, he must be trained to look to the past, and not forget the task of advancing the future. Education is the orderly arrangement of the development of working ability in the pupil in conjunction with the adapted order of the topics of instruction.

God leads the human race in a way, not analogous to, but identical with, the process of the education of the individual. Tracing this educational parallelism between the race and the individual is the task of Lessing's briefest, and one of his most important books, the *Education of the Human Race* (1780). Religious dogmas he revised in the light of universal development. Religion and revelation go together, for the history of positive religion is merely the divine education of humanity. Man's actions are guided at first by instinct, reason slowly acquires direction of the will, until finally freedom appears. Education is the natural and normal process whose methods and ideals are applicable equally to the individual and to the race. The recapitulation theories which play an important rôle in the educational thinking of the nineteenth century had their sane and vigorous start in Lessing's keen analysis of the educational process and the application thereof to the phenomena of reason, religion, history, and society. E. F. B.

See *ÆSTHETICS*; *HUMANISM*, *NEO-HUMANISM*.

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**LESSON PERIOD.** — See *SCHOOL MANAGEMENT*.

**LESSON PLANS** — It is the practice of supervisors in training or practice schools to demand plans of the lessons to be taught by student-teachers or apprentices. These are written and submitted to the supervisor in advance for criticism. They vary somewhat in form, but in general they agree in calling for a statement of the special aims of the lesson, the subject matter selected for the purpose, and the pedagogical methods employed at each step of the procedure. The subject matter and the teaching procedure are frequently stated in parallel columns so as to indicate their relation in time sequence. At first only a single lesson is included within the plan, later several lessons may be included within the unit of a larger topic, thus weekly, monthly, and term plans of teaching procedure may come within a single plan. In certain schools where close supervision of teaching is provided, lesson plans extending over the wider units of time may be required of teachers in regular service.

The lesson plan is useful in assisting the young teacher to organize his work, in giving the supervisor some means of preventing avoidable mistakes and crudities, and in saving the teacher in the classroom from that diffuseness which is likely to arise in adjusting the process of instruction to the children's interests, errors, questions, and doubts. In so far as the lesson plan fixes a general procedure in the mind of the teacher and leaves the specific adaptations to be made in the classroom, it is a useful device. Overinsistence upon the writing and following of lesson plans may make the instruction formal and rigid, depriving it of that flexibility and spontaneity which are requisite in using the full resources of teacher and pupils. The application of the lesson plan in any very detailed way to the supervision of teachers in service is a doubtful procedure. A trained and experienced teacher charged with the full responsibility of class control and instruction has neither the need nor the energy for the preparation of detailed written plans. The teaching art is so much a matter of opportune presentation and interpretation of experience that a clear knowledge of the purposes of the school, a scholarly command of subject matter, and a command over the fundamental principles of teaching once acquired are about all that the professionally trained and experienced teacher requires by way of preparation. The rest is a matter of insight and inventiveness in the face of classroom situations. Frequent self-criticism and supervisory aid provide for the proper growth required from year to year. H. S.

See *TEACHERS, TRAINING OF*; *SUPERVISION OF TEACHING*.

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**LESSON, TYPES OF** — The term "lesson" is applied to the unit of teaching activity which occurs within the time assigned to a class period in the school schedule. For the purposes of administration these lessons are designated in terms of the subject matter treated, *e g* geography, reading, civics, or geometry lessons. For the pedagogical purposes of teaching and supervision, they are named after the dominant type of teaching method employed in the lesson, *e g* drill, review, examination, recitation, developmental lessons. H S

See TEACHING, TYPES OF

**LETTER METHOD** — In the teaching of reading or spelling, any method which utilizes the letter as a unit of analysis or synthesis in the treatment of the structure or sound of words is a "letter" method of teaching. Thus (1) teaching spelling or reading by spelling the letters, the alphabetic method (2) by sounding the letters, the phonetic-alphabetic method, and (3) by marking the letters and then sounding them, the diacritical method, are all species of the "letter" method. H S

See ALPHABETIC METHOD; PHONETIC METHOD; DIACRITICAL METHOD, READING, TEACHING OF, SPELLING, TEACHING OF

**LETTER-WRITING** — See EPISTOLÆ

**LETTERS AND ARMS** — The famous controversy as to the precedence of physical prowess in war, or the mental triumphs of learning and knowledge was part of the larger dispute between noble birth and personal merit. The humanists appealed to Cicero's dictum, *cedant arma togæ*. The Ingenious Gentleman, Don Quixote (pt 1, ch xxxviii Ormsby's translation, pp 212 *et seqq*), compares the student and the soldier, a favorite comparison, when the days of chivalry ripened into the Renaissance. Letters say that arms cannot be maintained without the laws laid down in military writers. Arms can equally reply that without them laws laid down in letters cannot be maintained, for states are dependent for their very existence upon their armies.

Judged by difficulties of attainment, eminence in letters may require "time, watching, hunger, nakedness, headaches, indigestions, etc." But to become a good soldier "costs a man all the student suffers, and in an incomparably higher degree, for at every step he runs the risk of losing his life." Don Quixote makes an attack on "engines of artillery" and assigns their invention to hell, for making it easy "for a base and cowardly arm to take the life of a gallant gentleman." It is clear that Don Quixote awards the palm to the soldier over the student. Mr H E Watts (*Don Quixote*, Vol II p 211 n) quotes from

Bowles the name of a work entitled *Discorso sopra la Lite delle Armie et delle Lettere* (Firenze, 1580) by Francesco Bocchi, who, like Don Quixote, decides in favor of arms. He also names a treatise entitled *Pro Equitate contra Literas Declamatio* by a Spaniard, Juan Angel González, published at Valencia in 1549. In 1576 Louis Leroy wrote a book contrasting modern and ancient knowledge, and entitles it the *Interchangeable Course or Variety of Things in the whole World, and the Concurrence of Arms and Learning, through the first and famous Nations* (translated into English by Robert Ashley in 1599). Leroy has no hesitation in awarding the palm to learning, and this was the position taken up in most of the books as the Renaissance spirit gained sway. The discussion naturally plays an important part in the books on the education of gentlemen and nobles (*q v*). Thus, Ascham (*q v*) in his *Schoolmaster* (1570) describes the whole tendency of Castiglione's *Cortegiano* (*q v*), "To join learning with comely exercises Conte Baldesar Castiglione doth trimly teach."

In 1595 William Jones translated the *Nennio or Treatise of Nobility* written by John Baptist Nenna of Bari, who was both a doctor and a knight. The author hesitates to say which is more excellent and noble, "that which doctors purchase by their learning or knights by arms." In 1598 J Keper translated the *Courtiers Academie* of Count Hannibal Romei (first published in Italian at Ferrara in 1588). In this book Romei devotes a chapter to the subject of the "Precedence of Letters and Arms, two most principall Faculties" — and decides in favour of military art, which according to the author has all the characteristics of the liberal arts, *viz* "material subject, end, and the instrument which to the end conduceth."

F W

See CHIVALRIC EDUCATION, GENTRY AND NOBLES, EDUCATION OF

**LEVELS OF DEVELOPMENT** — See GROWTH, CHILD PSYCHOLOGY; ADOLESCENCE AND YOUTH; also PLATEAU.

**LEVERETT, JOHN** (1662 – 1724). — Seventh president of Harvard College, educated at the Boston Latin School and Harvard College, graduating in 1680. He engaged first in the ministry and later in political life. He was speaker of the House in the Massachusetts Legislature and judge of the superior court of that commonwealth. He was president of Harvard College from 1708 to 1724.

W. S. M

**LEWIS, DIO** (1823 – 1886) — Author of a system of gymnastics, graduated from the Harvard Medical College (1845). He was teacher in the public schools and lecturer on physiology and physical training from 1837 to

1861, when he founded in Boston a normal school for the training of teachers of gymnastics. Author of *New Gymnastic System* (1862), and many essays on physical training.

W S M.

**LEWIS, SAMUEL** (1799 - 1854). — First state superintendent of schools of Ohio. He attended the public schools and engaged in teaching. He did pioneer work in Ohio, and, as state superintendent (1837-1843), he investigated the educational conditions of the state on horseback, visiting over three hundred schools during his first year in office. He secured the enactment of a state school fund, the privilege of loans to poor districts for the erection of schoolhouses, and the publication of a state educational journal, *Ohio School Director*, of which he was the first editor. He was one of the organizers of the Western Literary Institute (*q v*), and continued a member of the Ohio State Board of Education from the expiration of his term of office to the time of his death.

W S M.

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**LEXICONS** — See LATIN LANGUAGE AND LITERATURE IN EDUCATION, DICTIONARIES.

**LEYDEN, UNIVERSITY OF, HOLLAND.**

— One of the four royal universities of Holland, founded in 1575 to commemorate the successful end of the siege of the town by the Spaniards. Given the choice by William I of immunity from taxation or the permission to found the university, the citizens preferred to establish a "free public school and university." The institution was housed at first in the Convent of the White Nuns, part of which was rebuilt by the municipality in 1618 and is still used. "The university at once became the center and rallying point of Protestant students, Huguenots from France and Puritans from England, and attained a great reputation in Europe through the eminence of its scholars and teachers, among whom was Joseph Scaliger, Lipsius, Vossius, Hensius, Grotius, Salmasius, Boerhave, Arminius, etc. In 1807 the Leyden became a royal university of Holland, but in the Napoleonic reconstruction of 1811 it was turned into an academy of the University of France, only to be restored to its earlier position in 1815. Its present organization goes back to the Law for Higher Instruction of 1876. There are now five faculties: law, medicine, science, letters, and theology. A remarkable feature of this university, as of other Dutch universities, is the extent of academic freedom enjoyed by teachers and students. The enrollment in 1910-1911 was 1195.

See NETHERLANDS, EDUCATION IN.

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**LEYS SCHOOL, CAMBRIDGE, ENGLAND** — See GRAMMAR SCHOOLS, ENGLISH; COLLEGE, COLLEGES, ENGLISH, PUBLIC SCHOOLS.

**LIBANIUS** — A distinguished Greek sophist (*i e* teacher of rhetoric and oratory) of Antioch in the fourth century A D. He was born in 314, of one of the respected families of Antioch. His father dying when he was eleven years old, he was left to the care of his mother and her two brothers, who undertook personally to direct his education. Until he was fifteen he displayed little liking for books, but he was then seized with a passionate desire for learning, which led him in the end to seek the sophist's life. At the age of twenty-two he went to Athens, and spent four years at the university there. He opened his first school at Constantinople, where he taught with great success, but, being compelled by the intrigues of rival sophists to leave the city, he retired, first to Nicæa, then to Nicomedia. At Nicomedia he taught five years, at the end of which time he was recalled to Constantinople. In 354 he removed to Antioch. There he at first set up a private school, but soon received an official appointment, with a salary from the state. He taught at Antioch until about 394, which was probably the year of his death.

Libanius's position as "sophist of Antioch" (the title given him by John Chrysostom) was one of great importance in the city, and carried with it much personal influence. The school of which he was head consisted of himself, at least four "rhetors" (probably teachers of the more elementary or technical, or of the more practical, as distinguished from the more literary, part of oratory), one or more "grammarians," or teachers of literature, and, at one time, a teacher of Latin, and possibly a teacher of law. Either by appointment or through his personal influence, he acted as Director of the whole school and university system of Antioch, subject, of course, to the direction of the municipal council and the emperor. He was the mouthpiece of council and teachers in their dealings with each other, and at times made the selection of new teachers, and determined, in some degree, the amounts of their salaries. Libanius's pupils came from all parts of Asia, as well as from other parts of the Greek world. They went forth from his school into nearly every walk of life. Though firm in his adherence to the old faith, he numbered among his friends pagans and Christians alike. He had great influence with all ranks of officials, and was ever ready to advance the

interests of his fellow citizens and of his city. He was admitted to the intimacy of the Emperor Julian, by whom he was greatly admired, and whose untimely death he bitterly lamented.

Libanius has left us a considerable body of writings. They are sixty-four speeches, including an autobiography, about fifty declamations, a large mass of rhetorical and school exercises, such as descriptions, character sketches, narratives, together with arguments to the speeches of Demosthenes, and over fifteen hundred letters, addressed to all classes and kinds of men. The speeches are on topics and events of the day, and they abound in autobiographi-

cal notices and in references to the life of the times. A like interest attaches to the letters, which are invaluable for a depiction of Libanius's character and for information about the men and the manners of the day.

The best edition of Libanius is that of Richard Forster, which is still in course of publication and of which six volumes have been published to date (1903-1911, Teubner, Leipzig).

J. W. H. W.

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WITH THE ASSISTANCE OF DEPARTMENTAL EDITORS

AND

MORE THAN ONE THOUSAND INDIVIDUAL CONTRIBUTORS

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# A CYCLOPEDIA OF EDUCATION (4)

**LIBERAL ARTS** — A term used in contradistinction to the fine arts on the one hand and the technical and practical arts on the other (for the former, see **ART IN THE SCHOOLS**, etc., for the latter see **INDUSTRIAL EDUCATION** and **TECHNICAL EDUCATION**) The liberal arts have constituted from the time of the Greeks the curriculum of secondary and higher schools. The function of the liberal arts in education is discussed in the aspects in **ART IN EDUCATION**, **COURSE OF STUDY**, **THEORY OF**, and **LIBERAL EDUCATION**. The other aspects of greatest educational interest of the liberal arts concerns their organization into a curriculum and the development of scholastic degrees in connection with them.

During the Middle Ages the liberal arts were organized into a distinctive curriculum, including seven of the arts only. The "Seven Liberal Arts" included substantially all learning. These subjects comprise grammar, rhetoric, and dialectic, also called the trivium, and arithmetic, geometry, astronomy, and music, also called the quadrivium. The distinction between the lower and higher groups of subjects goes back to Plato, who found in music and gymnastics, the traditional Greek curriculum, sufficient material for the earliest stages of education, but organized an advanced stage in which the appropriate subjects were arithmetic, geometry, music, and astronomy. Dialectic or philosophy was recognized as a yet higher stage, appropriate only for the intellectual class. Aristotle's treatment of the curriculum is incomplete, and does not include discussion of the advanced stages. He adds reading, writing, and drawing to the traditional music and gymnastics of the old Greek curriculum. It is evident that he would add some study of the natural sciences to the advanced subjects. These were called the liberal subjects. The sophists and rhetors laid especial emphasis on the three introductory subjects, grammar, rhetoric, and dialectic, using dialectic to indicate logic, now scientifically formulated by Aristotle and no longer the general philosophical study of Plato. The Romans borrowed the Greek organization of learning, making it more systematic. M. T. Varro, a contemporary of Cicero and Cæsar, wrote a treatise, now lost, on *The Nine Liberal Disciplines*. To the seven of later authority were added medicine and architecture. Quintilian and Seneca wrote on these subjects,

but assigned no definite number of studies to an approved curriculum. During the fourth century Martianus Capella (*qv*) wrote the *Marriage of Philology and Mercury*, in which for the first time the arts appear authoritatively as seven. The arts represent the bridesmaids in a heavenly wedding, and on the ground of their mundane characters medicine and architecture are omitted. At about the same period Augustine wrote a treatise on six of the liberal arts, omitting astronomy and possibly other subjects because of other work and interests.

Probably Cassiodorus (*qv*) (480-575) was the first to assign the limit of seven as authoritative. This he did in his treatise *De Artibus et Disciplinis Liberalium Literarum*, which formed a companion piece to a work on sacred literature, both written for his monastic brethren. Here the seven pillars of the temple of Wisdom referred to in Proverbs (ix, 1) is given as conclusive evidence of the fixity of the curriculum. Thus, as the Roman had absorbed the Greek, so the Christian accepts the Roman organization of learning. Isidore of Seville (*qv*), who comes shortly after, limits the subjects to seven and uses the terms *trivium* and *quadrivium*. Succeeding medieval writers indicate that the terms are fixed. Many of the great monastic leaders, later the schoolmen, and in fact all who wrote on education, give treatises on all or some of the seven liberal arts. Especially is this true of the earlier periods, with such as Alcuin (*qv*), Rabanus Maurus (*qv*), with whom as with the later schoolmen, interest was more intense in philosophical and dialectic discussions. Painting, sculpture, and engraving add their testimony to the universality of this organization of learning even after the Renaissance brought that wider interest in knowledge which finally resulted in the overthrow of the fixed restricted conception of the limits and divisions of learning. Yet it must not be understood that the content of these various subjects was the same as in modern times. For the most part the extent of these subjects was far broader, even if the content of some of them was not so profound.

**Grammar.** — This subject included the study of literature as well as that of the grammatical structure of languages. Quintilian says of the subject (I, 4) "This profession, distinguished, as it is, into two parts, the art of speaking cor-

rectly, and the illustration of the poets, carries more beneath the surface than it shows on its front." The same conception prevailed with the later Greeks Dionysius Thrax (c 166 B.C.) divided grammar into six parts: "(1) trained reading, with due regard to prosody, (2) exposition, according to poetic figures, (3) ready statement of dialectic peculiarities and illusions; (4) discovery of etymologies, (5) accurate account of analogies, (6) criticism of poetical productions, which is the noblest part of the grammatical art." The medieval definitions are quite as broad. Isidore defines grammar as "the science of correct speaking and of the sources and foundations of literature"; Rabanus Maurus, as "the science of interpreting the poets and histories and the method of correct writing and speaking."

Grammar was thus equivalent to our term "language and literature," and as such monopolized the attention of students during the early half of the Middle Ages and formed a broad foundation for the elaborated curriculum of the later Middle Ages.

The purpose of grammatical instruction was first, then, to give the student a working knowledge of the Latin language. To do this to those who had no vernacular training, since Latin had now become a "dead" language, or at least a foreign tongue, with few books for the students, was a new task. As aids to this new educational problem a great variety of texts were produced. Donatus (*q.v.*) still furnished the foundation. But a number of compilations of proverbs, fables, dialogues, or colloquies were produced to give a reader command through inductive methods. The so-called Cato's *Distichs* (*q.v.*), a series of 143 couplets or moral maxims, formed the most popular. Memorizing of these gave a vocabulary and a working knowledge. Other grammars supplemented those of Donatus and the more elaborate one of Priscian. (See LATIN LANGUAGE.) Some of these were component parts of encyclopedic works on the Seven Liberal Arts, such as those of Capella, Cassiodorus, Augustine, Isidore of Seville, Alcuin, and Rabanus Maurus. Each century, however, produced a number of independent treatises on Latin grammar, most of them introductory texts, more appropriate to the task of introducing the pupil into a foreign tongue in an age when general culture was at a minimum and books and other ordinary means of instruction were scarce. The most noted of all these texts was the *Doctrinale* of Alexander de Villedieu (*q.v.*), written in 1199. Its most striking characteristic was that it was written entirely in verse. When the method of introductory grammatical study was wholly by memorizing, such a text had great advantages. It became very popular, almost replacing the other text and rivaling Donatus. The *Doctrinale* embodied many of the changes which the language had undergone in the period intervening since

Priscian's work, incorporated a vocabulary more necessary to the Church, and adopted methods more in harmony with the dominant dialectic interests. Other popular texts, such as Bethune's *Græcismus*, were also in verse. In addition to the grammars, numerous vocabularies appeared in the various vernaculars to assist the grammar student.

The extent to which the study of grammar introduced to a knowledge of literature is much disputed. Priscian quotes the *Æneid* of Vergil more than 700 times in his grammar. Aristophanes, Aristotle, Julius Cæsar, Cicero, Demosthenes, Herodotus, Homer, Horace, Juvenal, Lucretius, Ovid, Sallust, Terence, and other writers are also quoted, some of them more than a hundred times. Naturally none of the later texts contained anything like this amount of literary material. But a thorough study of Priscian would give a fair introduction to some of the Latin authors. To what extent the authors themselves were read is even a more disputed question. Whatever the facts may be, it is evident from recent investigation, that the old opinion concerning the ignorance of the Middle Ages must be revised to a very considerable degree. Theodulphus, Bishop of Orleans and successor of Alcuin, states that he actually taught from Vergil, Ovid, Pompeius, Sedulius, Rutilius, Arator, Fortunatus, Juvenius, Prudentius. A century later Walter von Spier comprised in his grammatical studies Vergil, the Latin Homer, Horace, Persius, Juvenal, Statius, Terence, Lactantius, Boethius, and Constantine. Such lists could be extended indefinitely. Students from various centuries have left testimony as to literary activities quite as extensive. It is but natural that the Christian authors should predominate. But a knowledge of classic literature was not extinct.

**Rhetoric** — This formed the most important subject of study in Roman education, but during the Middle Ages it was the least important of the subjects of the trivium. Rhetorical training was essential in a society where political interests were dominant, but it had little significance in the training of the clergy or the men of public affairs during the Middle Ages, for church services called for little or no oratorical power, and public affairs developed no learned or trained class aside from the clergy. Rabanus Maurus states in his treatise on rhetoric, "It is sufficient if youths give some attention to the study of rhetoric. Even then not all who expect to enter the priesthood, but only those who are not as yet obliged to devote their time to pursuits of greater usefulness, should study the subject. At any rate one who wishes to acquire the art of eloquence can do so more advantageously by reading and hearing great orators than by studying the rules of rhetoric." But there was a general need in an uncultured society for a professional class that could write and compose the various docu-

ments necessary in the complicated ecclesiastical, legal, and political life of the times

The study of rhetoric then became directed to two objects: training in composing letters to various people in authority and in constructing various documents such as contracts, wills, decrees, deeds, commendations, immunities, or records of any kind. The first was known as *Epistolæ*, the second as *Dictamen* (*qv*). While the various encyclopedic texts, based largely on the old Roman writers, such as those of Cassiodorus, Capella, Isidore, and Rabanus Maurus, continued to be used to some extent, far more popular were the various textbooks prepared on *Epistolæ* and *Dictamen*. The former texts dealt in a formal way with the superscription, salutation, exordium, narration, petition, conclusion, and subscription; the latter contain models for the various kinds of documents needed in temporal and ecclesiastical affairs and in common life, such as privileges, commissions, citations, donations, petitions, exemptions, visitations, etc. Many manuscripts left are the dictation of teachers or the exercise work of scholars, and it is now thought that frequent instances of this character were but recently held to be pious forgeries of designing ecclesiastics. With the founding of the universities the study of rhetoric merged into the study of Roman law, into which the *Dictamen* developed. In some universities, courses in the *Ars epistolandi* were also given.

**Logic** — This subject was identical with dialectic, but though closely bound up with philosophy and metaphysics, did not include them as a school subject. Especially during the early Middle Ages were metaphysical and philosophical interests quite foreign. With the development of theological interests in the eleventh century, metaphysical distinctions and philosophical doctrines became of great importance; but it was only with the development of the universities and the recovery of the work of Aristotle that philosophy was added as a distinct part of the curriculum. The writings of Boethius (*qv*) were the sources from which the early Middle Ages drew its knowledge of logic. While with Boethius the metaphysical and philosophical implication and the relation of logic receive the greatest attention, it was his formal logic that was drawn upon for textbook purposes. Similarly Cassiodorus, Capella, Isidore, and Alcuin furnished in their encyclopedic treatises text for common use. But these again dealt almost exclusively with formal logic. With the rise of the theological discussion following Rabanus Maurus and Scotus Erigena, logic became of transcendental importance, was generally mentioned second in the trivial studies, and in reality replaced grammar and its inclusive though superficial study of literature.

While from now to the close of the Middle Ages logic was the subject of greatest importance because it became bound up with all

other aspects of study and all phases of intellectual interest, yet as one of the Seven Liberal Arts studied in the schools and the universities it was formal logic alone. Logical metaphysics was reserved as a part and function of theology. Both during and preceding the university period numerous brief school texts on formal logic appeared. By far the most famous of these was the one by Petrus Hispanus (d. 1277), which was very generally used for 300 years.

**Arithmetic** — The church was interested in the study of arithmetic, astronomy, and music, the major portion of the quadrivium, as well as in the study of the trivium. The standard encyclopedic texts of Boethius, Cassiodorus, Isidore, Alcuin, Rabanus were the basis for the study of arithmetic. While following this period numerous treatises and textbooks on arithmetic were produced, there was really no creative work and no advance made in the subject until the thirteenth century. At this time the algoristic or Arabic notation came into general use. The chief practical arithmetical interest was in the calculation of Easter. The works of Bede and of Rabanus Maurus were the chief treatises. The ordinary monk or priest, by the use of Bede's rules, could compute Easter with a knowledge of the four fundamental processes. Numerous church synods required this much arithmetical knowledge of all priests, and after the time of Charlemagne this knowledge was fairly general. To such an extent did the computation of Easter, and one other practical problem — the use of the abacus (*qv*) — make up the whole of arithmetic, that the ordinary term for the subject was *computus*. But the older texts, based upon Boethius, hardly touched the practical aspect of the subject. They scarcely have a reference to a rule of operation. They are devoted for the most part to a classification of numbers, a study of their properties, mystical, symbolical, and otherwise. Bede and Rabanus depart from this, later minor textbook rules follow them, and in the last centuries of the Middle Ages a great variety of texts appeared. The advance in arithmetic dates from Gerbert (*qv*), later Pope Sylvester, to whom is attributed by some the introduction of the Arabic notation. Without question he introduced the columnal computation and the methods of fundamental operation substantially as they are to-day. The introduction of the Arabic notation was very gradual, and its general acceptance was the work of the thirteenth and following centuries. Boethius persisted as a text into the sixteenth century. From the opening of the thirteenth century, arithmetic found new utilization in commerce and industry, and there were two distinct types of arithmetical texts corresponding to the two types of mathematical interests, — the theoretical and the practical. In fact, these aspects appeared as two distinct subjects, *arithmetica* and *algo-*

**rismus.** The former was encouraged in the universities, though some, such as Paris, gave little or no attention to arithmetic. In some institutions, as Vienna and Leipzig, both subjects received attention (See ARITHMETIC; ALGORISM; COMPUTUS; NOTATION).

**Geometry.** — The course followed by geometry was much the same as in the case of arithmetic. In the early third of the Middle Ages it was studied exclusively from the encyclopedic texts, though the treatise of Boethius seems to have been unknown. The scope of the subject, however, was that indicated by the etymological significance of the term. It corresponded to modern ideas of geography plus the rudiments of surveying. It was based on Pliny rather than upon Euclid. Capella adds some treatment of lines, circles, triangles, chiefly of their symbolic meaning. Rabanus writes *On the Universe* as a treatise in geometry. With Gerbert in the tenth century, a knowledge of Boethius's summary of Euclid was again brought to light. In extent it was limited to the first four books of Euclid, with full demonstrations of only three or four propositions. From the thirteenth century on, beginning with translations from Arabian sources, the subject rapidly expanded.

**Astronomy.** — In the quadrivium this was the most popular as well as the most practical subject. Its practical use in the calculation of the calendar and in the construction of the sundial gave it a greater everyday value than arithmetic, with which it was closely bound up. Its general aspect was astrology, which was of far more practical concern to the common man than modern mathematical astronomy. In fact, astrology was related most intimately to every aspect of everyday life, and as such was a study of utmost practical concern. Whether astronomy or astrology, it was the same symbolical and mystical interpretation of phenomena that so characterized all of the theoretical study of that period. In addition to the symbolical material, the ordinary texts included the elements of mathematical geography to about the same extent that a modern school geography does, making allowance for the difference in actual scientific knowledge. Such texts were those of the encyclopedists Capella, Cassiodorus, Isidore, Alcuin, and Rabanus. Bede's work was more comprehensive. In the early university period translations of Ptolemy and of Aristotle *On the Heavens* were introduced and widely used. Elementary texts, especially that of the English monk, Sacrobosco (thirteenth century), appeared and were widely used. The general interests in and the character of teaching of astronomy in the later Middle Ages were such as to afford an excellent foundation for the rapid advance made in the Renaissance period. (See ASTROLOGY; ASTRONOMY.)

**Music** — As one of the Seven Liberal Arts, music had little in common with our

modern idea of music. It consisted of the mathematical study of music, together with mystical and symbolic study of numbers after the Pythagorean ideas. It concerned itself neither with singing nor with ability to perform on an instrument. There was some practical study of music, made necessary by the church services; but this was not a liberal art, and the development of secular and folk music did not begin until late in the medieval period. As long as the Greek ideas of music prevailed, — and this was for the greater part of the Middle Ages, — there was no escape from these conditions. Boethius was the standard text, as he continued to be in the universities down into late modern times. Cassiodorus, Isidore, and other encyclopedic texts were used, but they were for the most part condensations of Boethius. Music in this sense was a part of the regular university course, and also appeared very generally in monastic and cathedral schools throughout the Middle Ages.

The later historical aspect of the arts curriculum is considered in the articles on each of the subjects mentioned; UNIVERSITIES; COLLEGE, COLLEGE, AMERICAN, incidentally in the articles on DEGREES and related topics. See also the cross references given under MIDDLE AGES, EDUCATION IN.

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**LIBERAL EDUCATION** — The conception of liberal education dates from Aristotle. He distinguished sharply between a liberal education, an end in itself, and a mechanical or professional training, a means for practical ends beyond itself. The chief traits of a liberal education were its association with leisure and its exclusive connection with the faculty of knowing. These two traits were necessarily combined with each other. Slaves, serfs, mechanics, tradesmen, were too much occupied with practical matters to have the leisure requisite for devotion to knowing for its own sake. Only a leisure class was in a situation to devote itself to the cultivation of the mind for the sake of the mind. Even in theoretical matters, however, excessive assiduity evinced an illiberal spirit. The chief material of a liberal education was music (in the Greek sense). The question how far practice was necessary was decided by applying the criterion suggested



above. If skill in doing became the chief end, the study was illiberal. Practice for the sake of doing should be relegated to the servile, unfree class of artisans. In a liberal education that amount of practice should be permitted which would promote the understanding and enjoyment of the arts as practiced by others.

The distinction between liberal and servile education was thus based by Aristotle upon the distinction of classes upon which Greek society was founded. Practice and education for practice were essentially illiberal because pursued by persons who were not free themselves or, who if legally free, were so given up to the narrow ends of money making, etc., as to have no interest in the exercise of the knowing faculties for their own sake. This exercise was the appropriate and congenial function for those whose social station relieved them from all menial preoccupations.

The distinction between the free character of knowing and the sub-servient character of doing which underlay the Aristotelian definition of a liberal education was also associated with several points in his metaphysical and ethical system. Pure knowing, concerned only with the rational relations of immaterial forms, was, according to Aristotle, the highest thing in the universe. It was the final cause of the existence of nature, the supreme end and good. It defined the nature of God as pure activity. It dealt with the reason, the explanation of all else, and was complete in itself — just as a syllogism is self-inclosed, needing no help from outside. In contrast, doing or practice sprang from appetites, which are bodily, not ideal — expressed needs, lack, incompleteness, imperfection, and in general was due to man's share in the animal, not the divine nature. The highest, the freest, or most liberal of all pursuits was a theoretical contemplation and inquiry which were *supra-civic*.

Aristotle's distinction became basic in all later definitions and classifications of education. It took specific effect in the conception of the seven liberal arts (*q v*). His assertion of the supremacy and divinity of the purely theoretical life was employed in the middle ages to justify theology as the supreme study, and to place the monastic life above not only secular careers but above that of the parish clergy — the latter being devoted to necessary practices and not to the exclusive cultivation of divine knowledge.

At the time of the revival of learning, however, the domination of theology and allied concerns was taken as a symptom of a professional education, that preparing for the clergy. Liberal education was identified with the humanistic studies, a knowledge of classic antiquity and the Greek and Latin literatures. Although the older classification of the seven liberal arts survived, these arts — such as grammar, rhetoric, logic — were identified, not with "sacred" grammar and rhetoric

and with the logic which was a handmaiden of theology, but with that of classic literatures. However, the interest in the content of these literatures tended, while reviving the idea of liberal education, to relegate its conventional divisions to the background.

In the eighteenth century the rise of natural science began to disturb the now orthodox identification of the liberal with the ancient languages. Pure mathematics was unambiguously taken in the fold, the other sciences were left as doubtful claimants. In the nineteenth century the further development of literature and philosophy in the vernacular tongues of Europe gave the living languages a claim for recognition as elements in liberal education. The growth of history and the social disciplines perturbed the content of the idea still further. Liberal education had claimed to be the peculiar representative of man as man, of human interests as such; and history, anthropology, political economy, and sociology seemed to concern themselves with humanity even more directly than did the classic literatures.

As a consequence of such causes, practically all attempt to define a liberal education by some principle of content has been given up, though it is still generally felt that Greek, Latin, and mathematics, at least from algebra through calculus, are peculiarly liberal in character. The attempt is now made to define it from the standpoint of aim, or of a peculiar, if intangible, influence it exercises upon those devoted to it. This end and effect are more easily stated from the negative side than from the positive side. Some would call it scholarship and would say that higher education, as distinctly representing the liberal interest in education, should be given to the promotion of scholarship. Among those representing this idea there is, however, a marked difference of attitude. Some would include research and discovery in the province of scholarship, while others would exclude them as specialized and technical. Many deny the claim of scholarship to represent the cause of liberal education and would substitute a specific refining and ennobling of the mind known as culture. However, the status of various subjects with respect to their power to bestow culture is involved in much uncertainty and polemic discussion. Negatively, the conventional idea of a liberal education is more easily made out. It excludes education designed to prepare one for any special calling, particularly if this calling is closely associated with money making, or if preparation for it involves much manual manipulation and dexterity — such as the laboratory pursuits of a technological education. Latterly, it has been held by professed upholders of the cause of liberal education that it is opposed to education for social service. This notion, however, is mainly an American innovation. Historically, the chief pursuit of the leisure class has been statecraft and diplomacy. One of the leading marks of lib-

eral studies was that it prepared men for managing the state, including the lower classes. In the United States, with the development of democracy, the notion of a special ruling class with a special education fitting it for social control has disappeared. Accordingly education for social service is no longer education for directing the affairs of other people, but for contributing to their happiness and well-being. Such a conception would lie in the physician and the engineer. Consequently it is too broad for the purposes of the traditional notion of liberal education.

The fact is that in a society which frankly bases its constitution upon class distinctions, it is comparatively easy to assign a distinct content and a distinct purpose to liberal education. With the growth of social studies, of the democratic ideal, and the increased application of the best scientific intelligence to the conduct of practical affairs, it becomes increasingly difficult to do so. Liberal education becomes a name for the sort of education that every member of the community should have: the education that will liberate his capacities and thereby contribute both to his own happiness and his social usefulness. It has value as a limiting concept to criticize various educational schemes. Thus an education in Latin and Greek may be quite illiberal if pursued by methods which restrict the play of the imagination and the sympathies, and bind down mental appreciations to one limited sphere. The same is obviously the case with education for law, medicine, engineering, or the clergy. In short a liberal education is one that liberalizes. Theoretically any type of education may do this. As matter of fact, all of them fall much short of accomplishing it, some in one respect and some in another. In so far they fall short of being an education in any worthy sense of the word. J D

See ACTIVITY; CULTURE, HUMANISM, LIBERAL ARTS.

**LIBERIA, EDUCATION IN** — Liberia is an independent negro republic under the control of black men, and has maintained its sovereignty for sixty-four years. It extends 350 miles along the coast of West Africa and 200 miles into the interior, and possesses thirteen ports of entry. The population is above one and a half million, of whom 25,000 are emigrants from the United States and their descendants. Planted by the American Colonization Society in 1817, Liberia declared its independence in 1847. In language and institutions the leading people are strongly attached to the United States.

The American-Liberians exercise ever increasing authority over the aboriginal tribes, which, however, are dominated by several native chiefs. A strip of land twenty to eighty miles broad extending along the Atlantic coast is effectively administered by the govern-

ment, which is modeled on that of the United States. The coast region is divided into four counties, Bassa, Sino, and Maryland, each under a government superintendent, and Montserrado, which is subdivided into four districts, each under a superintendent. This local organization has facilitated the progress of public education. The government system is based upon an act of 1869 providing for the maintenance of at least one public school in every settlement and township in each county. The act called for an annual appropriation of one thousand dollars from each county treasury to be applied to the support of public schools, and the levy of local taxes for the same purpose. By a second act of the same year the legislature created an Interior Department charged among other duties with the educational interests of the republic. A supplementary law provided for the appointment of a commissioner of education in each county, subject to the Secretary of the Interior. Prior to 1869 missionary societies had been actively engaged in efforts for the instruction and elevation of the people of Liberia, and the two principal church associations represented in the field, the Methodist Episcopal Church of the United States and the American Protestant Episcopal Church, had already made great progress in establishing schools when the government system was inaugurated.

In 1900, or thirty-one years after the passage of the first education act, the government was excited to new effort in this matter, and the legislature provided for the appointment of a superintendent of public instruction charged with the immediate direction of public schools throughout the country. Specific regulations were at once issued for the guidance of teachers and local school officers. The provision for a local school tax had proved futile, and the legislature assumed the support of the public schools by an annual appropriation.

As to the actual provision of schools in this republic, the latest reports give the following particulars. The Methodist Episcopal Church maintains schools in every county, having a little more than a thousand pupils on their rolls, including aborigines and Americo-Liberians. The former comprise about 57 per cent of the total number, and their ratio is steadily increasing. The central school of this system is the College of West Africa, located at Monrovia. It was founded in 1839, and accommodates about a hundred students in the several departments, theological, collegiate, and preparatory. Special provision is made for industrial training. Many of the leading men and women of the country, including a large number of efficient teachers, were educated in this institution. The Protestant Episcopal Church maintains many schools, which center about four principal institutions, namely, Epiphany Hall, at Cuttington, Cape Palmas, comprising a high

school, collegiate department, and divinity school, a girls' school and orphan asylum at Mount Vaughan, near Cape Palmas, St John's School, for boys, at Cape Mount, and a school for girls at Clay-Ashland. The latest statistics show a total of fifty schools in this system, of which twenty-seven were for day pupils only and twenty-three boarding schools. The enrollment in the schools in 1905 was about 1500, of which number 74 per cent were native Liberians. The schools of this system are under the close supervision of a resident bishop. The average annual salary of the teachers ranges from \$150 to \$300, which exceeds the average in other mission schools. The Lutheran Church also maintains a few schools among the native Africans at the Muhlenberg station.

The government school system in each county is under the direction of a local school commissioner. The latest statistics give a total of 102 schools, each under a single teacher, and a total enrollment of 3320 pupils, of whom about one fourth are aborigines.

The chief national institution is Liberia College at Monrovia. The institution was founded by the efforts of the Massachusetts Colonization Society, and was placed under the control of two boards of trustees, one representing the society and the other the legislature of Liberia. The college building was furnished by the Boston board at a cost of \$20,000. Liberia gave the twenty acres which form the campus of the college and a grant of 1000 acres of land in each of the four counties of Liberia as an endowment. The college was opened for students in 1862, and after varying fortunes passed to the sole control of the republic in 1890. Since 1900 the income of the college from public sources (taxes and endowment) has averaged about \$25,000, annually, and additional funds are also supplied from America. The college has the benefit of several public scholarships endowed in the names of men who have rendered unusual service to the country. The latest statistics show a registration of 120 students, including both young men and young women, and a corps of twelve instructors. The college is the alma mater of the most prominent citizens of the country, among the number being the former chief executive, Honorable Arthur Barclay.

Industrial education is a feature of both denominational systems. At the White Plains' school and the Sinoe River Industrial School, sustained by the Methodist Episcopal Church, students are taught building, woodwork, masonry, brickmaking, farming, and the cultivation of cotton, ginger, and rubber. The College of West Africa has a printing department, in which job work is done, and the *Liberia and West Africa* and other papers are printed. Most of the work is done by native Africans. In the college proper the girls are trained also in domestic economy, housekeeping, dress-

making, fancy work, and kindred arts. In the Protestant Episcopal schools industrial training is given at the four chief centers of education. At Epiphany Hall students are taught the cultivation of coffee, cotton, and rubber, at St John's School, Cape Mount, there is an agricultural department, in which rice is raised with success, and efforts are being made to secure facilities for teaching other industrial arts. A beginning has been made in industrial training in the public schools. At Rick's Institute, at Kai-Poo, the work consists chiefly of the cultivation of coffee, and the farm yielded 3000 pounds in 1902, 1600 in 1903, and 1400 in 1904. An excellent printing department has been fitted up at Liberia College, and other industrial work is being gradually introduced.

The American Colonization Society has aided schools in Liberia from time to time, in particular the school at Mt Coffee, forty miles from Monrovia. This school has been the especial charge of the Mt Coffee Association of America, of which Dr Edward Everett Hale was an interested and active member. The Colonization Society, as trustee for a fund left for schools by a Mr Graham, supports two schools, which bear his name. Graham School, No 1, is located at Greenville, Sinoe County; reports from teachers beginning with the year 1905, and ending with Mar 31, 1911, show the total attendance of scholars to have been 1261, Liberian boys and girls, 993, native boys and girls, 268. Graham School, No 3, is located at Royesville, Montserrado County, the report of the teacher for the five years ending Mar 31, 1911, shows the total attendance of scholars to be 447, Liberian boys and girls, 243, and native boys and girls, 204. The present President, Daniel Edward Howard (inaugurated Jan 1, 1912), is emphasizing the needs of improving the public school system, of agricultural education, and of Liberia College. I M C

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#### LIBERTY COLLEGE, GLASGOW, KY —

An institution for the higher education of women, founded in 1874. In 1911 there was amalgamated with it the Florence University for Women, Florence, Ala. Preparatory, collegiate, normal, commercial, music, art, and domestic science departments are maintained. The entrance requirements are equivalent to about three years of high school work. The degrees of B A, B S, B C, and M A are conferred.

**LIBRARIES — Historical —** *Babylon and Assyria* — The temples of the ancient cities

which lie between the Tigris and Euphrates, such as Telloh, Nippur, Sippar, Borsippa, and Nineveh, were administrative and literary centers as well as the shrines of gods. From ten to thirty thousand inscribed clay tablets in each temple preserved official record of battles and of the divinations which foretold success or failure. There were also treaties, petitions, diplomatic letters, laws, deeds, and church rituals. These constituted royal or national libraries, presided over by Nebo the god of learning, and under the care of the king-priest or a high official.

Later when Hammurabi (c. B.C. 2200) became chief ruler in Babylonia, Mardik was advanced to be the head of all gods, and Babylon became the center of records and learning. Hammurabi's famous laws were cut into the wall of the temple. These records and others were brought together by Ashurbanipal (B.C. 671-626) at Nineveh when he became King of Assyria. Copies of inscriptions on monuments of victories and of all national legends were here recorded on clay tablets and cylinders. These were arranged by classes, were catalogued, and indexed by title. Many of those which describe divinations had excellent drawings to illustrate the text. A century later (Ezra v, 17) Darius ordered a search to be made in the hall of books at Babylon for a decree regarding the house of God at Jerusalem.

The temples were great schools, and popular, because preferment, as in the Middle Ages, came through the priestly office. The libraries had many easy texts and vocabularies for boys to study. Ashurbanipal says that he had studied at the temple, probably as a youth.

*Egypt* -- At El-Amarna, the Egyptian capital of the Pharaoh Akhuateon, who tried to uplift religion and free art from convention, much of the national library has been found, composed chiefly of correspondence with provinces and with kings in Western Asia. These archives were in charge of Tetou-nou, an Egyptian, whose assistant was Shamas-Niki, a Babylonian. The hieroglyphic writings of Egypt never supplanted the cuneiform of Babylonia as the language of culture and diplomacy, and Shamas-Niki must have been indispensable. The papyrus plant which furnished food, fuel, and clothing for Egypt became the fragile medium for perpetuating her writings, until parchment or prepared skins came into use. There were many papyrus collections in Egypt (see Richardson's *Some Old Egyptian Libraries*, 1911); but the great library at Alexandria grew up under foreign influences, the product of one of many long periods of foreign domination of the Nile valley.

*Greece* -- Greece left records of books, book selling, and schools, but little of libraries. Demetrius Phalerus, poet and orator, honored with as many statues as there are days in the year, fled to Alexandria, and there advised Ptolemy in his plans for a great library, al-

though Aristotle is said to have aided in the arrangement. Aristotle's own library (*Stabo* XIII, 1, § 54) passed to Theophrastus and from him to Neleus of Scepsis, where it lay hidden to escape the rapacious bibliophile kings of Pergamum until bought by Apellicon of Athens. Sulla the dictator and book-lover carried the collection to Rome to have its texts copied and spread abroad.

From Ephesus, where, we are told, there was a book chained to the door of Diana's temple, came Zenodotus (B.C. 280) to manage the Alexandrian library, to walk in its colonnades with peripatetic teachers, and to dine in rooms set apart for its students. This was the mother library, distinguished thus from the daughter library in the temple of Serapis. The older collection was in part destroyed by Cæsar, but Antony gave 200,000 manuscripts of Pergamum to Cleopatra for the Serapeum. Of this great library fleeting and uncertain glimpses appear in 391, when Theodosius ordered its destruction, a generation later when Orosius says that he saw ancient books in Alexandria, and in 640, when Amrou, the great caliph Omar's lieutenant, is said to have used the remnant for fuel.

*Rome* -- M. Terentius Vairo, author of a work entitled *De Bibliothecis*, now lost, was commissioned by Julius Cæsar to collect books for a library. Under succeeding Cæsars Rome became a city of libraries, to which students of the many schools of oratory and philosophy resorted. Telephus, a grammarian of Pergamum in A.D. 117, is said by Suidas to have issued a *Notitia librorum* which described minutely the libraries of his time. Forty years earlier Crates, ambassador from Pergamum, probably stimulated an interest in libraries while lecturing on grammar at Rome. C. Asinius Pollio, the general, poet, and friend of Vergil and Horace, founded the first library in Rome from spoils of his Illyrian campaign, B.C. 39. Pliny calls him "the first to make men's talents public property," but Plutarch claims this honor for Lucullus.

The Porticus Octaviæ, a typical Roman library between the Capitoline Hill and the Tiber, was founded by Augustus. It has temples to Juno and Jupiter, connected in the rear by a long schola, or hall for conversation. A space of equal length behind the schola had three divisions: a middle section, the curia, devoted to meetings, with the Latin library at the left and the Greek library at the right. About this compact building there was a double colonnade 443 feet by 377 feet, to provide, as at Alexandria, a meeting place for master and pupils. Rome had nearly thirty libraries, to which Vespasian and Trajan made large additions. Their manuscript rolls were kept in bookcases or presses, inlaid, and surmounted by busts, unless there were portraits on the walls. There was usually a director with a subordinate in charge of each language. Men like Lucullus

lavished money on their libraries until Seneca spoke bitterly of books as "ornaments of dining rooms," reaching to the ceilings. He adds "Nowadays a library takes rank with a bath-room as a necessary ornament to a house. I could forgive such ideas if they were due to extravagant desire for learning" (*De tranquillitate animi*).

*Middle Ages.*—Christianity did not alter the form nor greatly abate the luxury in libraries. Eusebius, in his *History*, speaks of Bishop Alexander's library at Jerusalem (A.D. 250) as a storehouse of knowledge. St. Jerome worked in the library of Pamphilus in Caesarea in Palestine, and calls the founder a rival in zeal of Demetrius Phalerius and Pisistratus the tyrant. In the early Christian Church the apses on either side of the altar were used to store the altar vessels and ritual books. Thus one apse came to be used as a religious or monastic library. Christian enthusiasts retreating into the deserts and mountains to escape luxury needed books to keep themselves from ignorance. From them first came primitive library rules. Those of St. Pachomius (A.D. 292–345) were developed near Denderah in Upper Egypt. St. Benedict perfected library administration, and his successors influenced the government of early college libraries. (Clark, *Care of Books*) Monte Cassino, Saint Gall, and Cluny are examples of these Benedictine libraries.

In the manuscript era the monks of monastic libraries were also publishers and booksellers. The Abbot Loup of Ferrières kept a depot for books at S. Josse-sur-Mer. Others were at Wearmouth and Yarrow. Becker estimates that from A.D. 750 to 1200 there were 136 libraries in monasteries, with about 12,000 books in all. Of these about thirty were complete Bibles.

The two great figures in medieval learning were Cassiodorus (*qv*) and Alcuin (*qv*). Cassiodorus maintained a scriptorium where his monks copied the classic authors. Alcuin simplified the forms of written letters and stimulated scholarship. There are many woodcuts of the early years of printing which depict the monk in his library or scriptorium. Cassiodorus said "As the antiquarian copies the words of Christ, so many wounds does he inflict upon Satan." Here was the inspiration of medieval book making. Some of the best work was done by the Benedictine nuns, and trial pages written by nuns of St. Mildred's Abbey, Isle of Thanet, still exist.

By a law of recompense, the era of fanaticism that effaced or destroyed many manuscripts was followed by the age of printing. Books became cheap, and libraries leaped from a hundred to a thousand volumes. The scriptorium lost its influence, however, as a part of the monastic library. The *Ars Moriendi*, the *Biblia Pauperum*, the rude picture book of the Bible story, and the *Donatus* or popular grammar were multiplied beyond the dream of

Cassiodorus. Then movable type came, and the modern library was inevitable. Before the voyages of Columbus there were printing presses in 236 cities in Europe, with over a thousand printers. A million books were issued with good ink on durable paper before the end of the fifteenth century. The Bible, following Christian missionaries into every country, taught the world to read. "Some," said Fox, "gave a load of hay for a few chapters of St. James or of St. John in English."

Richard de Bury (*qv*), who finished his *Philobiblon* in 1345, shows forth the spirit which governed cathedral and university libraries in England. The general attainment of learning had grown to such proportion that Bishop Carpenter's librarian at Worcester in 1464 was required to be a graduate in theology and a good preacher. It was his duty to explain hard passages in the Bible, make lists of the books in his keeping, and examine the shelves each year on the Friday after the Feast of Relics (in January). At St. Martin's, Dover, now part of Dover College, the administrative details, worked out very thoroughly, have been preserved. At Pembroke College the titles of books were written on parchment attached to the left half of a board. The right half was covered with a thin layer of wax, on which the name of a borrower might be scratched in line with the book's title. The borrower deposited a "pledge," sometimes the value of the book, or an agreement in writing.

Education in 1400 is reflected in the character of college libraries in England. Theology and kindred subjects claimed three fourths of all the college books, with one fourth devoted to grammar, poetry, music, medicine, arithmetic, geometry, and astronomy. The proportion was not materially altered in colonial New England, but in the Southern colonies private libraries reflected a later and broader taste.

*Great Libraries Founded in Early Modern Period.*—The Vatican library at Rome has historic origins in church records dating from the second century, and was associated in the fourth and fifth centuries with Popes Damasus and Hilary. With Boniface VIII, a true pontifical library began, when he ordered a catalogue to be made in 1295. These books were scattered in the fourteenth century, some going to Assisi, where they may still be seen. Nicholas V (1447–1455) was a book lover, collecting for the common convenience of all learned men, and fifteen years later Sixtus IV provided a building for the new collection, appointed Platina as librarian, and made the modern Vatican library a reality. From 1475 to the time of his death in 1481, Bartolommeo Platina fitted his library with banchi and wall cases, added paintings by Ghirlandajo and Melozzo da Forlì, and catalogued the books. There were the Latin and Greek rooms, the *Bibliotheca Secreta* and the *Bibliotheca Pontificia*. Platina and his three pages slept in an adjoining room.

Juniper was used to fumigate, fox tails to dust, and brooms to sweep the library. A notice of the time of Julius II asked readers not to quarrel nor to jump over the desks. A pleasant description of the library will be found in Montaigne's *Travels in Italy* in 1581. Scholars were first admitted in 1888. Much might be said of the Laurentian library at Florence and of the origin of old collections in other parts of Europe. The familiar print by Woudanus in 1610 of the library of Leyden University represents gentlemen with their hats and cloaks on, followed by dogs, going from case to case to consult the chained books.

Edwards, in his *Memoirs of Libraries*, has given the story of the plundering of monastic libraries in the sixteenth century, when manuscripts were used to light candlesticks, to rub boots, and to wrap grocers' bundles, "and some they sent over sea to the bookbinders, not in small number, but at times whole ships full, to the wondering of the foreign nations." Books are still found with pieces of written parchment used in the bindings. In some college libraries the desks were sold since no books remained.

A century later a great need stimulated renewed interest in book collecting. Humphrey Chetham in 1651 saw the value of "godly English books, proper for the edification of the common people," and founded chapel libraries and a town library in Manchester. The Reverend Thomas Bray, whose life was one of amazing energy and results, promoted deanery and parish libraries all over England and parish libraries in the English colonies to preserve the clergy from ignorance.

The British Museum had its origin not as a hall of official records, but in three great collections illustrating English history. The death of Sir Hans Sloane in 1753 brought about the act (26 Geo. II, 1753) for the purchase of his treasures of art and books, together with the Harleian manuscripts, the two collections to be united with the Cottonian manuscripts, already the property of the nation, under a board of trustees. The British Museum was opened as Montague House in 1759, the Royal Library of the Kings having meanwhile been given by George II. The romantic career of the late Sir Anthony Panizzi, Italian refugee, librarian and scholar, resulted in placing the British Museum in the front rank. "He governed his library as his friend Cavour governed his country," wrote Dr. Garnett, "perfecting its internal organization with one hand while he extended its frontiers with the other." The printed catalogue, from troubled beginnings in 1834, is now complete, and represents a great bibliographical achievement, closing with the year 1900. Of earlier origin, the Bodleian library at Oxford, opened in 1602, was the first "public" library in Europe; the second was that of Angelo Rocca, opened at Rome in 1604. The John Rylands Library at Manchester, begun in 1890, took high rank two years later

when the ancient Althorp Library of the Earls Spencer was purchased. This collection, associated with the genius of Dibdin, illustrated by examples the whole range of the history of printing.

The Bibliothèque Nationale in Paris can be traced to a collection of records in the Louvre in the time of Charles V. Guillaume Budé was the first *Maître de la Librairie du Roi* in 1544, and in 1556 a copy of each book printed in the country "with privilege" was by law deposited in the library. For several centuries two library families, the De Thou and the Bignons, held a sway of varying power, building up the collection by unceasing labor and foresight. In 1721 the books were removed to the Palais Mazarin, the Bignons serving as librarians from father to son from 1642 to 1784. The revolution sent its spoils of churches and country houses, swelling the accumulations of centuries to a total of nearly three million volumes. A catalogue is now (1912) being printed.

All the important countries of Europe have royal or national libraries, varying in size and administrative efficiency. The Imperial Library at St. Petersburg, with over a million volumes, is one of the most valuable in the world, and is freely open to scholars. In most cases, however, the great libraries of the continent are the accumulation of time rather than of systematic effort, and from them down to the humblest civic collection there is rarely any liberal control comparable to that which is everywhere characteristic of American libraries.

*America* — For two centuries at least after the arrival of Winthrop in Massachusetts Bay, Boston was the literary center of the English colonies. Her clergy and her civic rulers could not be content without writing as well as reading books. A library established in the Town House at Boston through the will of Captain Robert Keayne, dated in 1653, was composed of books in English, and the idea may have been suggested by the small municipal collections formed at the English Norwich and elsewhere as early as 1608. New York owes its advent into library history to Reverend John Sharpe, chaplain at the fort, who proposed in 1712-1713 a public school, a public library, and a catechizing chapel. The library was to be free to all Sharpe's books, and those of the corporation library of 1728, sent over by the Society for the Propagation of the Gospel, together with the much finer collections of the New York Society Library, founded in 1754, were all swept away during the Revolution.

Franklin once said that in his boyhood there was not one good bookstore south of Boston. When a lad, he went to Philadelphia and projected there in 1731 the first subscription library in the colonies. Franklin says: "I set on foot my first project of a public nature, that for a subscription library. . . I was not able, with great industry, to find more than fifty persons, mostly young tradesmen, will-

ing to pay down for this purpose forty shillings each, and ten shillings per annum. On this little fund we began." This collection eventually became the Philadelphia Library Society, and half a century later was strengthened by adding the Loganian library, which had been founded in 1745 through the generosity of James Logan, famous as the secretary of William Penn. The Redwood Library, established in Newport, R. I., in 1747, belongs to this period. A similar library, also an institution for self-improvement, was begun in the following year by some seventeen young men of Charleston, S. C.

As early as 1774 the *Connecticut Courant* made the assertion that the need of public libraries was "too manifest to be denied", but up to 1850 the public library had no such character as it has to-day. It is true that Boston and New York made spasmodic attempts at city libraries, but in reality the only libraries during this time were the Bray or parish libraries, mostly unused, and the subscription libraries, which flourished because they were near by and were not necessarily self-sustaining.

The first ten years of the nineteenth century, influenced by the conditions in France, show a great intellectual awakening. Clubs of all kinds, and especially learned clubs, sprang up, and almost all had a reading room or a library. From this beginning many atheneums or scholars' libraries came into being, from New England to Georgia.

During this same period the establishment of state and national libraries was begun. New Hampshire, the pioneer, had a colonial library as early as 1770, which was reestablished as a state library in 1818. New Jersey followed with a library as early as 1796, though it was so much broader in scope that it has served as a type to guide many later state libraries. It was a sufficiently elastic model to allow for the changes which time and varying conditions have imposed, enlarging the original conception into a far wider idea of its duty to the people, than that of a merely legislative function. South Carolina, Pennsylvania, and New York, the best known of the early state libraries, were all founded before 1818. In 1800 the national government established a library. Its beginnings were so small that its first catalogue (1802) was hardly necessary. When the British took Washington in 1814, the library was burned, and twice since, in 1825 and 1851, fires have occurred. Jefferson's library was purchased in 1815, and was the first of many famous collections to be added. The Library of Congress now aids her libraries through printed catalogue cards, bibliographies, and other material.

All these were tendencies away from libraries which were under private control, and the tendency became more marked when towns like Salisbury in Connecticut (1803) and Peterborough in New Hampshire (1833) established libraries with town funds. These

foreshadowed the true public library, but it was not until George Ticknor of Boston grasped the significance of the great benefit that would come when books were free to all, that the movement came to its fruition. The first convention of librarians was held in New York, Sept. 15-17, 1853. The fact that fifty-three delegates were present shows how great was the awakening, both among scholars and among librarians.

In 1848 William F. Poole printed a modest index to the many periodicals which had become useless and because of the impossibility of finding the material hidden there. This was the origin of Poole's *Index*. At about the same time other men came into prominence in the library world, which at this time centered around Boston. Jewett failed to create a National Library, came to the Boston Public Library (1855), and made himself widely known by his rules for cataloguing. Thirteen years later Justin Minor succeeded them. At this time Poole was about to go to Cincinnati, and Cutter prepared to succeed him as librarian of the Boston Athenæum. These men and many others met in Philadelphia in 1876 and founded the American Library Association, with the *Library Journal* as its organ.

**Recent Development** — *Scientific Library Management* — Edwards (*qv*), Pamizzi, and Ewart (*qv*) in England, and the leaders in America laid the library world under a debt hard of comprehension in the present day of universal progress. Library devices of all kinds were being perfected and improved at this time on both sides of the Atlantic. New rules for cataloguing were being tried, and Dewey and Cutter were bringing to perfection their system of classification. See **LIBRARY CLASSIFICATION**.

Women at this time had little connection with libraries, but this has grown greater as their sphere of activity has grown wider. Mrs. Anne Waddell, a woman of affairs in New York, was named in the charter of the New York Society Library in 1772. During the first half of the nineteenth century women's sole literary interests were such as might be derived from the circulating libraries in the stationers' or bakers' stores. A few very crude scholars were allowed to use the libraries of general literature, but the general attitude of mind toward such use was reflected by Charles Folsom, who protested in 1855 against women having access to "the corrupter portions of the polite literature."

In 1850 Harvard had 68,000 volumes, the largest collection in America, the Library of Congress about 46,000, the New York Library Society 30,000, and the Library Company of Philadelphia 55,000, the second in size. To-day these would not seem large collections for any prosperous town.

The library movement in the United States is indebted to many forces for its success. The

Mathers, Prince, Sharpe, and others of the colonial clergy fostered the collection and care of books. Franklin, a great social and scientific factor in our development, emphasized the library as an aid to the skilled laborer. Following the American Revolution and its period of inaction, French ideals had an awakening impulse, caught up and carried on by the far-reaching lyceum system of rural lectures. No doubt also the articles by Edward Edwards and the speeches of Ewart had their echo on this side of the Atlantic. Certainly the *Report of the Commissioners*, appointed by the House of Commons to inquire into the constitution and government of the British Museum under Panizzi, and published in 1850, must have interested and aroused men interested in books, in administration, and in social forces.

*Library Legislation* -- An enlightened opinion has in some states forced special library legislation, but more often a few devoted men have obtained the laws that in time create a regard for libraries. The library law of New York, passed in 1835, under which a school district could raise a sum of money for the purchase of books, established the principle of taxation for the support of libraries. New Hampshire passed a very simple library law in 1849, with no limit as to appropriation and no conditions as to management. Massachusetts enacted in 1851 a brief law under which libraries multiplied rapidly in the commonwealth. Maine in 1854 passed an unsatisfactory law, permitting the levy of a dollar on each ratable poll to establish libraries, and twenty-five cents per poll for maintenance. Vermont did little better in 1865. The Ohio law of 1847 tied the library to the educational system. In 1872 Colorado passed a good law, and Illinois devised an elaborate and thoroughly satisfactory act which has influenced many states, New Jersey, Wisconsin, Michigan, California, Missouri, and others. Some sections of the country were for a long time very backward in library legislation, including Connecticut, Pennsylvania, and even New York, where the fairly convenient school district system was not altered till 1892.

The State Library Commission, which was established by Massachusetts in 1890 to foster town libraries, set an example that has been followed throughout the country; with increasing powers and a firmer conviction of the work to be accomplished, state commissions have grown in importance and in the scope of their work for library extension. In many states the cooperation of the state commission and the state library has made the use of books a vital and far-reaching force for intelligent citizenship.

Library history in the United States has been of short duration, but, with no traditions to forget and no customs to break, progress has been rapid. History, as far as it has been made, has had less of the dignity of mere age and more of the fruit of real achievement. One has only to study

library history in France, Germany, or Italy, to realize that what has been done in the United States toward establishing an intimate relationship between good books and the social life of all classes has been pioneer work.

*Free Public Libraries.* -- Library progress in the sociological sense must be studied in three sections. England, although handicapped by inability to free her library and museum property from taxation, began before 1850, under able leaders, her campaign for free libraries. America, recognizing early the right to levy taxes for the establishment and maintenance of public libraries, made greater progress along seemingly radical lines. The Continent, crippled by social and economic conditions, has only very recently welcomed modern ideals.

In 1700 John Evelyn said that Paris had more libraries than were in the three kingdoms of Great Britain, and Gibbon declared in 1800 that no scholarly work could be done in English libraries. A conference at Manchester half a century later agreed that since Gibbon's day little improvement had been made, and William Ewart was asked to begin a parliamentary fight for a library law. The bill of 1845 "for encouraging the establishment of museums in large towns" was passed, it allowed half a penny in the pound to be levied for land and buildings for museums in large towns, but no specimens or books could be bought. Edward Edwards, for many years on the staff of the British Museum, took up the study of library conditions at home, on the Continent, and in the United States, embodying his researches in articles published in 1847 and 1848. Ewart then brought in a bill, which met with vigorous opposition and the most absurd arguments before its passage in 1850. This act was permissive for towns of 10,000 inhabitants and over, kept to the same inadequate rate, and made no provision for the purchase of books, but it was distinctly for libraries as well as for museums, although the latter have always overshadowed public libraries in English legislation. Subsequent acts advanced the rate to a penny, allowed the purchase of books and newspapers, permitted money to be borrowed for the erection of buildings, and extended these privileges to Scotland and Ireland. So great was the confusion arising from conflicting library acts that in 1894 they were consolidated, making a nearly uniform law for the United Kingdom.

The rate limit has hindered library progress, and taxation of library property has still further decreased the net return from a rate already too small for healthy growth in populous communities. London, with no central government until 1899, has had a slow development. English libraries in early days depended too much on mechanical devices; the librarian was a custodian and clerk rather than an administrator, and his influence was limited. Until recently there have been no training schools for young men and women who fill the minor places,



so that these have been less intelligently managed than large libraries which could tempt officials from the British Museum. An American is apt to think that the English librarian does not trust his public enough, that he does not do enough for schools, for rural districts, and in the way of cooperation with neighboring libraries. The Englishman considers our classification on the shelves too close and too inflexible, and he experiments cautiously with the many social plans by which Americans bind the community to the public library.

In America Ticknor set the pace for library progress when, in 1851, he spoke of his aim for the proposed public library in Boston. "I would establish a library which differs from all free libraries yet attempted; I mean one in which any popular books, tending to moral and intellectual improvement, shall be furnished in such numbers of copies that many persons can be reading the same book at the same time, in short, that not only the best books of all sorts, but the pleasant literature of the day, shall be made accessible to the whole people when they most care for it, that is, when it is fresh and new."

But even in America the free public library has come with wise slowness into favor. As late as 1876, when one hundred and three delegates met at a conference of American librarians, only fourteen represented institutions of the modern free public library type. Libraries maintained by shareholders and by annual subscribers still predominated. With the rapid advance of the free library the scope of its work along social lines has become a subject for debate. We are not far from that condition referred to in 1850 by a member of Parliament who prophesied that the working classes would soon be asking for "quoits, peg-tops, and footballs." Sunday opening, first tried in Cincinnati in 1870, was an early step in the radical movement in America. Work with children, now recognized as essential in a good library, attempts to attract and hold the young when they first learn to read. Indeed, story telling and games are introduced in branches of great city libraries to win the very young and the foreign born. University extension lectures, given on certain evenings each week and on Sundays, bring older people to the building and give them predigested treasures from books and art. More liberal rules for the circulation of books (the two-book system and special cards for teachers), free access to the shelves or to special standard collections, and even free delivery from library to home, all illustrate the endeavor to make the free library indispensable.

A distinct effort is now made to educate taste in architecture by new ideals of excellence in buildings, but the façade follows the plan and is not merely a pleasing exterior. Books on library planning fortify the librarian against the inexperienced architect who desires effect only.

*Library Methods* — The American missionary spirit, radical though it may be, has had its

influence in the old world as well as in the conservative communities of the new. Certain mechanical improvements, such as the decimal and expansive systems of classification for placing books on the shelves, indexing the books of the library on cards instead of in ledgers, making a charging record for books taken out of the building so that statistical information may easily be compiled, and uniform cataloguing rules, adopted in preparing cards to be issued by the Library of Congress, are revolutionizing the routine of library administration. The librarian, while he may still be a "missionary of culture," must recognize that his vocation calls for business ability.

English and American methods, though differing, are not fundamentally divergent after all. The Continent, however, can show little enlightened library development outside a few isolated examples in Holland, Switzerland, Germany, and Sweden. In Germany the dual library system, a *Stadtbibliothek*, or sleepy municipal library in the main street, and a *Volksbibliothek* or cheap fiction library on the side street, has delayed the coming of the all-round large public library. Social club libraries also have satisfied the more intelligent members of the community, who are bound together by a love for art, music, archaeology, or science.

France has few cities where the public seem to want libraries, and zeal is not expected from poorly paid librarians. The scholarly librarian, however, still survives in some historic French towns. What France lacks in organization Italy carries almost to an extreme. A library assistant in Italy can be transferred from city to suburb or to a distant city, finding the same system everywhere. In the northern countries of Europe people's libraries are still parish charities, except where Miss Valfrid Palmgren, through addresses and writings, has introduced American methods and aims. The censorship in Russia has crushed library progress there, and throughout many square miles no books are accessible to the public. The works of a contemporary poet under the ban of the censor could not be found in a library which honored him by bearing his name. Still, in Russia, and in Siberia, interesting little libraries may be found where a librarian has been born for the task, undismayed by conditions which prevail all about him.

Germany and Switzerland have attempted catalogues on a great scale, but in most European capitals the catalogues are inaccessible, or inadequate, and the service is very slow. Munich, Stockholm, and Brussels have been famed in the past for helpful employees and convenient appliances, but administrators die and policies change. The real library movement is to be seen at Charlottenburg and Essen in Germany, at Dordrecht and Groningen in Holland, at Stockholm, and at several other places where modern methods are but just coming into vogue. Foreign scholars have

attended English and American library conferences, and have admired what they saw, but they have been slow to believe that these radical methods could be made successful in Continental cities. They are, however, very gradually making the experiment. C. K. B.

**School Libraries** — *District School Libraries* — The district school library movement antedated the modern public library movement in this country by about forty years. Its original impulse came from educators who saw that if the State was to gain intelligent citizens, as a result of its investment in education, the young must not only be taught reading, but must be given good books to read.

New York was the pioneer, and a law was passed in 1835 permitting the voters of any school district to levy a tax of \$20 to start a library, and \$10 annually to maintain it. Thus permission failing to appeal to the rural taxpayer, the legislature of 1838 passed a law appropriating \$55,000 annually for the establishment of libraries in every school district of the state, with the provision that after three years the money might be spent for books or for teachers' wages, at the discretion of the district. These were not to be strictly school libraries for the use of the pupils alone, but were also intended for the use of the people of the district.

The example of New York was followed by Massachusetts, which, through the efforts of Horace Mann (*q v*), passed in 1835 a permissive school district law, and in 1842 added the stimulus of a state appropriation of \$15 to each district that should raise an equal amount.

Following the lead of New York and Massachusetts, seventeen states passed more or less effective laws providing for district school libraries, as follows: Connecticut, 1839, Rhode Island and Iowa, 1840, Indiana, 1841, Maine, 1844, Ohio, 1847, Wisconsin, 1848, Missouri, 1853, California and Oregon, 1854, Illinois, 1855, Kansas and Virginia, 1870, New Jersey, 1871, Kentucky and Minnesota, 1873, and Colorado, 1876.

The results of this legislation were in the main disappointing. Jewett's *Notices of public libraries in the United States*, published by the Smithsonian Institution in 1851, reports 9505 public school libraries in all, containing 1,522,332 volumes, of which 1,338,848 volumes were in New York, 91,539 in Massachusetts, 47,220 in Michigan, and 19,637 in Rhode Island, no other state reporting more than 10,000. In the Bureau of Education's special report on libraries in 1876 the total number of volumes in school libraries had declined to 1,365,407. In New York State, where alone the school libraries were very generally established, the number of volumes in libraries fell from over 1,300,000 in 1851 to 825,000 in 1892, and most of the annual appropriation had come to be devoted to general school purposes.

*Success of the Movement* — Two reasons are usually assigned for the comparative failure of

the school library movement in the country. First, defects in legislation; many of the states failed to give state aid or gave it only intermittently or failed to provide for the supplementing of state aid by local taxation, thereby keeping up local interest in the libraries. Second, defects of administration, there was seldom any supervision over the selection of books, and the local school authorities were not accountable to any central authority for the management of the libraries. But underlying both of these reasons was the fact that this early school library movement was strictly a school enterprise. The educators originating it did not realize that books alone do not make a library, and that only where organized into libraries do masses of books become available for use. To be efficient a library should be well chosen, classified by subject, the contents of the books brought out by analytical cataloguing. The books need to be mended and rebound, they should be charged when in circulation, both for safety and in order that their use may be recorded. All this is a librarian's business, not a teacher's, and in the forties and fifties librarians themselves had not yet worked out methods of efficient library administration, — library science was in its infancy.

American librarianship did not become an organized profession until 1876. By that time the great increase in the number and size of libraries in the country (from 694 libraries with 2,201,632 volumes in 1851 to 3647 libraries with 12,276,964 volumes in 1876, exclusive of school libraries) had forced librarians to create more uniform, economic, and efficient methods of administration, and for the first ten or fifteen years the sessions of the American Library Association were largely devoted to questions of library technique, — cataloguing, classification, charging systems, shelving, etc. Very dry and uninspiring subjects, but thanks to the fine quality of thinking expended on them and to the *esprit de corps* that put every improvement at the disposal of the whole profession, these problems were solved so successfully that the enormous expansion in the number and size of libraries during the last twenty-five years was accomplished easily and has been accompanied by an even greater expansion of use. According to the Bureau of Education *Reports* there were in 1884, 2988 libraries of over 1000 volumes in the United States, containing in all 12,376,473 volumes, with a total circulation of 10,899,469, in 1908 there were 5640 libraries, with 62,628,541 volumes and a circulation of 82,222,584. In other words, while the libraries have doubled in number, their size has multiplied by five, and their use has increased nearly eightfold.

With problems of library administration in a fair way to be settled, librarians next turned their attention to improving the quality of books in the libraries. Principles of book selection were evolved, and bibliographic tools for the evaluation and selection of books were forged, a partial

list of which will be found appended. With these methods and tools librarians were now equipped to aid educators in their endeavor to make the school libraries a dynamic element in education.

In 1888 Melvil Dewey, who had perhaps done more than any other man to promote administrative efficiency in American libraries, was made State Librarian of New York, and thus the organizing genius of the new librarianship was brought to bear on the unsatisfactory conditions of district school libraries. Mr Dewey found that the \$55,000 still appropriated under the law of 1838 had been almost wholly diverted to general school purposes, that in many cases the libraries had been dispersed, and that where they survived, the original purpose of supplying books to the people of the school district had been lost sight of, and that the books were regarded as part of the school equipment. A new law drawn up by Mr Dewey transferred those that had developed into public libraries to the regents of the university, to be carried on in connection with the state library, while the appropriation of \$55,000 (subsequently increased to \$100,000) was continued, but it was specifically directed that it be administered by the Department of Public Instruction for pedagogic and reference books for the use of the teachers and pupils. That rule, however, was annulled in 1910, and school libraries in communities that have no public libraries may be opened to the public. Since 1892 the number of volumes in the school libraries has increased from about 800,000 to 3,135,408 volumes, selected from lists approved by the state authorities and bearing on the state course of study. The state education department reports that the libraries are well cared for; that in some cases the librarian of the local public library supervises the school library, and that in many cases there are trained librarians in charge of the school libraries.

State commissions to stimulate the establishment and to advance the efficiency of libraries have been established in thirty-three states, beginning with Massachusetts in 1891, and in many states the school libraries have come under their influence. In Illinois the library commission lends books to county school libraries; in Minnesota the relation between the commission and the schools is very close,—the commission organizes school libraries and revises the list from which purchases must be made, the state superintendent of education employing a member of the commission's staff to care for school books. In Missouri and Nebraska the state library commissions are also in touch with the district school libraries. In Connecticut the State Library Committee (Commission) is directed by law to assist in the selection, purchase, and administration of school libraries and to lend them books and pictures. In Oregon the library commission is directly responsible for the district school li-

braries. A mandatory tax of not less than ten cents per capita for each child of school age shall be levied by each county having less than 100,000 inhabitants and set aside for school libraries. This is apportioned by the county superintendent, who must report to the Oregon Library Commission the amount apportioned to each district and the number of school children in each district. During July of each year the local school authorities must select from lists prepared and furnished by the library commission such books as are desirable for their district, the aggregate mailing price of which shall not exceed the apportionment. This list must be sent to the library commission by Aug. 10, and the commission buys the books, thus receiving much larger discounts than each library purchasing separately could obtain. If the lists from any districts fail to be received by Aug. 10, the commission shall select the books for these districts. The county superintendent shall appoint a librarian who shall receive and have the care and custody of the books, and shall loan them to the teachers, pupils, and other residents of the district in accordance with regulations prescribed by the commission. When school is in session the library shall be placed in the schoolhouse, and the teachers shall be responsible for its proper care and protection.

A revival of effort to increase the number and improve the efficiency of public school libraries, due in part at least to direct or indirect stimulus from library sources, is felt all over the country and has been reflected in recent legislation. Only eight states (Arkansas, Georgia, Mississippi, New Hampshire, Tennessee, Texas, Vermont, West Virginia) have no school library system established by law.

An analysis of existing laws shows that they fall into three classes,—permissive laws, in which the district is allowed to tax itself for a school library, persuasive laws, in which the state grants aid to the district, usually duplicating the amount raised by the district, and mandatory, in which the establishment of school libraries is required, part of the school funds being set aside for the purpose, and some state official or body, superintendent of schools, or library commission being made responsible for the enforcement of the law.

Only the exceptionally energetic school authorities or progressive communities avail themselves of the privileges granted by a permissive law. When the inducement of state aid is added, the moderately energetic and intelligent will take advantage of it, but a mandatory law, the execution of which is intrusted to state authority, will overcome the inertia of the great mass, and will achieve the desired result of a well selected library in every public school in the country.

The essential points to be covered by a good school law are:—(1) A mandatory minimum annual tax levy by county. (2) Compulsory selection from a well chosen list made by some

recognized and responsible authority (3) A central purchasing agency and a state contract price. (4) A definite and fixed time for annual purchase (5) Suitable rules and regulations to prevent scattering of the books

The Oregon law described on page 15 is especially to be commended as providing all these requirements. A brief résumé of the laws relating to state aid for public school libraries will be found in *Library Journal*, Vol XXXVII, 1912, pp 312-315

*School Libraries in Towns and Cities* — School library legislation has in the main concerned itself with the problem of the country school, while library work in city schools has largely developed along the lines of cooperation between the public library and the schools

To-day practically all of the public library systems in the cities of the United States have organized school departments through which classroom libraries are placed in the schools. In Buffalo the public library has placed 828 libraries in the grammar schools of the city, from which 418,753 volumes were circulated in 1910. In St. Louis traveling libraries are sent to the grade schools. In 1911, 176 traveling libraries containing in all 101,759 volumes, were sent to schools, and deposit stations are established in ten school buildings in which 59,238 volumes are placed. The Cleveland Public Library appointed a supervisor of classroom libraries in 1906, and the use of classroom libraries is being developed as rapidly as the resources of the library will permit. Detroit sends books for supplementary reading to the schools, circulating 77,869 volumes to school children in 1910. In Pittsburgh a catalogue of books for the use of pupils of the first eight grades was published in 1902 by a committee of teachers and librarians. A second, revised edition was published in 1907. Books are sent to 108 schools, about 100,000 volumes are circulated for home use yearly, and nearly twice that number used in the classrooms. The Newark Public Library has a school department, maintains a reference room containing books and periodicals for the use of teachers, and sends about 500 traveling libraries to classrooms.

The State Board of Education of New Jersey decided in 1911 that in all communities having free public libraries the board would recommend, subject to the approval of the local board of education, that the school library be administered by the public library, the circulating books, both fiction and nonfiction, becoming part of the working collection of the public library, with a distinguishing label, "Bought from the school library fund"; the pedagogical and strictly reference books are to be left in the school buildings where desired. The public library, on the other hand, must agree to furnish such books to the schools as may be needed in school work.

In New York City the work of supplying

classroom libraries is carried on by the board of education. This work began in 1893 before the consolidation of the several privately endowed and maintained libraries of the city into the present efficient public library system. In 1903 the board appointed the head of school work in the Buffalo Public Library as superintendent of school libraries of New York City. There are in 1911 more than 12,000 classroom libraries in the system, containing from thirty to forty books each, and with a circulation of about 8,000,000 volumes a year. There are also teachers' reference libraries in each school building.

The New York and Brooklyn Public Libraries supplement these school libraries by sending traveling libraries to the schools on request, and the New York Public Library has a school department which promotes reference work with the schools in the neighborhood of each branch of the library.

*High School Libraries* — In an article in *School Review* (Vol XIV, p 762) it is stated that "In every city school building there should be set apart as a library one large room furnished with comfortable chairs, in which should be found daily papers, suitable magazines, a liberal supply of the best fiction, travel, popular science, live, unabridged historical narrative, biographical essays. A modern card catalogue should be provided, which the students should be taught to use." A trained librarian to make the catalogue and to teach the use of it, as well as to stimulate the use of the books themselves, is needed to complete this picture. How many high schools of the country have established such libraries cannot be stated. The last Bureau of Education statistical report on libraries gives the number of school libraries in the country having over 1000 volumes as 1644, but private schools and the larger public school libraries are included.

In New York State there were in 1909 fifty-three high school libraries, established within the last twenty years, thirty of which are for the exclusive use of the schools, nine of them are for all grades, though housed in high school buildings, and fourteen of them combine the functions of high school and public libraries. Twenty-five of these libraries are in charge of librarians having previous library training or experience. A very important function of the high school librarian is that of giving instruction to the pupils in the use of the library, catalogue, indexes, and reference books. This is done systematically in several high schools in New York State, and the committee on high school libraries of the New York Library Association has been bringing the matter to the attention of high school principals. It has been done for some years in the Detroit Central High School; in other high schools, as at Newark, this instruction is given by the English teachers aided by the public library. In Cleveland the high school libraries are under the charge of the

public library. The schools furnish equipment and reference books, the library the librarian and a permanent circulating collection, and, in addition, lends books as needed, a regular delivery schedule being maintained between the high school libraries and the public library. Instruction in the use of books, based on a manual prepared by the supervisor of high school branches, is given regularly in all the high school libraries, for which credit is given in English.

*Library Training in Normal Schools* -- Most school libraries depend for their efficiency on the teacher, who must not only acquire enough knowledge of library economy to arrange, care for, and record the use of the books, but who should be able to guide the reading of the children and also to make the books contribute their utmost toward the enrichment of the school work. In order to attain this end, normal school students must be trained in the care and use of books and given some critical knowledge of children's books.

In a report of a subcommittee of the National Council of the N. E. A. on the relation of libraries to normal schools, in 1899, the question was asked if "the professional training of teachers had not reached that period in its development where the library must be one of the chief factors in the training of pupil teachers?" No mention was made in the report of any definite course in library training being given by a normal school, but an affirmative response was made to the query shortly after by the announcement of library courses by normal schools in different parts of the country. In 1902 a trained librarian was engaged by the Cleveland Normal School to give a course in "library use." In 1903 a study of juvenile literature was added to it. The course occupies three periods a week for three terms, is on the same basis of credit as other regular courses, and is required for graduation.

The Normal School at Whitewater, Wis., publishes a helpful outline of the work given there. The N. E. A. published in the *Proceedings* for 1906, and as a separate pamphlet (now out of print), a report on the subject which outlined a rather elaborate scheme of library instruction.

In several cities, Omaha, Neb., Newark, N. J., and Dayton, Ohio, among them, instruction of normal school students in library work has been carried on by the public library.

A number of state normal schools have given courses in library economy in connection with their summer schools, and in Michigan instruction in library work has been given at teachers' institutes.

*Branch Libraries in Schools* -- The movement to increase and to socialize the use of school buildings is of great interest to librarians and suggests the desirability of placing branches of public libraries in school buildings, more generally than has been done heretofore. This has already been started in Newark, N. J., and it has been carried on successfully for several

years past in Grand Rapids, Mich., where through cooperation between the Board of Education and the library regular branches of the library have been housed in the school buildings. These are conducted as public, not as school libraries, being open from 12 30 to 9 p. m., and containing books for readers of all ages. The superintendent of schools said recently that the greatest educational advance in recent years was the establishment of branch libraries in the public schools, as the presence of a library and a librarian added greatly to the efficiency of the general school work.

*Canada.* -- The district school library movement started in New York in 1835 and spread into Ontario, where an act was passed in 1850 providing for school libraries managed by local authorities under regulations prepared by the Council of Public Instruction. In accordance with the law, a classified catalogue was prepared by the Council from which alone selection could be made. The books were purchased by the Council, and, in addition, books to the value of the amount raised by the locality were given by the Council to each library. A record of each library was kept by the department and of the books furnished to it, thus preventing duplication. This law was much more enlightened than most of the corresponding legislation in the United States, and its results have been satisfactory.

*England* -- Sonnenschein's *Cyclopædia of Education*, 1906, states that in Great Britain any attempt at the formation of elementary and secondary school libraries has been due chiefly to purely voluntary effort, no assistance being given by the State. School libraries are not mentioned in the Educational Act of 1902. In an article in the *Library World* (1905-1906, p. 173) it is stated that about 9000 schools out of 12,000 are provided with libraries, the management of which varies in different localities. The larger number are entirely under the control of the individual education committees, while some are managed by a joint education and library committee. The public libraries of Great Britain have been too much hampered by restrictive legislation limiting the amount that could be raised by rates for library support to carry on work for schools like that done in the United States. A beginning, however, was made at Cardiff, Wales, in 1899. The school board raised the money, and the library committee undertook to administer the libraries, a joint committee of management being appointed from the two bodies. This has worked very successfully. The example has been followed by several other localities, and it indicates the line along which school libraries are likely to develop in the United Kingdom.

In London in 1908 a scheme was adopted by the County Council by which any public elementary school may be supplied with a small permanent library upon an application to the

libraries' committee by the headmaster or trustees, who must give surety to the Council for the safe custody of the books. A list of 200 books will be sent to the applicant with a recommendation that books be selected from it.

*France* — The idea of placing libraries in the schools dates back to the era of the Revolution, the *Décret sur l'organisation des écoles primaires*, 12 Déc 1792, directed that there should be formed in each school a small collection of books for the use of the pupils, and that it should be put in the care of an *Instituteur*. All the subsequent laws relative to elementary education recognized the importance of school libraries and dealt with means of introducing them into the schools. Successive ministries ordered the distribution of books to the schools, and between 1833 and 1848 more than a million volumes were distributed. But the indifference of the teachers and the laxity of supervision worked even more disastrously in France than in America, and in 1850 the school libraries had completely disappeared. (Buisson's *Dictionnaire de Pédagogie*, s v *Bibliothèques*, 1911 ed.)

In 1862 the ministry issued an order directing the establishment of school libraries in every public school for boys, and ordering the books to be placed in a bookcase in a schoolroom under the care of an instructor. No commune would receive books from the government unless it complied with this regulation. The State has since continued its gifts of books to school libraries, the volumes comprising both works necessary to the classroom work and instructive reading for the scholars and for adult members of their families. A special commission was created in 1865 to pass upon the books to be bought for school libraries, this commission, *Le Comité des bibliothèques de l'enseignement primaire*, issues catalogues of approved books from time to time.

The development of school libraries has been continuous since 1862. There are now in the neighborhood of 50,000 libraries, containing an average of 160 volumes in each, the regulations are definite, and the libraries are a branch of the public service.

*Germany* — There is no general school library law in Germany, and but little mention of school libraries in the educational legislation of the separate states. Württemberg and Saxony have recognized them, but the laws are vague and merely suggestive, and have not had much influence. So, while there are libraries in most of the higher schools and in many public schools, the school library has not the legal status in Germany that it has in France or Austria. The existing school libraries are in general for the use of teachers and pupils, and are not for popular use, as in France, though in country districts the public and school libraries are sometimes combined.

*Austria* — The Minister of Religion and Education issued an order in 1870 that a library should be established in every communal

school, regulations for the organization of the libraries were promulgated in 1871 and completed in 1875. The director of the school is to be responsible for the library, which is not only intended for the scholars, but for the people of the commune. The government has not given the school library movement the systematic support which it has received in France, and there are no general statistics of the number of school libraries obtainable; but there has been much general interest in the subject, and private efforts have been organized to extend and improve school libraries.

School libraries for pupils and their families are also found in Sweden, Switzerland, and Belgium.

*Italy* — The government has done nothing for school libraries, but at a library conference in Milan in 1906 it was reported that a national society had been organized with headquarters in Ferrara to promote the establishment of school libraries. Through the efforts of the society the schools of Ferrara and Leghorn had been provided with libraries, and the movement was extending to Pisa, Turin, San Remo, Florence, and elsewhere. The society is doing much, but it cannot take the place of state action, and until that is forthcoming Italy will be far behind its neighbors.

*Spain* — School libraries were created in Spain by government decree in 1869. In 1878 the government purchased 100,000 volumes for distribution to school libraries, but it seemed to consider the work done for all time, as no provision was made for subsequent additions.

J. A. R.

**Pedagogical Libraries** -- Pedagogical libraries in the United States have developed in connection with national, state, and city bureaus of education, state and city libraries, universities, and normal schools.

The U. S. Bureau of Education at Washington, D. C., established in 1867, has collected a pedagogical library of more than 100,000 volumes. In certain classes of educational literature, such as state and city school reports, laws, etc., catalogues and reports of universities, colleges, and schools, files of educational periodicals, and transactions of educational associations, the library is probably the most complete in the country. It has also a large collection of school and college textbooks. While primarily a library for the use of the bureau staff, it is designed to serve also as a central reference and circulating library for educators throughout the country. Books may be borrowed as interlibrary loans, or upon the guarantee of a responsible school official, or of a personal deposit, and are transmitted to the borrower free of charge. The library also supplies bibliographical information on educational subjects through its printed publications and correspondence. Its most significant publications are the *Monthly Record of Current Educational Publications* (No 1, Jan. 15, 1912),

cumulated in the annual *Bibliography of Education*, which now covers the period since 1907, and *A Teacher's Professional Library Classified List of 100 titles* (Washington, 1909). Upon request the library also supplies lists of books and magazine articles on special educational questions. The bibliographical equipment of the library consists of a union catalogue of educational literature in the government libraries at Washington in card form, an extensive card index to the contents of current official reports, society publications, and periodicals relating to education, and a file of reference lists in typewritten manuscript form (W D Johnston. The Library of the Bureau of Education. *Educational Review*, Vol. XXXVI, pp. 452-457, December, 1908. E D Greenman. The bibliographic work of the U S Bureau of Education. *Library Journal*, Vol. XXXVI, pp. 180-181, April, 1911.)

The state pedagogical libraries are identified with either the state department of education, the state library, or the state university. Those of the first class are ordinarily mere office libraries, but two significant exceptions may be noted, that of the New York Department of Instruction, established in 1895, the purpose of which was the circulation of professional and related literature among school officials and teachers throughout the state, and that of the Rhode Island Department of Education, which sought instead to promote the establishment of local collections and with this in view published a periodical *Library Bulletin* (1908).

The New York Education Department library was in 1904 transferred to the state library. In other states, too, the facilities of a general library for the care and distribution of books have led to the development of a pedagogical department of the state library and the circulation of traveling libraries for teachers either by the state library or state library commission. The state universities on the other hand have superior resources for the bibliographical work pertaining to such service.

In California (1889) and New Jersey (1891) county libraries for teachers were established. In each case, however, the tendency has been to merge this special service with the general, and especially to make use of the library resources and equipment of the largest county town.

The first city to establish a pedagogical library was Philadelphia. This library, founded in 1883 upon the accession of Dr. James MacAlister to the office of superintendent of schools, published a catalogue of its collections in 1887, and again in 1907 (525 pp.). This library still remains distinct from the public library service of the city; but in most other cities, as in most states, the special library service has either been transferred to the general library or in some measure made a part of it. In Cleveland, for example, the board of education published in 1892 *Courses of professional reading for teachers and catalogue of pedagogical and refer-*

*ence books of the Free Public Library*. In Providence, on the other hand, it was the public library which first published a catalogue of local collections of pedagogical literature, issuing first a list of books in its own collections (*Monthly Bulletin*, May, 1897), and a year later a catalogue of the public school library at the office of the superintendent of schools. The only other local bibliographical work of significance for teachers is that done by public libraries, examples of which are the *List of textbooks in the Boston Public Library*, *Monthly Bulletin*, September, 1900, and the *Check list of works relating to the schools and to the educational history of the city of New York in the New York Public Library*, published in its *Bulletin* for June, 1901.

Of university pedagogical libraries the earliest and the largest is that of Teachers College, Columbia University. This library, established in 1888, was in 1899 coordinated with the other libraries of the university, and in 1901 a catalogue entitled *Books on Education in the Libraries of Columbia University* (435 pp.) was published. The library now numbers 87,236 volumes and pamphlets, of which 65,336 relate to education. The latter are distributed as follows: history of education, including documents, 15,784; higher education, 21,807; secondary education, 5,472; elementary education, 1,104; training of teachers, 2,734; textbooks, 6,501; other classes, 11,336.

The libraries reported by 185 public normal schools in 1910 contained 1,331,705 volumes, an average of 7,198 volumes each. The largest library, that of the Indiana state normal school, Terre Haute, contained 50,000 volumes. Fifty-seven private normal schools reported 189,823 volumes, an average of 3,330 volumes each.

The principal pedagogical libraries in other countries are the *Pädagogische Central-Bibliothek (Comenius-Stiftung)*, Leipzig, 152,216 volumes and pamphlets (*Katalog der pädagogischen Central-Bibliothek*, 2te Aufl. 1892-1897, 2 v.), the library of the *Musée Pédagogique*, Paris, 76,000 volumes (Catalogue, 1886-1889, 3 v.), and the library of the English Board of Education (25,000 volumes). W D J

See MUSEUMS, EDUCATIONAL.

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### LIBRARY CLASSIFICATION OF EDUCATIONAL PUBLICATIONS —

The system of classification of books on education commonly used in public and in some university and college libraries is the Dewey Decimal System. This classification is as follows:

#### 370 EDUCATION

- 1 Theory of education Meaning Aim
- 109 History of educational theory
- 15 Psychology applied to education
- 3 Dictionaries Cyclopedias
- 4 Essays Addresses
- 5 Periodicals
- 6 Organizations Conventions
- 7 Study of education Institutions and organizations for training teachers
- 71 Teachers' meetings
- 72 Teachers' institutes
- 73 Normal schools
- 74 Educational museums
- 9 History, description
- 92 Educational biography
- 93 99 History of education in special countries

#### 371 TEACHERS METHODS DISCIPLINE

- 1 Teachers Teaching personnel Professors, masters, instructors
- 11 Qualifications Personality
- 13 Examination Certificates Certified teachers Licenses
- 14 Appointment Organization of teaching force
- 15 Professional status
- 16 Salary and promotion Compensation Amount of service
- 161 Salary
- 165 Promotion Advance in rank
- 2 School organization School records
- 21 Admission Enrolment Matriculation
- 212 Grammar or intermediate school admission standards
- 213 High school standards
- 214 College standards
- 23 Terms Vacations Holidays Breaking up
- 25 Classes Grades
- 253 Length of school courses, e g year course
- 27 Examinations oral, written Cramming
- 28 Promotions Degradation
- 3 Methods of instruction
- 32 Textbooks Recitations
- 38 Laboratory work
- 4 Systems of education
- 421 Educational value
- 43 Military organization Military instruction
- 5 Government Discipline Authority
- 52 Attendance Truancy Tardiness Absences
- 53 Rewards Prizes Favors Approbation

## LIBRARY CLASSIFICATION

- 54 Punishment Disciplinary penalties
- 6 School premises and equipment
- 62 Buildings
- 623 Laboratories Observatory Machine shop
- 624 Gymnasium
- 63 Furnishing and decoration
- 631 Furniture
- 64 Libraries
- 648 Professional and technical school libraries
- 65 Museums character and functions
- 66 Scientific apparatus, laboratory equipment and supplies
- 7 School hygiene
- 71 Health of students Overstudy Fatigue
- 712 Medical inspection
- 716 School meals
- 73 Care of body Gymnastics Calisthenics
- 732 Gymnastics Calisthenics
- 74 Recreations Games, etc Athletics Diversions
- 8 Student life and customs
- 87 Student houses Lodgings Dormitories
- 9 Education of special classes
- 91 Physically defective
- 911 Blind
- 912 Deaf
- 913 Blind-deaf
- 92 Physically defective
- 93 Morally defective Delinquents
- 94 Other abnormal classes
- 945 Exceptionals
- 947 Dependents
- 974 Freedmen Negroes
- 975 Indians

#### 372 ELEMENTARY EDUCATION

- 2 Kindergarten
- 3 Observing powers Object teaching Science
- 4 Reading Alphabet Phonics and word methods
- 5 Elementary writing and manual work
- 6 Elementary grammar Language lessons
- 7 Elementary Arithmetic
- 8 Other studies

#### 373 SECONDARY ACADEMIC PREPARATORY

- 374 HOME EDUCATION SELF-EDUCATION AND CULTURE
- 4 Correspondence teaching Manuscript aids
- 5 Lectures
- 6 Extension courses Lecture study
- 8 Continuation schools

#### 375 CURRICULUM

#### 376 EDUCATION OF WOMEN

- 6 Higher education of women
- 7 Coeducation Segregation Separation
- 8 Colleges for women
- 9 Special countries and schools history, reports, etc

#### 377 RELIGIOUS, ETHICAL AND SECULAR EDUCATION

- 1 Religious instruction Bible in public schools
- 2 Ethical education
- 8 Church and education
- 9 Non-Christian religions and education

#### 378 COLLEGES AND UNIVERSITIES

- 05 Academic periodicals
- 06 General college associations
- 1 Organization Government Location Scope, field
- 2 Academic degrees and costume College colors
- 3 Endowment of research Fellowships Scholarships Student aid

## LIBRARY CLASSIFICATION

- .4-98 Special countries and colleges History, reports, etc
- .99 Professional, technical and other special schools
- 379 PUBLIC SCHOOLS RELATION OF STATE TO EDUCATION
  - 1 Public school system
  - .13 Local support
  - .14 School laws and regulations School age
  - .15 School supervision and control national, state and local Centralization
  - .16 Public colleges and universities national, state and local
  - 17 Secondary schools
  - 171 High schools Academies
  - 18 Primary schools Kindergartens
  - 19 Evening schools
  - 2 Illiteracy Instruction of illiterates

The Library of Congress has recently devised a scheme of classification which is now used by the Bureau of Education and other governmental departments, as well as in some other public libraries; and, because of the exchange of index cards inaugurated by the Library of Congress, is apt to be used in many additional libraries. This scheme alone occupies a pamphlet of 168 pages. The outline of this scheme is as follows

- L- General
  - 11-97 Periodicals, Societies
  - 101 Yearbooks
  - 106 Congresses
  - 111-791 Documents. Reports
  - 797-898 Exhibitions Museums
  - 901-981 Directories
- LA5-LB15 Encyclopedias
- LA-History and description
  - 11-13 General
  - 31 Ancient history
  - 96 Mediaeval history
  - 106 Renaissance period and early modern
  - 126 Modern history
  - 205 United States
    - 212 Primary or elementary education
    - 222 Secondary education
    - 226 Higher or university education
- LB- { Theory of education
  - { Principles and practice of teaching
    - 1025 General
    - 1051 Educational psychology
    - 1115 Child study
    - 1137 Plays, games, etc
    - 1141-1547 Kindergarten and primary education
    - 1555 Elementary or common school education
      - 1567 Rural schools
      - Field work School excursions
      - 1570 Curriculum
      - 1573 Reading
      - 1607 Secondary education
        - High-school fraternities
        - 1629 Curriculum
        - 1630 Languages
        - 1715 Education and training of teachers
          - 1751-55 { Teachers' associations
          - { Teachers' institutes, meetings, etc
          - 1763-65 Teachers' examination questions
          - 1771 Certification of teachers
          - 1775-1779 Teaching as a vocation
          - 1805-2151 Normal schools
          - 2283 International exchange of teachers
          - 2321 Higher education
            - 2332 Academic freedom
            - 2334 Salaries and pensions
            - 2341 Supervision and administration

## LIBRARY CLASSIFICATION

- 2342 Discipline
- 2351 College entrance requirements
- 2353 College examinations
- 2361 Curriculum
- 2363 Electives
- 2365 Special subjects
- 2371 Graduate work and courses
- 2381 Degrees
- 2507 Legislation, laws
- 2523 United States
- 2531-2567 Canada, Mexico, Central and South America
- 2580-2584 England
- 2631-2639 France
- 2805 Administration — a. Supervision and organization
  - 2842 Teachers' salaries and pensions
  - 2851 School-book question
  - 2861 Centralization of rural schools
  - 2890-2999 By countries other than United States
  - 3011 Administration — b. Management and discipline
    - 3025 Rewards and punishment
    - 3033 School hours
    - 3061-3063 Classification and grading
    - 3063 Promotion
    - 3081 Attendance, truancy
    - 3087 Compulsory education
    - 3093 Self-government
    - 3205 School architecture and equipment
    - 3405 School hygiene
      - 3411 Medical inspection of schools
      - 3483 Contagious diseases
      - 3471 Feeding of school children
      - 3487-3489 Special subjects
      - 3503 School gardens
      - 3517 Playgrounds
      - 3525-3571 Special days (Arbor Day, Bird Day, Flag Day, etc)
    - 3604-3615 Student life and customs
- LC-Education — Special forms, relations, and applications
  - 191 Education and society Citizenship
  - 201 Education and heredity
  - 211 Education and crime
  - 107-120, 351-629 Education and the church
  - 71-188 Education and the state
  - 129-139 Child labor and education
  - 251-318 Moral and ethical education
  - 321-951 Religious education
    - 383-414 Universities
    - 588-589 Y M C A
    - 361-368 Sunday schools
    - 461-629 Denominational schools
    - 1001-1021 Humanistic education
    - 1081 Industrial and trade education
    - 1051-1071 Professional education (professions and occupations)
      - 1101 Architecture
      - 1401-2580 Education of women
      - 1601 Coeducation
      - 2601-2611 Indians
      - 2701-2978 Negroes
      - 3001-3801 Orientals
      - 4051-4100 The destitute (orphans, outcasts, paupers, etc)
  - 4301 The blind
  - 4451 The deaf
  - 4601 Backward children
  - 4631 Mentally defective children
  - 4801 Mentally defective — truants, etc
  - 5201-5401 Continuation schools
  - 5701-5760 Vacation schools Summer schools
  - 5901-6101 Correspondence schools
  - 6201-6660 University extension
- LD-United States
- LE-America other than United States
- LF-Europe
- LG-Asia, Africa, Oceanic
- LH-College and school magazines and papers

## LIBRARY CLASSIFICATION

LJ—College fraternities  
LT—Text-books

The third system of library classification which has common usage in the United States is the Cutter Expansive classification. The outline of the educational section as follows:

- IK EDUCATION
  - KC Classical education
  - KE Home education
  - KF Female education
  - KH Early education in general, including infant education, kindergarten, and primary school
  - KI Infant education, the mind of the infant
  - KM Self-education
  - KP Public education, Popular education, Compulsory education
  - KR Religious education
  - KS Scientific education
  - KT Technical, Industrial education
- L Mechanic's institutes, Mercantile associations, Apprentices' associations, Lyceums, etc
- M Reading clubs, Debating societies, etc
- N Correspondence universities, Chautauqua societies, etc
- O University extension
- P Pedagogics, Teaching
  - PC Curriculum
  - PD Discipline
- PDC Corporal punishment
- PE Examinations
- PH Hours of study, vacations, etc.
- PI Inspection
- PM Marking
- PO Organization
- R Means of Education
  - RB Books, School
  - RD Apparatus, School
  - RK Laboratories, School
  - RL Libraries, School
  - RM Museums, School
- S Kindergartens, Object teaching
- SK Kitchen gardens, *i.e.* household training for children
- T Primary schools
- U Secondary schools, Public schools in general
- V Private schools
- W Academies, Gymnasiums, Public schools like Eton, Rugby, etc
- X Universities and Colleges
- Y Special schools, methods and history
- IZA Blind and deaf and dumb
- ZB Blind
- ZC Books for the Blind
- ZD Deaf and dumb
- ZF Feeble-minded
- ZI Indians
- ZK Criminals
- ZN Negroes, Freedmen
- ZP Poor, The
- ZW Women, Female education, Sex in education

Any one of these systems is subject to local modification, especially in case of large libraries. The third may be used in combination with the other two for more detailed analysis of any one class.

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## LIBRARY METHOD

**LIBRARY METHOD** — In the teaching of geography, history, and other school subjects, where the final reliance of the ordinary student is placed upon books, it has become a well-established practice to supplement the class text with additional textbooks and other readings. Some teachers have gone further and required the student to do his reading in the school or public library under the normal conditions which would accompany similar work in after life. The student is trained to know the probable sources of information, to consult the proper bibliographies and guides to reading, to make his own list of references, to estimate the materials found, and finally to prepare his work in outline with reference in good form.

The library method represents an extreme reaction from the slavish use of a class text, distinctly in the right direction. The teacher who relies largely upon one or more texts is very likely not to give the student power to investigate and develop a subject under the difficulties which would confront him, once he is removed from teachers and school facilities. This is true in a slightly lessened degree where a large number of books are used as supplementary or collateral reading. Here the student knows a larger number of books to which he can make appeal, but he may not have acquired the ability to use a library. The library method bears somewhat the same relation to the modern humanities as the laboratory method does to the modern natural sciences, it makes the pupil familiar with the materials and methods which would be used in the more thoroughgoing field of research. There is distinct danger, however, that the method may be carried too far in teaching, particularly by teachers who are themselves engaged in research, and are instructing students whose present interest in the subject is general and cultural rather than specialized and investigative. The method is slow in accumulating facts for the student, it is a prolonged matter in which the young student may soon lose interest, if he does not actually take a dislike to a subject pursued by a method so costly of time and energy. Its most extended and complicated use will be found in college and university, but it ought to be somewhat used in its less complex forms in the secondary school, and perhaps even in the highest grades of the elementary school. Such a tendency exists. The growth in approval of the efforts to teach children the power of independent study is one of the broader pedagogical sanctions behind a modified application of the library method to teaching in grammar and high schools. H. S.

See HISTORY, TEACHING OF, SUPPLEMENTAL READING

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**LIBRARY SERVICE, TRAINING FOR** —

No formal means of training for librarianship existed in this country before 1887. The library school proper was hinted at as an ultimate desirability in the *Library Journal* of May, 1879. Interest in the subject of training was aroused in 1877 at the International Conference held in London, at which accounts were given of the Italian practice of admission to library service through examinations, and of the system employed at the Vittorio Emanuele library in Rome. The idea of library training has thus been borrowed from abroad, but its development in America has been along lines somewhat different to that in Europe.

It was not until 1886, however, that plans were made for a library school. In the meantime, certain libraries had acquired some reputation for training their apprentices, chiefly in cataloguing and classifying. But the general situation was chaotic. In 1886 announcement was made that a School of Library Economy would be opened at Columbia College, in its library on Madison Avenue and 49th Street, New York. No entrance examinations were given, and the class of nineteen or twenty students entering came from various parts of the country, some with experience in libraries, some without. The work consisted largely of lessons in cataloguing and classifying, other subjects being taught by lectures, without recitations, practical work was also arranged, but was optional at first. The first class began in January, 1887, and the course was finished in June. In 1889 the resignation of Melvil Dewey, the librarian of Columbia College, and his appointment as State Librarian, led to the removal of this school from New York to Albany, the title being changed to the New York State Library School.

In 1890 Pratt Institute of Brooklyn, N. Y., which had been carrying on a class for the benefit of its own staff, announced that this class would be open to applicants not on the library staff, and twenty-two persons undertook the course. Here also no examinations were given for the first year, and no tuition fee was charged. In the second year a small fee was required, and in 1892 entrance examinations were given. Very soon other than local candidates applied and the class became a school, supplying other libraries with assistants. In 1892 Drexel Institute, of Philadelphia, opened, with a library school among its departments, and in 1893 Armour Institute, in Chicago, tried the experiment. The two former schools are still in existence, but the last-named was removed in September, 1897, to the University of Illinois, Urbana, Ill., where it has remained. In 1897 Syracuse University offered a course in library economy; in 1904 a school was opened in connection with Western Reserve University, Cleveland, in 1905 instruction was offered by the Carnegie Library of Atlanta

and Wmونا Institute of Indianapolis, and in 1907 by the Wisconsin Library Commission. The Carnegie Library of Pittsburgh established a course for children's librarians in 1900, and Simmons College, Boston, in October, 1902, made library science a subject to be studied in connection with the regular college course. The latest school, now in process of establishment, is that connected with the New York Public Library.

The character of each school is somewhat dependent on that of the institution with which it is connected. While the same subjects appear in the curricula of all, the emphasis on certain subjects is stronger in some schools than in others. The practice which can be offered to students in a college or university library is different in degree and even in kind from that offered in a public circulating library. As yet, however, this has not led to specialization in the schools as entirely as one would imagine. The only declared attempt at specialization is that of the school connected with the Carnegie Library of Pittsburgh. The Wisconsin Commission's school trains primarily for Wisconsin libraries, and the school at Atlanta for the libraries of the South, but no school refuses to enlarge the field for its graduates, when opportunity offers. The likenesses and differences of these schools can be discovered only by an examination of their various hand-books. It is evident that no type school is yet fixed.

While there is a difference of opinion among the schools as to some of the entrance requirements, the majority have an age limit of twenty years, refusing all applicants under that age. Two schools, those connected with the New York State Library and Illinois University, now make college graduation an entrance requirement. Some institutions hold a supplementary examination in addition to requiring college graduation. Others, again, give their own entrance examination more nearly suitable to the work to be taken up, the subjects of examination cover history, literature, current events, general information, French, and German. Schools that began by accepting high school certificates and diplomas or freshman requirements have gradually raised their standards and made tests definitely applicable to the work to be undertaken. A comparison of entrance examinations shows that, while there is general uniformity in the subjects required and the passing mark is usually the same, the difficulty of the examination and its value as a test vary with different schools. Examinations are very generally exchanged among the schools, and while there is not much copying, it is admitted that the practice has suggestive value. Uniformity in entrance examinations is favorably considered.

In the curricula of the schools stress was laid originally, not by intention, but of necessity, on those branches of work best exemplified

in college libraries, — cataloguing, classification, reference work, and the subjects coming under the head of technical library economy. The schools have modified this preference to some extent, although the first three subjects are still the backbone of every course. The introduction into even the small libraries of the Library of Congress catalogue card has made the importance of cataloguing consist largely in the study of subject headings rather than in the writing of the catalogue card as formerly, while the modifications insisted upon by libraries using the best-known systems of classification have led to a more searching interest in classification itself rather than to the memorizing of any system. As the field of work for libraries has enlarged, the study of library extension in its various forms has become a part of the curriculum of most of the schools.

The subjects of instruction may be classed under four heads — administrative, technical, bibliographic, literary, the two first claiming more attention than the others in the present allotment of hours. The following synopsis represents the general classification under these heads —

*Administrative* — Library buildings — legislation — government — reports — rules, blanks, and forms — accounts — staff — furniture and fittings — principles of work with children and with other classes of users.

*Technical* — Classification — cataloguing — work of order department — accessions-work — alphabetizing — shelf-listing — book numbers — mechanical preparation of books for the shelves — stock-taking — loan systems — keeping of statistics — care of supplies — preparation for binding.

*Bibliographic* — Trade bibliography — general and subject bibliography — public documents — book selection — reference work — history of printing — history of binding — history of libraries.

*Literary* — Appraisal of fiction — appraisal of current periodicals — modern European literature — study of children's books — technical French — technical German — technical Italian.

*Miscellaneous* — Indexing — proofreading — type-writing (optional in most schools) — current topics — survey of library field — library extension.

A specific amount of actual practice in one or more libraries is required by all library schools, this differing in value, both as a test of the student and as a help to the student, according to the kind of library, the amount, variety, and character of practice available, the amount and quality of supervision given, and the fullness of reports made of the students' work.

At the end of one year the schools giving a general course of this duration, offer a certificate to the satisfactory student, the schools of two or more years usually withholding the highest recognition until the completion of the course, when a diploma or the degree of B. L. S. is bestowed upon the graduate.

Within the last ten years the demands made upon the library schools have increased in number and complexity. Specialization in libraries has begun and so taken hold of the imagination of those in commercial and manu-

facturing concerns that the largest of them are organizing or reorganizing libraries and calling for trained or experienced librarians to manage them. The schools cannot give specific training for such work, and can supply only graduates with a technical library training and general education, whereas, to make the most of such libraries, a scientific specialist is needed. Professional libraries, those of medical, law, and theological institutions, and libraries of applied science, are in the same case. The schools are called upon for a highly differentiated product, and do not have it to offer, while having plenty of demand for all that they do offer. In other words, more training, and that specialized, is needed. Another defect exists in the small number of librarians instructed in bibliographical matters. Many are interested, but, owing to the lack of old and rare books and manuscripts in American libraries, to the essentially practical American temperament, and to the lack of any instruction or opportunity for instruction, few American librarians are sufficiently versed in or sufficiently appreciative of the cultural side of their work. It is still necessary, in the largest libraries, for those having collections of rare and early books or old manuscripts, to call upon the foreigner of university education and scholastic aptitudes to deal with this material.

The interest in the two fields of special libraries and of bibliography has led within the last few years to the formation of the Special Libraries Association and of the Bibliographical Society of America, and increasing pressure has since been brought to bear upon the library schools to extend their curricula in these directions.

The immense and rapid increase of libraries, the extension of the library field to cover the work of State Library Commissions, libraries in schools, grade, high, and normal, rural and county libraries, libraries in state institutions, and the sudden rise of municipal and state legislative reference libraries, and commercial and technological libraries, call for a well-considered and far-sighted scheme of training beyond anything that is now offered.

The question of remuneration entered into the question of training very early. Numerous librarians of small libraries, who were without special schooling in their work and could not afford to attend the library schools, either became uneasy in regard to their tenure or ambitious to be prepared for better work or better positions, and a demand arose for short and inexpensive summer courses which could be pursued within the limits of an obtainable vacation or leave of absence.

For the most part, such courses have been conducted by State Library Commissions which have aimed at the raising of the professional level and not the lowering of it by short cuts to positions, they have had to face the fact that it was almost impossible to get

## LIBRARY SERVICE

librarians of longer training at the salaries offered, and have therefore tried to inspire the attendants on the short courses with sufficient interest to come back for several successive years until they acquire the equivalent of a year's general course

In the same way the large city libraries, feeling unable to pay to the lowest grades of assistants the salaries required by graduates of the schools, have opened apprentice classes for training subordinate members of their staffs. Entrance to these classes is usually by examination, and after from six to nine months of instruction, combined with practice, the apprentice is eligible to a paid position. In some libraries promotion also is gained through examinations, and the qualified apprentice may reach a much better position. The only objection to these classes, from the point of view of disinterested care for librarianship, arises from the youth of the average apprentice, who has not had time for the study and reading desirable in persons engaged in an educational work and who is not likely to get time when once engaged in strenuous daily practice, from the occasional laxness of those who pass upon admissions, in regard to the personality of candidates, and from the reprehensible practice -- not generally followed, however -- of giving a general letter of recommendation to apprentices who cannot be given employment, thus enabling them to enter the field of general library work when their training has been in the methods of one library only

The work for which the training class of the large library system prepares is so specific a work that its problems are less complex than those of the library schools, but as yet it has failed, with exceptions, to attract the most desirable local material, owing partly to the low salaries offered and partly to the fact that an adequate effort has not been made to set the work before persons desirable as applicants with the attractions that it undoubtedly has in itself and with an appeal to the civic spirit that exists in many young people. M. W. P.

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## LIGHTING OF SCHOOLHOUSES

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**LICENSE** — See CERTIFICATION OF TEACHERS, TEACHERS, APPOINTMENT OF

**LICENSE, TEACHERS.** — See CERTIFICATION OF TEACHERS, EXAMINING BOARDS; TEACHERS, TRAINING OF, TEACHERS, APPOINTMENT OF

**LICENSES TO TEACH.** — See TEACHERS, APPOINTMENT OF

**LIÈGE, UNIVERSITY OF** — See BELGIUM, EDUCATION IN

**LIFE INSURANCE COMPANIES** — See INSURANCE COMPANIES, EDUCATIONAL WORK OF

**LIGHTING OF SCHOOLHOUSES** — It is now generally established that with proper orientation and unhindered sky exposure there should be in every schoolroom from one quarter to one sixth as much glass surface as floor space, e. g. from 128 to 192 square feet of glazing in a room 32 feet long and 24 feet wide. This standard has been adopted in most progressive countries. Variation must, however, be provided for according to circumstances, less window space will, for example, be required where there is a long period of intense sunshine than where long foggy days of winter or even the shadow of neighboring buildings must be guarded against. Where the standard proportions are adopted, it is also necessary that the windows are properly placed and have the best orientation. This is a matter to be handled by the architect, who must make the best use of the wall space at his disposal, safeguard the external appearance of the building, and observe the hygienic laws affecting the eye. In rooms designed for primary classes the windows should be at least 3 feet 6 inches from the floor, and for all upper grades, including high schools, they should be set 4 feet above the floor. In all cases care should be taken that the windows should be higher than the eyes of the pupils when seated at their desks, and so prevent the strong light from striking the retina. The light needed is that reflected into the eye from the page of the book or work upon which the pupil is engaged. A strong light from the wrong direction will tend to

maladjustment of the eyes, to strain of unhygienic vision, and fatigue of the ciliary muscles (See EYE) In addition to saving the eye, the necessity of placing the windows  $3\frac{1}{4}$  or 4 feet from the floor and maintaining a definitely proportioned area leads to an extension of the windows nearer to the ceiling, and one foot of glass surface near the ceiling of a schoolroom is worth more than two feet at the bottom of a low window, especially in the rooms on the ground floor, and allows the light to be more thoroughly diffused. The upper part of a window properly exposed to the light carries it farther across the room and lets it fall more directly on the work on which the pupils are engaged. The introduction of iron and steel beams in the construction of buildings permits of the extension of windows to within six inches of the ceiling without any danger to the building. The top of the glass surface ought to be at least twelve feet above the floor, allowing eight feet at least as the length of each window, without the slightest detriment to the external appearance of the building.

*Unilateral Lighting* — Windows of a schoolroom should be placed on one side only. Where there are windows on opposite sides of a room, there can be but one line through the room along which the light will be equally strong from both sides, a line, however, which shifts because of the change in relative light due to the changing position of the sun and other less important factors. As a result pupils will suffer the annoyance of crosslights and be subject to direct rays of light continually. Another defect is the introduction of wedges of shadow from the walls between the windows, while the amount of window space uses up this available room for blackboards. Unilateral lighting always from the left side is the only efficient type for a schoolroom. The windows should be placed as far to the rear of the room as possible, with the mullions as narrow as possible, so as not to obstruct the light and take up space in the wall. Thus a solid or blind wall of ten feet should be left in front of the windows. No objection can be raised to this arrangement, since, as was stated above, the only effective light in a schoolroom is that reflected from the work with which the pupils are occupied, and the pupils' desks are rarely nearer the teacher's end of the room than eight feet. The position of windows here described concentrates the light and delivers it on the desks of the pupils.

Windows should never be placed facing the pupils, where they are still found they should be covered with opaque curtains so fastened to the sash that no beams of light can come through. Nor should there be windows in the rear of a room for purposes of light. Where, as in the south, they are desirable for ventilation, they should be placed about eight feet from the floor up to the level of the other

windows, with which they should harmonize in size. They should be hinged on the lower side and fastened above with a spring catch. Stained glass or an opaque shade may be used with these windows, for the light should be excluded for the benefit of the teacher. If any attempt is made at decoration, a design of leaded glass will be found most successful; but the main purpose of these windows is to allow ventilation, and accordingly they should be made to open and close easily, and set so as to prevent rains from beating in.

*Width of Mullions* — The mullions, it has just been stated, should be narrow. To this objection has been made that they would not afford adequate support, a valid objection in the case of two-story buildings or buildings of brick or stone construction only. A metal mullion has, however, been devised which solves this problem. This form of mullion has been used with success under many conditions. Where walls are not of necessity thick and heavy, part of the weight may be supported from above by using a steel lintel in addition to the narrow mullion. The use of the arch form of lintel which transfers the strain to a greater or less degree to the main walls in front and behind the windows is not to be recommended, because it encroaches on the window surface on both sides. The steel lintel has been used in many of the largest and most successful school buildings in New York City.

The mullion should be wedge-shaped with the edge turned outward, so that a wider gathering of light is made possible by reason of its bevelled form, and much of the shadow otherwise cast by the mullion is eliminated.

*Orientation* — In the latitude of this country it is essential for purposes of lighting to open as many windows as possible toward the east or west. The east light is the best, the south is most trying and troublesome, the west is good, and the north should be used only for rooms designed for art work in its various forms. The advantage of the east light is that a room may be directly purified by the sunlight almost before school work begins, while for the rest of the day a clear white light from the eastern sky can be obtained without the glare of the direct rays of the sun. With light coming from the south it is almost impossible to keep out the direct sunshine and at the same time get indirect and diffused light into the room. Whatever means may be used, streaks of light will filter through the room and tax the accommodative muscles of the eyes. Where the noonday heat is strong, as in the south, it will be difficult to keep out the heat, and at the same time not to darken the room too much, if ventilation depends on the windows. To cut out direct sunshine and at the same time permit the air to pass unhindered is a matter of some difficulty. Venetian blinds have been recommended, but have certain defects. They are noisy, cut out the

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best light, are rarely adjusted to meet the exact demands and conditions, and, when rolled up, often admit pencils of light, and easily get out of order. Sliding blinds are, if anything, even less desirable. The difficulty of providing successful blinds as screens from the sun has not yet been overcome.

For the primary grades schoolrooms receiving light from the west are often more satisfactory in hot climates than those receiving light from the east, for the day's sessions of these classes is usually over before direct sunlight streams into the room. But for the upper grades lighting from the west is less desirable, since the rooms are apt in summer to become uncomfortably warm after two o'clock.

As few rooms as possible should have windows placed on the north side unless they are to be used for art work, or possibly as manual training rooms and laboratories. It is a safe rule, then, to have as many classrooms as possible facing the east or west and to utilize the space on the south for libraries, offices, physical and biological laboratories, and that on the north for drawing, manual training, and chemical laboratories. This statement will sufficiently indicate the importance of considering the lighting of schoolrooms at the time of selecting a site for the building. (See ARCHITECTURE, SCHOOL.) Sufficient has been said to show that in this country it is best that a schoolhouse should be built with its main axis running from north to south in order that the classrooms, as far as possible, may be supplied with light from the east and west. While a school building facing at an angle of 45° with the meridian would receive sufficient sunning and light in almost every room, there are disadvantages connected with the plan which make it inadvisable, thus with the main axis of the building from northeast to southwest those rooms looking toward the southeast would be troubled by the long exposure to the direct rays of the sun, giving rise to difficulties already referred to, and with the axis from southeast to northwest the rooms facing to the southwest would be affected in the afternoon both by direct sunlight and heat.

**Ribbed Glass** — The problem of lighting rooms too wide for the height of windows, or those situated where sufficient window surface could not be obtained, or those too close to tall buildings, or neighboring trees, has been greatly simplified in recent years by the use of ribbed or prismatic glass. It has been used most extensively in business houses, such as stores, where deep rooms must get all their light from a restricted frontage. It is not expensive, and when set high up in a window increases and diffuses the light in a very helpful way. It is generally not advisable to set such glass in the lower part of windows of schoolrooms, on account of the glare thus produced. But for basements, dark hallways, toilet rooms, and closets it is specially valuable.

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For regular classrooms it is most satisfactory when placed in the upper half of the windows. There are now many dark and gloomy schoolrooms in daily use, which could be easily transformed into well lighted, cheerful rooms by the use of ribbed glass, which is comparatively inexpensive to substitute for the ordinary glass.

**Artificial Lighting** — Because of this situation of the country with reference to latitude, comparatively few public schools have heretofore needed artificial lighting during the day session. But as evening schools multiply, and as school buildings come to be used more and more for various social and educational undertakings, it is rapidly becoming necessary to give this phase of school equipment more consideration. It is highly advisable, therefore, that all plans for high schools, manual training schools, and all other school buildings likely to need either power or light, should have provisions for electric wiring and such fixtures as are necessary for immediate use. In general it is good economy to thoroughly wire all school buildings, where the probability is on the side of future need for it, especially since this is not an expensive undertaking. For the same reasons gas pipes ought to be installed, for progress is rapid nowadays, and good schoolhouses ought to last a hundred years or more. It goes without saying that electric lighting is much to be preferred to gas, even though the new methods of handling gas flames insure good light. Electric lights give out but little heat, and release no bad odor or noxious gases. They reduce the danger from fires, are far more easily and quickly lighted, require less attention, and offer no dangers from leakage, or contamination of any sort. This cannot be said of gas lights under the most favorable methods yet devised. Clay gives the following table, prepared by Professor Lewes, which shows the "Comparative Hygiene Effect of Illumination per Unit of Light."

	CARBONIC ACID EVOLVED	MOISTURE EVOLVED	OXYGEN REMOVED FROM AIR	HEAT PRODUCED
Acetylene	100	100	100	100
Coal gas, flat flame	480	1470	520	795
Coal gas, mantle	45	230	62	87
Petroleum, large lamp	995	700	498	246

(See FELIX CLAY, *Modern School Buildings*, London, 1902, p. 118.)

But electric lights are hard on the eyes, particularly when the filaments are visible. It is necessary, therefore, to shield the eyes from these by ground glass bulbs, or some form of refractive and dispersing globes surrounding the bulbs. The chief objection to the ground glass bulb is that it permits only about 50 per cent of the light to pass through.



As the result of some extended experiments for the Schoolhouse Commission of Boston, it was found that for direct lighting "the most satisfactory results were obtained from nine thirty-six candle power forty-watt Tungsten lamps, each equipped with the diffusing prismatic reflector. These shades are constructed of prismatic glass coated on the outer or inner surface with a white enamel."

Various forms of holophanes have been used, and the best of these give good light dispersion and at the same time shield the eyes from the glare of the globes. The chief point, however, for consideration in preparing plans for wiring schoolrooms, assembly halls, and other rooms of like sort, is to see that the wires are properly placed and that switches are conveniently arranged both for power and lights.

In villages and country districts not yet supplied with electric lighting currents, the acetylene lighting has proved very helpful. This gas, which is made by bringing calcium carbide into contact with water, gives a brilliant white light and burns quite regularly. It is not expensive to install such plants, and where a comparatively cheap and a very effective gas illuminant is needed, this form is to be recommended. It has, however, the disadvantages and dangers of all such illuminants.

F B D

See ARCHITECTURE, SCHOOL, and the references there given.

**LILLE, UNIVERSITY OF** — Although established as a university only as recently as 1896, this institution directly succeeded the old university at Douai which had been founded by Papal Bull in 1560 and sanctioned by Philip II of Spain in 1562. There were five faculties of theology, civil law, canon law, medicine, and arts. The university was intended to stem the rise of Protestantism in the Low Countries. The continuity of organization and work was not broken by the change of the rulers of Flanders in the reign of Louis XVI. A decline set in during the eighteenth century, and in 1793 the university was closed by Napoleon, and in the reorganization of 1806 only the faculty of letters was restored, to be closed again from 1826 until 1854. At the latter date a faculty of medicine was added, and in 1865 a faculty of law. In 1875 a faculty of medicine and pharmacy was established at Lille, whither the other faculties were transferred in 1887. In 1890 the four faculties were recognized as a university. The enrollment of students in 1910 was 1675 (law, 567, medicine, 368, pharmacy, 109, science, 335, letters, 296). For the present organization see FRANCE, EDUCATION IN.

**LILY, WILLIAM** (1468-1522) — The writer of the authorized Latin grammar which for many generations was to England what for a thousand years Donatus (*qv*) was to Europe.

Lily was born at Odham, near Southampton, c 1468, and was educated at Magdalen College, Oxford, where Grocyn (*qv*) lectured on theology. Lily intended to enter the priesthood, and took a pilgrimage to Jerusalem; but became converted from the priesthood of ecclesiasticism to the ministry of learning, and entered with enthusiasm into the study of Greek. At Rome he studied under Sulpitius and Pomponius Lætus Sabinus, so as to make himself a thorough Latinist. When Lily returned to London, he was ranked, with Grocyn and Linacre (*qv*), among the earliest of English Renaissance Grecians and Latinists. About 1512 Lily was appointed headmaster of Colet's foundation of St Paul's School, London, an office which he held till his death in 1522. Lily's fame as a schoolmaster is eclipsed by his authoritative *Latin Grammar*. For an account of this see LATIN LANGUAGE.

F W

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**LIMEN** — This term has been introduced into recent psychological discussions as a substitute for the earlier term "threshold," which was employed to indicate that degree of a sensation which is just perceptible. Thus, when one begins with a very faint air vibration which is not perceptible to the ear and gradually increases its intensity, he ultimately reaches the threshold or limen of the sensation or the point at which a sound is just audible. There are also limens of difference, that is, after a sound has reached a certain intensity, if it is gradually changed so as to become more or less intense, the point is reached at which the difference in intensity is just noticeable. Sound serves as a good example, but all forms of sensory experience exhibit limen values in analogous fashion.

C H J

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**LIMITS** — A topic necessarily met in an elementary way in the study of plane geometry, and one that forms the subject of scientific study in the calculus, in the theory of irrational numbers, and elsewhere in more advanced mathematics. The term is difficult of simple definition, but is easily illustrated. For example, the length of a circle is, and may be defined as, the limit of the inscribed or circumscribed regular polygon of  $n$  sides, as  $n$  increases indefinitely. Similarly, the limit of the sum

of the series  $1, \frac{1}{2}, \frac{1}{4}, \dots$ , can easily be shown to be 2. The following definition has been suggested by Professor J W Young as one that is as simple as can reasonably be expected. "Let C be any linearly ordered class, and let the variable  $x$  represent any element of this class. A segment of such a class may be defined as the elements of the class which lie between two given elements of the class. Given an element  $a$ , which need not be itself an element of the class C, but which is ordered with reference to C (it may be an element of a linearly ordered class C' containing C), a neighborhood or vicinity of  $a$  is defined as any segment of the class C such that  $a$  lies between two elements of this segment. The element  $a$  is then said to be a limit element of the class C, provided every neighborhood of  $a$  contains elements of C."

The practical question for the teacher of high school mathematics is this: where should the subject be introduced, and how extensively should it be treated?

In reply, it seems at present to be the feeling of the great majority of teachers in the United States that no scientific treatment of limits should be attempted in the high school. Incommensurable quantities ( $qv$ ) are now not generally recommended for pupils of this grade, and practically the only need for the idea of limit is found in the treatment of the circle and the round solids. For this treatment nothing is required beyond the idea of limit, a strict definition like the one given above not being necessary. Theorems relating to limits are usually postponed until the calculus is reached, when the needs of the subject and the maturity of the student demand and permit their introduction. D E S

**LINACRE, THOMAS** (1460?-1524) — Humanist physician; received his early education at Canterbury, probably at the school of the monastery of Christ Church, under William de Selling, who had visited Italy. Linacre then went to Oxford, and in 1484 was elected Fellow of All Souls. About 1485-1486 Linacre went with Selling to Italy, and at Florence was under the instruction of Politian and Demetrius Chalcondylas. He met Hermolaus Barbarus at Rome, and Aldus the printer at Venice. At Padua he stayed long enough to graduate as Doctor of Medicine. It is clear that he must have remained several years in Italy. He had already begun a translation of the book on the *Sphere* of Proclus from Greek into Latin, and this was completed or revised in England, and published by Aldus at Venice in 1499, being the first work of the Renaissance influence done by an Englishman. Linacre settled at Oxford, and was incorporated M.D. and lectured, probably, on medicine, though he taught pupils Greek, *e.g.* Sir Thomas More ( $qv$ ). In 1501 he was tutor to King Henry VIII's son Arthur, and removed to London,

and in 1523, together with J. L. Vives ( $qv$ ), was Latin tutor and physician to the Princess Mary, for whom he wrote an elementary Latin Grammar — the *Rudimenta Grammatices* (date not known). Many editions of the *Rudimenta* also contain Vives' *De Ratione Puerili*, suggestions for systematic reading and composition. Linacre received a number of ecclesiastical appointments, though he probably did no work in them. In 1518 he founded the College of Physicians, which in the first instance held its meetings in his house in Knight-riding Street, London. He also bestowed great benefactions on the University of Oxford.

In 1517 he turned his Greek studies to use for the purposes of his profession of medicine, and translated from Greek into Latin the first six books of Galen's *De Sanitate Tuenda* (See GALEN). In 1519 this was followed by a similar translation of Galen's *Methodus Medendi*, a great undertaking. In 1521 he translated Galen's *De Temperamentis*, a work of the first importance in its historical influence, one of the bases of the psychology of medieval and Renaissance times. With regard to these translations from classical medical writers, Dr J F Payne remarks that, in spite of drawbacks, the revival of classical medicine led "immediately to the revival of anatomy, of botany, and of classical medicine as progressive sciences, and produced results quite comparable to those ascribed to the Renaissance in other departments of knowledge." Other medical translations into Latin from the Greek of Galen made by Linacre are of less importance. In 1524 he published his *De Emendata Structura Latini Sermonis*. This work was apparently written at the request of Colet to be used in St Paul's School, but was found too comprehensive and regarded as unsuitable for the capacities of boys. Colet adopted a brief grammar (*Æditho Coleti*) drawn up by himself and Lily ( $qv$ ). This incident caused a quarrel between Linacre and Colet, which Erasmus unsuccessfully tried to settle. The *De Emendata Structura* is not an ordinary grammatical accidence, but an account of Linacre's ingatherings in the way of illustration from all sources placed under the headings of the parts of speech. The significance of the work is that it is the application of the inductive method to philological and grammatical purposes, and shows a command over authors and a power of purposeful multitudinous citation, in both Latin and Greek, which was entirely new to England in 1524. In the second part of the book Linacre enters upon construction in composition, and expounds the use, with examples, of figures of speech. The last section is entirely given to Greek constructions, and the book, therefore, marks the first published Greek study in England. F W

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**LINCOLN, ALMIRA.** — See PHELPS, ALMIRA LINCOLN.

### LINCOLN COLLEGE, LINCOLN, ILL. —

A coeducational institution chartered in 1865. In 1901 the charter was amended, making the college a constituent member of the James Milliken University (*q.v.*) Preparatory, collegiate, normal, music, and elocution departments are maintained. The college confers the degree of A. B., B. S., and Ph. B., on completion of the appropriate courses. The degrees of A. M. and M. S. are given after one year of graduate work, of which one semester must be in residence. The faculty consists of seventeen members.

### LINCOLN MEMORIAL UNIVERSITY, CUMBERLAND GAP, TENN. —

A coeducational institution founded in 1897 to provide higher education for the people of the mountains. Preparatory courses and domestic science, commercial, music, elocution, art, printing, industrial, agricultural, normal and collegiate departments are maintained. Courses leading to the degrees of A. B., B. S., and Mus. B. are offered. There is a faculty of twenty-eight members. The enrollment of students in 1911-1912 was 301. The Lincoln Memorial Hospital and the Lincoln Memorial Medical College, both of Knoxville, are affiliated.

### LINCOLN UNIVERSITY, CHESTER CO., PA. —

An institution for the higher education of the negro race, chartered in 1854 as Ashmun Institute, the present title being adopted in 1866. Collegiate and theological departments are maintained, the former is undenominational, the latter is under the control of the Presbyterian Church. The requirements for entrance to the college are fifteen units of high school work. An arts course is offered, leading to the A. B. degree. In the theological department students are admitted to the regular course if they have already pursued a college arts course or its equivalent. The degree of S. T. B. is granted. The enrollment of students in 1911-1912 was 134 in the college and forty-three in the theological seminary. The faculty consists of thirteen members.

### LINDNER, GUSTAV ADOLF (1828-1887).

— An Austrian educator, was born at Rozdalowitz in Bohemia and studied at the University of Prague. In 1854 he became a teacher at the gymnasium of Cilli in Styria, where he wrote

## LINE OF REGARD

his *Lehrbuch der Psychologie für Mittelsschulen* (*Textbook of Psychology for Secondary Schools*, 1858). This book, as well as his *Logic*, which soon followed, is still largely used in Austrian schools. In 1871 he was appointed director of the Realgymnasium at Prachatitz in Bohemia, and soon afterwards put in charge of the Czech teachers' seminary at Kuttenberg. In this position he published two textbooks on general methodology and general pedagogy, as well as his *Enzyklopädisches Handbuch der Erziehungskunde* (see ENCYCLOPEDIAS OF EDUCATION). He was also the editor of a series of pedagogic classics, for which he translated the *Didactica Magna* of Comenius. In 1878, when the University of Prague was split into two institutions, a German and a Czech, he was called as professor of philosophy and pedagogy to the Czech university, where he taught until his death.

Lindner was largely instrumental in introducing the Herbartian psychology and pedagogy into Austrian schools. Besides the books spoken of above, he published a number of philosophical and pedagogic writings, among which may be mentioned, *Introduction to the Study of Philosophy*, 1866, *The Problem of Happiness*, 1868, and *Contributions to Social Psychology* (*Ideen zur Psychologie der Gesellschaft als Grundlage der Sozialwissenschaft*, 1871). F. M.

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**LINDSLEY, PHILIP** (1786-1855) — University president; graduated from Princeton in 1804. For three years he taught in the schools of New Jersey. He was tutor and professor at Princeton from 1807 to 1824, and president of the University of Nashville from 1824 to 1850. He was active in the work of the early American educational associations, and published numerous articles on educational subjects. He was one of the early advocates of normal schools for the training of teachers.

W. S. M.

### LINE FORMATION IN SCHOOL ROOM.

— See SCHOOL MANAGEMENT.

**LINE OF REGARD** — A single point to which both eyes are directed is called the *fixation point* or the *point of regard*. The *line of regard*, is, then, an imaginary line passing from the center of rotation of the eyeball to the point of regard. The two lines of regard, in any act of binocular fixation, thus form an angle at the point of regard. The term *plane of regard* is applied to the plane passing through both lines of regard. Both the concepts *line* and *plane* of regard are used in describing or calculating the possible movements of the eye.

R. P. A.

See EYE

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**LING, PER HENRIK** (1776–1839) — The founder of the Swedish or Ling system of gymnastics, was born in Småland, one of the southern provinces of Sweden, Nov. 15, 1776. He was educated in the higher classical school at Wexio, where he distinguished himself by his "mental ability, strong individuality, firm, unyielding will, and reckless enterprise." He was dismissed from the school, with others of his comrades, in November, 1792, for some breach of school discipline. Not much is known regarding his life in the next six years, except that he was a student at Lund and Upsala universities, where he studied theology and modern languages. From 1799 to 1804 he studied philology at the University of Copenhagen, and engaged in literary work. He wrote in French, German, and Danish, translated the poem *Balder's Death* by Johannes Ewald into Swedish, and wrote in Danish a three-act comedy, *The Envious Man*.

During the years of his stay in Copenhagen, Ling frequented a fencing school conducted by two Frenchmen, and there acquired great skill in the art of fencing. He also attended a private *Turnanstalt* conducted by Nachteggall, where he took up gymnastics with great enthusiasm. In 1804 Ling was appointed fencing master at the University of Lund. Besides fencing, Ling also taught riding and vaulting. He remained at Lund until 1812, when he was appointed teacher of gymnastics at the Royal Academy in Karlberg near Stockholm. Soon after taking up his work at Karlberg, he conceived the idea of founding in Stockholm a royal Central Institute for the training of teachers of gymnastics. The Institute was opened in 1814, with Ling as its director, and is still in existence. Ling taught gymnastics at Karlberg until 1825, and he retained the post of director of the Royal Central Institute from its foundation in 1814 until his death in 1839. In 1835 he was elected to membership in the Swedish Academy, and was given the honorary title of Professor and the decoration of the Order of the North Star by King Charles XIV.

Ling believed that gymnastics had a rightful place in education, medicine, and national defense. He had studied anatomy and physiology at the University of Lund, and tried to base his system and teachings upon rational and scientific foundations. He did not leave any complete treatise of his system of gymnastics. His chief works are *The General Principles of Gymnastics*, published in 1840 by his pupils, Liedbeck and Georgii, *Regulations for Gymnastics to be Used in the Army*, published in 1836, and *Instructions in Gymnastics and Bayonet Exercises for Soldiers*, published in 1838.

G. L. M.

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**LIP-READING** — See DEAF, EDUCATION OF.

**LIPPE, PRINCIPALITY OF, EDUCATION IN** — See GERMANY, EDUCATION IN.

**LIST SPELLING** — See SPELLING

**LITERARY CENSORSHIP — Early Period**

— The practice of supervising, restricting, or prohibiting the expression of intellectual conceptions or the dissemination of ideas is as old as the organization of society itself. Some one holding authority or claiming authority was always ready to object to the free circulation of ideas as threatening danger to existing institutions, religious or political. The two earliest authorities recognized by men, that of the ruler, whether of the family, the clan, or the State, and that of the priest, the representative of the accepted religion, were equally interested in retaining control over the direction and the expression of thought. In the earlier communities, political and religious authority were frequently combined in the same individual. It is probable that in these states the contention for an authoritative control of opinion rested chiefly upon the risk that heretical utterances might interfere with the public peace.

The earliest method of publication was in the form of the lecture or recital. A censorship or control of the utterances of the lecturer could be exercised by the very simple method of prohibiting the lecture, and, in case of contumacy, of imprisoning or killing the lecturer. The decision of the authorities at Athens in 400 B. C. that Socrates must be put to death, is often referred to as possibly the earliest recorded example of censorship by the State. It is certain that no organized official censorship ever came into existence in Greece. The philosophers and the poets appear to have lectured and written without hindrance and without supervision.

An early example of the influence of the Christian Church for the restriction or elimination of objectionable literature is described in Acts xix, 19. "Many of them also which used curious arts brought their books together and burned them before all men." This was frequently cited in later centuries by upholders of the censorship policy of the Church of Rome. Certain of the more artistically printed editions of the *Index* (for instance, the first Roman edition of the *Index* of 1758) contain, as a vignette title, a representation of Paul casting into the flames the books of magic, and beneath the print the verse from Acts.

The whole theory of church authority and of excommunication for disregard of such authority was a matter of slow development through the ages that followed the preaching of St. Paul. It was, in fact, not until the sixteenth century that there came into existence anything that could be called a censorship policy or any attempt at a general censorship system; but from the earliest periods in the history of the Church, there are instances of condemnations of individual writers, and of prohibitions, under severe penalties, of the manifold or of the distribution of particular works. These prohibitions are usually the result of one of the series of fierce controversies about dogma that characterized the earlier centuries of the Church. They emanate for the most part from councils, but they are occasionally issued directly by the Pope or by local bishops. In certain cases, they take the form of an imperial edict, but even in these the initiative comes from a council. It is probable that the influence either of the councils or of the Emperor in restricting the multiplication or distribution of writings that had been condemned was not very effective. The edicts and decrees must be considered as representing an expression of opinion connected with some one of the bitter theological controversies of the day, rather than as regulations to be enforced. There was, in fact, no machinery for the enforcement. The work of the copying scribes could not be supervised, as was possible later for the operations of the printers, and the manuscripts could be passed from hand to hand among the sectarians without the intervention of a bookshop.

**Roman Empire** — There are instances of literary censorship on the part of the imperial authorities of Rome before the institution of the Christian Church. Thus Tacitus remarks that Augustus was the first ruler who undertook to punish a word written or spoken, that is to say, a word unaccompanied by action. The law of the Roman Republic had recognized as deserving of punishment only criminal deeds, but the Emperor brought the authority of the law to bear upon writings described as libellous or scandalous (*libelli famosi*). He ordered, for instance, that the writings of Labienus should be publicly burned. His successor Tiberius issued a still stronger regulation for the supervision of undisciplined or insubordinate writings. Cremutius Cordus was driven from his occupation and left to die through poverty for the offense of speaking of Gaius Cassius as the "last Roman." His writings were ordered to be burned by the *ædile*. Tacitus speaks with scorn of those who, in the possession of a little momentary power, undertake to crush out opinions not in accord with their owner to prevent such opinions from being handed down to posterity. The writings of Verginio were prohibited by Nero. Concerning this prohibition, Tacitus

writes "So long as the possession of these writings was attended by danger, they were eagerly sought and read, when there was no longer any difficulty in securing them, they fell into oblivion." This statement of literary conditions under the early Empire shows a curious resemblance to the results which obtained throughout Europe fourteen centuries later. The books which were formally condemned and the titles of which were placed on the *Index* obtained an advertisement which secured for them a decided advantage over works of the same general character that had not been fortunate enough to be picked out for reprobation. An edict ascribed to Domitian ordered that the historian Hermogenes and any book dealers who assisted in the distribution of certain writings of his which had libeled the Emperor should be crucified. Severus and certain other bishops Justinian deposed from office, because they had been lax in their supervision of literature and had permitted the wide circulation throughout the realm of prohibited books and of pernicious writings.

**Catholic Church** — With the development of the Church of Rome to the ecclesiastical headship of the civilized world, the claim for the supervision of literature and for the control of the productions of authors was asserted by the Church as the legitimate successor of the imperial authority. The earliest and most sweeping censorship of the Christian Church is probably that contained in the *Apostolic Constitutions*, which purport to have been written by St. Clement of Rome at the dictation of the Apostles. These *Constitutions* prefigure the *Index* by forbidding the Christians to read any books of the Gentiles. "The Scriptures should suffice for the believer" (*Const. Apost. Lib. I, CVIII*). This general prohibition of St. Clement (which bore date about 95 A.D.) is followed by a series of prohibitions issued by the authorities of the early Church, mainly under the decision of the councils. For instance, in 150, a synod of bishops of Asia Minor, meeting at Ephesus, prohibited the *Acta Pauli*, an historical romance written a little earlier in the century, and having for its purpose the clarification of the life and labors of St. Paul.

In 325 edicts were issued by the Emperor Constantine and prohibitions by the Council of Nicæa, against the writings of Arius and of Porphyry. The Emperor ordered the penalty of death for any who might conceal copies. In 399 the Emperor Arcadius issued an edict, based upon the recommendation of a council of the Church, ordering the destruction, under penalty of death, of all books of magic art. The various denunciations of books of magic art were, under the influence of the ecclesiastics who might happen to be in control of the proceedings of the councils, utilized for the repression of the writings of their theological

opponents In 399 the Council of Alexandria, presided over by Bishop Theophilus, issued a decree forbidding the owning or the reading of the books of Origen (*q.v.*) The Egyptian monks protested, and the bishops were obliged to call in the prefects to enforce the authority of its edicts In 436 the Emperor Theodosius issued an edict forbidding the possession and the reading of the books of the Manicheans and ordering the burning of the same In 446 Pope Leo I issued an edict ordering the destruction of a long series of writings described as not in accord with the teachings of the synods of Nicaea, and, therefore, antagonistic to the Christian religion. The prohibition prescribes that "Whoever owns or reads these books is to suffer extreme punishment" In 499 Pope Gelasius issued what is later referred to as the first papal *Index*. It presents a catalogue of books prohibited, but the prohibitions have to do not with private or general, but with public or official reading. In 496 Gelasius issued a decree, confirmed later by the Emperor Gratian, which specified the patristic writings accepted and approved by the Church, and which then proceeded to the condemnation of a long series of apocryphal and heretical writings and writers The classification of the writings to be condemned is curiously general in terms (*Haec et omnia his similia*, etc.)

These condemnations are presented as early examples of the basis of authority for the restriction of reading The restrictions emanated for the most part from the councils, and were promulgated by the popes, while their enforcement depended upon the exercise of imperial authority The Church and the State worked in unison for the control of expression of opinion The orthodox opinion was that which was supported by the majority of the latest council and which secured the approval of the Pope A year or two later the majority might be changed and the Pope replaced by an ecclesiastic representing a different school of thought There is no record of any individual opinion on the part of the Emperor His edicts were issued and his actions were taken under the counsel of the ecclesiastics and for the safety of the State

From the ninth to the fifteenth centuries a long series of condemnations and prohibitions of books were ordered by various ecclesiastical authorities, councils, bishops, and popes These prohibitions present examples of the attempts made, in advance of any system of general indexes, to supervise, control, and restrict the production and distribution of literature The penalties placed upon the writers of books classed as heretical cover excommunication, imprisonment (sometimes for life), and, not infrequently, death. The penalties upon those who continue, after the issue of the prohibition, to distribute or to read the heretical writings cover excommunication and occasionally imprisonment In

869 Gottschalk, a German monk, at the instance of Hincmar, Archbishop of Rheims, was excommunicated and condemned to imprisonment for life; he died after twenty years' confinement. His offense was the publication of a treatise opposing certain doctrines of St. Augustine The conclusions arrived at by Gottschalk were, curiously enough, substantially in accord with those maintained seven centuries later by successive popes and by the "orthodox" Church generally, against the "heresies" of Jansen and Quesnel

During the period here in question, 830-1430, it did not prove possible to secure any consistency of action on the part of the ecclesiastics undertaking to represent the authority of the Church The changing personalities of the successive popes, the average of whose reigns was less than five years, and the varying points of view of synods and bishops, speaking from all parts of Europe, produced a series of utterances in regard to heresy which naturally enough were frequently conflicting and which might have caused serious difficulties to conscientious believers who were endeavoring in good faith to maintain for their teachings and their studies a consistently orthodox standard

In 1215 the Fourth Synod of the Lateran condemned a tractate written by the Abbot Joachim against Peter Lombard The *Sentences* of Lombard had been accepted by the Church as presenting the best compact statement of the views of the orthodox Church, and the book was utilized for instruction in the several university centers The Lateran decree reads. "Any one who shall attempt to defend the heretical utterances of the said Joachim concerning the Trinity shall be thrust out as an heretic"

In 1225 the Synod at Sens condemned the treatise by Scotus Eriugena (*q.v.*) written about 860, *De Divisione Naturae* Pope Honorius confirmed this condemnation, and ordered that all persons possessing copies of the books must, under penalty of excommunication, deliver the same within fifteen days to the ecclesiastical authorities for burning Scotus had, during the first century at least after his writing, been accepted as an orthodox son of the Church, but his teachings gave rise later to many controversies In 1231 Pope Gregory IX wrote to the University of Paris directing the prohibition of the *Libri naturales* of Aristotle, which had already been condemned by the Provincial Council, until they had been freed from heresies During the greater part of the Middle Ages, the views of Aristotle had been accepted by the Church as in accord with orthodox teachings; and as his writings made their way into Europe they were generally accepted for instruction in Montpellier, Paris, and elsewhere.

From time to time, however, some ground for protest is found on the part either of a council or a pope. One of the teachers whose

influence was most potent during the middle of the thirteenth century against the heresies that were disturbing university circles was the great schoolman, Thomas Aquinas (*qv*). He is credited with having turned the tide of skepticism in Paris. The Minorite scholar, Petrus Johannes Oliva, who died early in the fourteenth century, is an example of an author whose writings gave occasion for conflicting decisions on the part of the highest authorities. In 1312 John XXII condemned these writings and ordered them to be destroyed; and the bones of Oliva were disinterred and were burned with copies of his books. In 1471 Sixtus IV, himself a Minorite, after further examination of the writings of Oliva, declared them to be sound in doctrine and removed the prohibition. A similar result obtained in the case of Raymond Lully, who died in 1315. In 1378 Gregory XI condemned two hundred propositions selected from Lully's treatises. In 1559 Lully's name was placed in Class II of the Roman *Index*; but in 1564 the Council of Trent decided that the condemnation was unwarranted, and freed Lully's books from prohibition.

In 1387 King Richard II of England prohibited, under penalty of imprisonment and of confiscation of property, the sale or purchase of the heretical writings of Wyclif, who had died three years earlier. This is the first instance in England, and is certainly one of the earliest in Europe, of a condemnation by royal or by political authority, which does not even in form rest upon a decision of the Church. In 1408 the Convocation of Canterbury prohibited the reading of any writings of Wyclif or any writings of the associates of Wyclif until the same had been expurgated by censors appointed by the universities of Oxford and Cambridge. In 1415 the Council of Constance condemned as heretical the writings of Wyclif. In the same year the Council took similar action in regard to the writings of John Hus, copies of which were publicly burned, and in the year following the same fate came upon Hus himself.

In 1463 Pope Pius II, Æneas Sylvius, condemned, in a Bull directed to the University of Cologne, a tractate on the Council of Basel which had been written by himself before his elevation to the papacy. He says further to the university: "In case you may find among writings of mine any that are unsound or are likely to prove pernicious, these should be analyzed and condemned." To a friend who chaffed him in regard to the correction of his own views, the Pope said very simply: "As we climb higher, we are able to see more clearly."

The great impetus given to the distribution of books by the invention of the printing press (1450) had as one result a fresh effort at supervision and control of literary production on the part of the Church. The first measures that were put into shape for the enforcement of

such control provided for what has been called preventive censorship, that is, for a requirement, before the printed book could be put into circulation, of an examination and approval by ecclesiastical authorities. It was, however, not until half a century after Gutenberg had printed his first book that official cognizance was taken of the new art in a Papal Bull. And it was nearly half a century later before the Church undertook, through a system of expurgatory and prohibitory indexes, to maintain a systematic censorship upon literature. The invention of printing had as an immediate result an enormous increase in the influence upon the shaping of popular opinion of the written word, which now became the printed word, that is, of thought in the form of literature.

It was not until nearly three fourths of a century after Gutenberg, when the leaders of the Reformation were utilizing the printing presses of Wittenberg for the spread of the Protestant heresies, that the ecclesiastics became aroused to the perils that the new art was bringing upon the true faith and upon the authority of the Church. If the people were to be protected against the insidious influence of the new heresies, it was essential that some system should be instituted under which the productions of the printing press could be supervised and controlled. The more active and far-reaching the operations of the printers, the greater the necessity for the watchful supervision of their work, and the greater at the same time the difficulty in making such supervision complete and effective. The requirement was met by mandates which prohibited any books from reaching the public that had not been passed upon and approved by ecclesiastical examiners appointed for the purpose. The production and the circulation of any literature not so approved was stamped as constituting a misdemeanor of the most serious character, one that might become the final sin against the light, the offense against the Holy Ghost.

In 1559 the responsibility for the censorship of literature was assumed directly by the papal authority through the publication of the *Index Auctorum et Librorum Prohibitorum* of Paul IV, the first of a long series of papal *Indexes*, aggregating, up to 1900, forty-two in all. No *Index* has been published since that of Leo XIII, in 1900, although a number of books have been condemned by separate prohibitions. It does not appear to have been the intention either of Paul or of his successors that the responsibility for the system of censorship should be retained under the exclusive direction of the papal authorities, and there is no record of objections having been raised to the publication of *Indexes* prepared by such representatives of the Church as the theological faculties of the universities of Louvain and of Paris or by the Inquisition

of Spain. There were, however, very material differences between the lists as shaped in Rome of works condemned as heretical and the similar lists issued within the same period in Louvain, Paris, or Valladolid. Books of undoubted heresy included in one *Index* failed to find place in another, and it is not possible to arrive at any consistently applied principle or policy by which the selections of the chief compilers were determined. It might at first be assumed from the wording of the prohibitions that any and all of the *Indexes* published under the direction of ecclesiastical authorities such as those specified must have been intended to be equally binding on all the faithful irrespective of political or ecclesiastical boundaries. In the majority of cases, however, no attempt was made to enforce the prohibitions of an *Index* outside of the territory of the state in which it had been promulgated. It is probable that the Roman *Indexes* were held to be in force outside of the immediate territory of the Church only after they had been formally accepted and promulgated by the authorities ecclesiastical and political of the individual states, such as Spain, France, the Empire, etc. The first of the series of papal *Indexes* was, as stated, issued under Paul IV in 1559, but as early as 1542 the Inquisition of Rome had promulgated a special edict prescribing penalties for the reading of heretical or doubtful books, and in 1545 was published the first Italian list of prohibited books and authors. This is one year earlier than the date of the *Index* of Louvain of 1546, which is usually referred to as constituting the first of the series of official *Indexes* of the Church. In 1571 the task of compiling the papal *Index* was confided by Pius V to a body organized under the name of the *Congregation of the Index*, which is still (1912) carrying on its work. These Roman *Indexes* exercised an important influence, even in the states in which the papal prohibitions were not officially published, as the titles collected for them were largely utilized by the makers of the *Indexes* of Spain, France, and Belgium; and in like manner the material put into print in Louvain, Paris, and Valladolid formed the basis of certain of the Roman lists. A more authoritative position in regard to the work of censorship was taken by the Papacy through the publication, in 1564, of the *Index* of Trent. This *Index*, as well through its formulation of the rules for censorship as because of the greater comprehensiveness of its lists, constituted the most authoritative guide that had yet been issued. The *Tridentine Index* was promulgated under the authority of the council and successive popes throughout all the Catholic states and also in countries in which the Catholic Church, while no longer the ruling power, still possessed followers. It was printed in a long series of editions issued from all the more important publishing centers; its lists formed the basis of all subsequent

*Indexes*, while its famous ten rules were accepted as the guide for future censors and compilers. After the Council of Trent, a wider and more assured recognition was given by churchmen throughout the Catholic world, from which must curiously enough be excepted Catholic Spain, to the authority of the Papacy acting through the *Congregation of the Index*, to retain the general direction and control of the business of censorship.

In 1758, two centuries after the publication of the *Tridentine Index*, was issued the *Index* of Benedict XIV, in which the lists represented better bibliographical work than had been previously attempted. This *Index* is important as representing what may be called the last attempt of the Papacy to maintain any general censorship of the world's literature. The compilers of the *Index* since 1758, including that of Leo XIII, compiled in 1899 and published in 1900, content themselves with repeating the general rules or principles by which should be guided the reading of the faithful, the lists of current publications are, with a few noteworthy exceptions, limited to works of Catholic writers and chiefly to books of a doctrinal character, the teachings of which are to be found in one respect or another open to condemnation. The proportion of books absolutely prohibited becomes smaller, the greater number of the works cited being placed in the lists of *Libros expurgandos*, the reading of which is forbidden only until certain corrections or eliminations have been made (*donec corrigatur*). The *Index* of 1884 and that of 1900 bring forward from the more important of the preceding papal *Indexes* the titles of the most noteworthy of the works condemned in these. No attempt is made, however, to condemn, excepting under general rules and principles, the increasing lists of modern Protestant doctrinal books or to characterize or differentiate the great mass of the world's literature. The printing press had outgrown the machinery of ecclesiastical censorship.

The interference during the earlier centuries of printing on the part of political rulers was fitful and intermittent, and appears at no time to have arrived at the dignity of a continued policy or system. In a number of states, as in Spain, France, and the Holy Roman Empire, while the rulers continued to claim for themselves the exclusive control of the printing press, they were willing to confide to the ecclesiastics the selections of the books to be condemned and prohibited. The Catholic work of censorship, at least in the countries which remained Catholic, fell, therefore, more and more into the hands of the Church, and was as a result carried on with reference to the clerical standard of orthodoxy and morality and to the clerical theories of what was required for the welfare of the community.

The proportion of works of a purely political



character that came under condemnation was small as compared with the long lists of books condemned on doctrinal grounds. During the two centuries in which censorship exerted the largest influence upon intellectual development, say from 1550 to 1750, the minds of men were directed more largely to doctrinal questions than to political matters. It was not the State, but the Church, whose authority and existence were assailed, and the contest was fought out not over political platforms, but over creeds.

When, with the beginning of the Reformation, it became apparent how great a range of influence was possessed by the printed sheet, the problem that confronted the authorities of the Church was certainly serious in more ways than one. For the space of fifteen centuries the education of the people had remained almost exclusively under the direction of the Church. The faithful had accepted their entire intellectual sustenance at the hands of the priests. In 1516 the leaders of the Reformation, in beginning their long contest against the Church of Rome, promptly availed themselves of the power of the printing press. While the words spoken in the pulpit or in the market place could reach at best but a few hundred of hearers, the tracts poured forth from the Wittenberg presses, the "flying leaves" (*Flugschriften*), carried to many thousands the teachings of Luther and Melancthon, and it was through these "winged words" (*epea pterocenta*) that the revolt developed into a revolution.

To the devout adherents of the Church of Rome, and particularly to those to whom had been given the responsibility for its government and for the spiritual guidance of its members, the situation, not only during these earlier years of fierce strife against the Protestant heresies, but throughout the succeeding centuries, presented the gravest difficulties. There is something pathetic in the long series of attempts made by the popes, councils, bishops, congregations, and inquisitors, to protect the souls of the faithful against the baneful influence of the ever-increasing tide of literature that was pouring forth from the various publication centers, and so much of which was calculated to lead men astray from the true doctrines and to bring them into risk of everlasting perdition. To ecclesiastical rulers honestly holding such a conviction there was of course but one duty. They must use every means in their power to suppress the heresies and to warn and protect their flocks. The action of the Church was, therefore, not only logical and reasonable, it was the only course that was possible for an organization to which, as its rulers believed, the Almighty had confided the care of the spiritual welfare of mankind. The safety of the soul depended upon the nature of the intellectual sustenance, whether this were taken through the ears or through the eyes. All literature

or instruction in any form, spoken, written, or printed, must, therefore, before reaching the understanding, be sifted under the authority of an all-wise and infallible Church. The believer must be protected against harm, the doubter must be recalled to the true path, and the heresies and the heretics must alike be exterminated. While it was only after the active propaganda work of the Reformers had made clear the perils of the printing press that any general system of censorship was attempted, there had been, as pointed out, instances of prohibited books centuries before the time of Gutenberg.

From 1450 on was issued a long series of papal utterances, given mainly in the form of bulls, in which is asserted the claim of the Church to the supervision and control of all literary productions before these are permitted to be distributed. The first of these papal bulls, dealing generally with the control of literature, bears date 1487. It was addressed by Pope Innocent VIII to seven "governments," as follows: Romana, Curia, Italia, Germania, Francia, Hispania, Anglia, and Scotia. The opening paragraph reads: "And, therefore, we who hold on earth the place of Him who came down from heaven to enlighten the minds of men and to disperse the darkness of error, etc."

In 1520, on June 12th, Pope Leo X ordered a formal burning in Rome of the copies within reach of the writings of Luther, and with these was burned an effigy of Luther himself. This was four years after the appearance of Luther at the Diet of Worms.

The Bull *Cænæ Domini*, the Bull of the Lord's Supper, originally issued by Urban V in 1365, was reissued by successive popes, with some modification of its provisions, at different dates up to 1586. It presents a collection of various excommunications which had been ordered by successive popes against certain specific classes of persons. The form in use through the period of the Reformation was given by Julius II in 1511. Julius specified as under excommunication a number of heretical sects including the Wycliffites or Hussites. The conclusions of the Casuists in regard to the effect of the prohibitions in the *Bulla Cænæ* are summarized as follows by Ferraris, *Libri Prohibition* (n 27). In order that the reading of a book shall bring upon the delinquent the threatened excommunication (1st) the book must be the production of an actual heretic not merely of one not baptized, or of a Catholic who through heedlessness or ignorance has given utterance to heresy, (2d) it must contain a heresy, or must have to do with religious matters, (3d) the reader must have knowledge that the book is the work of a heretic and contains heresy or treats of religion, (4th) the reading must have been done without the permission of the Apostolic Chair (5th) the reading must

be sufficient in amount to constitute a mortal sin. This amount has naturally been variously defined, so as to cover the entire work (Sanchez), or a single page, or two lines (Toletus) (Gretser, *De Jure Prohibendi, Opera* XIII, 97)

The year 1542 is important in the history of the censorship of literature. It marks the beginning of formal regulations framed in Rome itself for the suppression of heretical literature and for the supervision and control of the work of the printers. The Inquisition of Spain, which proved to be by far the most persistent, the most effective, and the most terrible of the Inquisition organizations of the world, dates from 1480. The series of *Indexes*, prohibitory or expurgatory, had its beginning, not in Rome, but in Louvain. The first general catalogue of prohibited books was printed in Louvain in 1510. The first schedule of prohibited books printed under the name of an *Index* was, as far as is at present known, that issued by the University of Paris in 1544. The first *Index* compiled in Italy was that in Venice in 1543. The first *Index* issued under the authority of a papal Bull was compiled in 1546 by the Theological Faculty of the University of Louvain under the instructions of the Emperor Charles V. From this period on there follows a long series of *Indexes* issued by the Popes or other ecclesiastical authorities or by Catholic princes in different parts of Europe. The first *Index Expurgatorius* was issued at Valladolid in 1534 by authority of the Senate of the Inquisition. In this certain books were marked as condemned until they had been expurgated, and the compilers of the *Index* themselves prepared editions of a number of these books. According to Paulo Sarpi of Venice, famous as leader in the long contest of Venice against the ecclesiastical authority of Rome, "the Roman authorities prohibit as corrupt the text of many valuable works, particularly of the class that have to do with political science and the rights of states; they prohibit many books which have no relation to matters of theology or religion, and which they are not in fact competent to understand, they contest the right of the Republic (Venice) to prohibit pernicious books." Thus an *Index* issued at Rome under Alexander VII formally condemned the works of Copernicus and Galileo (*qq v*) and all other writings which confirmed the movement of the earth and the stability of the sun.

By the middle of the eighteenth century the Church authorities were finally prepared to admit the impracticability with any such means or examining bodies as could be maintained of making an individual examination of each work produced from the printing press. Such a conclusion might with better wisdom have been arrived at a century earlier. The most direct evidence of the futility of the attempts on the part of the *Congregation of the Index*, of the Roman Inquisition, and of the local

inquisitors, to inform themselves intelligently concerning the nature, the orthodoxy, and the probable influence for good or for bad of the increasing mass of books brought into print from year to year, is presented by the *Indexes* themselves. The work of the compilation of these *Indexes* was placed in the hands of scholarly men, and in the majority of cases of men whose integrity of purpose and whose devotion to the higher interests of the Church need not be questioned. These devout and scholarly compilers were, however, willing to put into print under the authority of an infallible Church, instructions for the reading of believers which the most faithful of Catholics must have found difficulty in obeying with any consistency.

The *Index* lists contain many inaccuracies. The names of the authors, frequently misspelled, are entered almost at random, sometimes in the vernacular, sometimes in the Latin forms. This method, or lack of method, necessarily resulted in duplicate entries, while the copyists succeeded not infrequently in omitting altogether in their transcripts writers and books of unquestioned heresy. It became increasingly impossible for the compilers to secure personal knowledge of the contents of more than a very small proportion of the books which were to be passed upon and classed as either safe or pernicious. The judgment arrived at concerning an unfamiliar book depended in part on the name of the author and in part on that of the printer or the place of publication. Certain printing offices and certain publishing centers came to be associated in the minds of the Roman censors with heretical opinions. The general policy seems to have been that it was safer to condemn a few books not assuredly either pernicious or heretical than to run the risk of omitting from the lists any single work which might constitute an influence against the authority of the Church. The selections were also undoubtedly influenced by doctrinal issues and by the party prejudices that arose between the great orders of the Church. The direction of the censorship work in Rome both of the Inquisition and of the *Congregation* has, since their institution, remained in the hands of the Dominicans though occasionally, under the authority of a Jesuit or a Franciscan, the two latter orders secured representation on the boards of examiners.

*France* — In France, censorship was retained under the direct control of the Crown to an extent paralleled in no country except England. The prohibitions of the papal *Indexes* were not accepted as binding unless confirmed by the rulers of the Gallic Church, and the French bishops seldom took action in regard to censorship, excepting under instructions emanating from the Crown. The kings of France, during the two centuries succeeding the invention of printing, were for

the most part more keenly interested in furthering the operations of the printer-publishers than in protecting the doctrines of the Church and the faith of believers against the risks of heretical literature. The achievements of the Paris press brought prestige to the rulers. Even in the cases, however, in which a book might have been placed on the *Index* in Paris, it was likely to be promptly brought into print in Lyons or in Tours. If the authority of the censors succeeded in stopping the operations of provincial printers, the presses of Geneva, Cologne, and Amsterdam were ready to supply the demand that was certain to continue for a work classed as heretical or dangerous.

The law at present in force in France controlling literary censorship dates from the institution of the Republic in 1871. The wording of the law is quite voluminous. It provides, in substance, that there must be no publication containing incitement against public order, or anything offensive concerning the President of the Republic, and no publication, either in language or in pictures, of false news or of material to be classed as obscene. There must also be no publication which reflects upon the honor of any citizen, or is likely to cause moral damage to citizens.

The provisions of the law, however, are at this time (1912) very rarely enforced, except in the case of virulent attacks on the President, or on a foreign ruler or diplomatic agent. Such attacks have led to the suppression of a book, or of a particular number of a journal. Anti-military propaganda or incitements to disobey the military law have also led to the suppression of pamphlets or of specific numbers of journals. Action is, however, very rarely taken on the ground of obscenity or of personal defamation of character.

*Netherlands* — In the Low Countries, and particularly in Holland, the operations of the censors and *Index* makers of Italy, Spain, and France constituted a factor of not a little importance in furthering the development of the book trade. The printer-publishers of Holland kept themselves promptly informed of the operations of the censorship authorities. Early copies of the *Indexes* found their way, as soon as produced, to Leyden, Amsterdam, and Utrecht, and were promptly utilized by the enterprising Dutch publishers as guides for their publishing undertakings. Within a few months of the time when the censors of Rome or Madrid had completed as they supposed, the cancellation of the local editions of the condemned books, copies of the Holland issues would begin to find their way more or less surreptitiously into the hands of the readers of the country of origin. The printer-publishers of Holland were also fortunate during the two centuries in which censorship was active in having available the services of scholars who had been banished from Spain

or Italy or France, or who had migrated for the purpose of securing freedom of action.

During these centuries, there was for Europe but one literary language, Latin. The Holland publishers were able, with the service of these scholarly exiles, to produce, at a comparatively low cost, for the use of scholarly readers throughout Europe, original works or great compilations which could not be undertaken by publishers in the states in which censorship was either persistently or even fitfully active. These Holland publishers were shrewd enough to utilize the censors of Rome, of Madrid, and of Paris as their literary advisers. They could bring into print with certainty of a remunerative circulation books which were important enough to have secured condemnation by the authorities of the *Index*.

It may be concluded, therefore, that outside of Spain the attempts of the Church to supervise and control the production and distribution of literature were practically without effect. It is doubtless the case that the circulation and the influence of many books were materially furthered by the stamp of ecclesiastical condemnation.

**Protestant Censorship** — Irrespective of the censorship initiated by the divines, which had for its purpose the maintenance of creeds and the protection of "sound theology," history gives record of a long series of attempts, which have in fact continued into the twentieth century, to enforce what might be called political censorship, — that is to say, the control of literary production in the interests of the State and in support of the authority of the State, against opinions believed to be inimical to such authority.

The prohibitions to be classed as Protestant, whether in their origin ecclesiastical or political, do not compare favorably with the similar prohibitions issued under the authority of the Church of Rome. There is far less consistency of purpose, and, at least as far as the political edicts are concerned, there are more examples of bitter and brutal oppression than can be found anywhere in the states controlled by the Roman Church, outside of Spain. The list of books, which during the centuries in question came into condemnation under Protestant censorship, was more considerable than the aggregate of all the lists in the *Indexes* issued under the authority of the Roman Church. The censorship policy of the Protestants represented more largely the spirit of faction or personal grievance, while the political censorship was of necessity influenced by the action of the party which happened at the time to be in control or of the minister who had for the moment the ear of the ruler. Protestant censorship may be considered as less defensible than that of the Church of Rome, but as also less serious in its final effect upon intellectual activities.

It is not practicable under the conditions

obtaining in modern states and with the active intercourse between the residents of such states to repress any literary productions for which a circle of readers are waiting. The books condemned and prohibited in Berlin come into print in Leipzig, or, when imperial authority controlled conditions in Leipzig, such books were without difficulty purchased in Amsterdam or Leyden. It proved to be impossible to prevent books so printed from finding their way even into the territory in which their production and distribution had been absolutely forbidden.

*England* — Censorship in England was controlled, as in France, by the authority of the Crown, and varied of necessity according to the policies of the successive monarchs. The regulations for the control of heretical publications were presented in a series of royal edicts. After the time of Luther, certain regulations were issued under the sole authority of the bishops, but these could be enforced only when confirmed by the political authorities. The Crown secured the control of the operations of the English printers by restricting very closely the licenses or permits for the use of printing presses. For the first century after the introduction of printing, very little printing was done outside of London. It did not prove practicable, however, to prevent the distribution through England of books of interest to English readers which were printed in Holland. At the time when political censorship in England was most severe, the printers in Holland secured the largest returns from the book market in England. The press law passed in 1819 imposed a penalty of transportation on the writers and printers of "godless and revolutionary works." This law was repealed in 1837, and the legislation of 1869 finally secured an assured freedom for the press.

The most eloquent argument ever presented in behalf of the freedom of the press was that published in 1644 by John Milton under the title of *Areopagitica*. Milton was protesting against the claim of Parliament to control the output of the printing presses and to decide what utterances should be permitted to the citizens of the day. He writes: "We should be wary what persecution we raise against the living labours of public men, how we spill that seasoned life of Man preserved and stored up in Books. for Books are not absolutely dead things, but do contain in them a potencie of life to be as active as that Soule was whose progeny they are; nay, they do preserve as in a violl the purest efficacy and extraction of that living intellect that breed them."

Blackstone wrote that "Christianity is part of the laws of England. Offenses against it are punishable by fine, imprisonment, or other infamous corporal punishment."

In 1776, at the time of the publication of the first volume of Gibbon's *History of the Decline and Fall of the Roman Empire*, a writer who,

having been educated in the Christian religion, brought into print any statements which could be interpreted as denying the truth of Christianity, was liable to imprisonment for a term of three years. Birkbeck Hill, in his introduction to Gibbon's *Autobiography*, points out that this statutory provision may well have influenced certain reticences on the part of Gibbon in his famous fifteenth chapter and in other divisions of the history having to do with Christianity.

The law at present in force in Great Britain covering the supervision of the sale of books, prints, etc., classed as obscene or as otherwise objectionable, is that of August, 1857, known as Lord Campbell's and described as 20 and 21 Vict. 83. The House of Lords and the Chancery Judges are entrusted with the authority to forbid by injunction the publication, or the continued publication, of publications which they deem to be contempts of court. Magistrates have the power to order the seizure and the destruction of books classed as obscene. The judgment in regard to such classification appears to rest with the magistrates.

In February, 1911, an association comprising peers, prelates, and schoolmasters was organized to secure an enactment by Parliament of laws which would place British literature under an efficient official censorship, and which would make impossible the publication of any book deemed by the censors to be improper or injurious. It does not seem probable, however, that legislation of this character can now be secured.

*Germany* — The Imperial Statute controlling the operations of the press in Germany dates from May 7, 1874. The provisions covering material printed in periodicals are fairly strenuous, but comparatively little attempt is made to control by statute the character of material printed in books. The statute provides that every book must specify the name of the author and editor, and the name and residence of the printer. The responsibility for criminal offenses committed through publications comprising libelous or scandalous matter, etc., is cared for under the provisions of the criminal law. A literary production cannot be confiscated without prior judicial order, application for which is made either through the police or through the state attorney. The jurisdiction of the court is confined to the tribunal elected at the place of publication. Authority is exercised directly on behalf of the executive in the enforcement of the provisions of the law of libel in regard to publications which are claimed to bring the rulers into disrespect. The offense of disrespectful utterances against the ruler is described as *Majestätsbeleidigung*.

An example of the operations of German censorship in the past century is afforded in the case of the writings of Heine. By a resolution of the Bundestag (the general assembly of the German confederation) of December, 1835, a general interdict was laid upon the

printing or distribution of all that Heine had written and of all that he might thereafter write. The initiation for this interdict had come from the authorities of Prussia, who had convinced themselves that the peace of the realm was being interfered with by the political writings of the poet. The curiosity of this piece of censorship was the absence of any discrimination. The censors found it easier to take the ground that all of Heine's utterances should be prohibited or prevented from reaching the German people, than to discriminate between the articles in the *Allgemeine Zeitung* on political reform and the *Book of Songs*. Heine had made his home in Paris, and he succeeded in reaching some at least of his German readers by means of editions of his works printed in French. The interdict was finally raised or passed into desuetude, as by 1840 we find Heine's publisher again announcing editions of his author's complete works.

*United States* — During the Colonial period a certain measure of censorship was exercised in Massachusetts and in Connecticut under the authority of the orthodox or Congregational Church, but no attempt was ever made to formulate a general censorship policy or general prohibitions.

The national government has from time to time put into force laws prohibiting the production or the distribution of certain classes of literature. No attempt has been made in these laws to protect against attacks on dogmas or theological opinions. The general purpose has been to prevent the circulation among the general public of books *contra bonos mores*. A large latitude has been allowed in the literature of politics in the matter of criticism of the existing government. The act now in force (February, 1911) affecting literature is that of Feb. 8, 1905, ch. 550, 33 Stat. L. "It shall be unlawful for any person to deposit with an express company or other common carrier for carriage within the territory of the United States and obscene, lewd, or lascivious book, pamphlet, paper, letter, writing, print. Any person who shall knowingly take from such express company or other common carrier with intent to sell, distribute, or circulate any such matter, etc., shall be fined not more than \$5000 or imprisoned at hard labor for not more than five years, or both at the discretion of the Court."

A further act of Aug. 5, 1909, Sec. 9, prohibits "All persons from importing into the United States any obscene book, pamphlet, paper, writing, or other production of an immoral nature. Such prohibited articles, and the package in which they are contained in the course of importation, shall be detained by the officer of the Customs, etc." Under this latter provision, cases of books have been held up in the Customs because the shipment included a copy of Boccaccio's *Decameron* or of the original edition of Burton's *Arabian*

*Nights*. No one questions the propriety of preventing or restricting the circulation of obscene literature. The difficulty is, of necessity, to secure any consistent and judicious authority for determining what literature is to be so classed and what books are likely to exert a bad influence upon the morals of the community.

Action in regard to publications classed as *contra bonos mores* is also taken under state law, the laws of the several states varying very considerably according to the difference in the standards of feelings of the different communities. In a city like New York such action is usually investigated under individual effort, such as that of the Society for the Suppression of Vice.

G H P

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**LITERARY SOCIETY** — See STUDENT LIFE.

**LITERARY WHOLES.** — See READING

**LITERATURE, CHILDREN'S** — A term referring mainly to books written especially for children, and including a number of types, more or less distinct, which will be noticed later. Of the history of such literature before the eighteenth century little is known. But it seems that such books must have been insignificant both in number and in importance. In primitive times there was probably little or no difference between the tales told to the children and those told to adults, in fact, the naïveté of the adult mind and that of the child were much the same.

Folklore (*qv*), consisting mainly of tales, but including also proverbs and simple verses, were the common mental entertainment and instruction for both young and old. Under folklore may be classed myths, hero stories, fairy tales, and fables. The distinction between the myth and the fairy story — the latter being more commonly included in the term "folk tale" — is not easy to draw. In general the myth is more formal, more dignified, more distinctly infused with instructional or educational purpose, and likely to be a part of the religion of the race, and to introduce gods and demi-gods. The fairy tale commonly deals with humbler motives and characters, makes a homelier appeal, and seems adapted to the entertainment of simpler minds. Its delight in the marvelous, and its disregard of unity and logic are more marked than in the myth. As between the myth and the fairy story, the latter is distinctly more juvenile. A further discussion of this humbler form of folk tale can be found in Andrew Lang's *Custom and Myth*, his Introduction to Grimm's *Tales* (Bohn), and his Introduction to Perrault's *Popular Tales* (Clarendon Press), in the Appendix to Steel's *Tales of the Punjab*, and in the publications of the Folk Lore Society.

This material has been rescued from its evanescent oral form in earlier times, partly by the use made of it in great classics like Homer and the Greek dramatists, the *Nibelungenlied*, and Chaucer, and partly by the labors of philologists or antiquarians, who have obtained it from the lips of the people, or in old books like the chap-books and the ballad collections. The most noteworthy services in this latter field are those of the brothers Grimm, who collected and fixed the German folk tales between 1840 and 1850; of La Fontaine and Perrault, who retold the French folk tales in the seventeenth century, and those of a number of scholars like John Ashton, Professor Child, and others, who have within the last quarter of a century gathered up the remaining bits of tale and verse that could be found. To this type of oral and traditional literature belong also the nursery rhymes and jingles.

Like the myth and fairy story, they are oral and traditional in their origin, and are the product not of any one mind, but of many. That is, each of them has probably been changed or added to in successive repetition. Like the other forms of primitive folklore, they make free use of the improbable, and seek to give entertainment rather than instruction. In some of them the appeal is evidently to the child's sense of intellectual play, — pure nonsense verse. Others bear the marks of historical events referred to playfully for the amusement of the nursery. The famous *Sing a Song of Sirpence*, for example, seems to point to the Gunpowder Plot, *My Lady Wind* to the great fire of London. The latter is, also, like a few others, clearly instructional and ethical, and still others belong to the class of riddles. In the publications of the Percy Society (Vol. IV) is to be found an interesting collection of this old-fashioned juvenile verse.

Another general type of books for children consists of the classics written for adults, but coming within the comprehension and the range of interests of children. Prominent among these are parts of Homer and the Bible, the *Arabian Nights*, *Robinson Crusoe*, *Gulliver's Travels*, and *The Pilgrim's Progress*. In these the appeal to the child is mainly in the simplicity and boldness of imagery, in the action, and in the simple and heroic elements of character. Whatever they contain of the analytic, the introspective, or the symbolic is likely to escape him. His enjoyment of Christian's conflict with Apollyon or of the experiences in the castle of Giant Despair is quite apart from the theological meaning involved, nor does it ever occur to him that the marvels told by Gulliver conceal a bitter satire against humanity. It should be added that the line between books suitable for adults and those adapted for children is further obscured in the case of much fiction and poetry. Scott and Dickens and Stevenson become the property of many children after the age of twelve, and much of the poetry of Wordsworth, Tennyson, Whittier, Longfellow, and others can be appreciated by children at a very early age. So that any good collection of reading made for children will contain many books not written primarily for them.

The third general class of children's books comprises those written primarily for children. This class, whose history is but recent and comprises scarce 500 years, has now become the largest and in some respects the most important. Interwoven as it is with the changes in the general attitude toward children, it reflects both the educational and the social ideals of the various periods in which the books appeared.

The earliest of these books in England, dating from the fifteenth century, such as *The Babees Book*, and *The Boke of Curteisie*, were devoted to instruction in manners and morals, given in the form of direct and positive precepts. What this type of book was like may be seen

in the reprint of several of them in the publications of the Percy Society, Vol. IV. A fair specimen of the popular attempt at writing for the young may be seen also in the eighteenth-century chap-books, small sheets with stories or verses, generally sensational, and making the same sort of appeal as our modern "yellow journals."

Writing for children, however, may be said scarcely to have begun until the second half of the eighteenth century. Indeed, the interest in childhood seems, as reflected in the literature of the sixteenth and seventeenth centuries, to have been either non-existent or totally different from what it is now. Children were of interest, not for themselves, but only because they would become men and women later. Hence much of the teaching addressed to them, in books at least, regards them as small men and women. Even Shakespeare, whose range of view was so wide, seldom makes use of the love of children as a motive, and when he does, in rare instances, introduce a child into one of his plays, he makes the child precocious and priggish, — a child playing at being a man. From this something of the general attitude toward children in the days of Elizabeth can be gleaned.

Many of the important educational and social ideas of the nineteenth century had their roots in the eighteenth. To the eighteenth century must be assigned the beginnings of the modern attitude toward children and their education. The writings of Rousseau, Froebel, Pestalozzi, Basedow (*qqv*), and others created and reflected a new interest in children, and the desire to adapt educational methods to their natures. One of the earliest results of this new movement was Weisze's *Kinderfreund* (*Children's Friend*), a paper for children published in Leipzig. This same title was taken by Von Rochow (*qv*) for his *Primer*, a book that was intended to supply children with reading matter that should interest and please as well as instruct. In its teaching it was moral, rather than strictly religious, as earlier school-books had been, and it conveyed its lesson in tales and songs. It was the first true school reading book. Its success was great and immediate. It went through many editions, and was translated into French, Dutch, Danish, and other languages.

The effect of educational ideals and purposes upon juvenile literature is especially marked in Germany. Under the influence of the Philanthropinists, Basedow and others, there arose a type of literature addressed to the understandings of children and uneducated adults. This general movement includes not only the work of Von Rochow and others mentioned above, but books like those of Campe and Salzmann (*qqv*), who carried on the traditions and work of the Philanthropinists. Their books, addressed to undeveloped minds, conveyed both teaching and information in the

form of popular tales. Although they were of mediocre quality, from a literary point of view, they are of great interest in the evolution of juvenile literature. To the same general movement is to be assigned, in part, the popularity of *Robinson Crusoe* and of the many translations and imitations of it. Except the *Swiss Family Robinson*, by Johann Wyss, few of these imitations have survived. But for a quarter of a century they constituted a considerable part of the juvenile and the popular literature; and, for adults, a vehicle for various kinds of ethical and political propaganda.

The present important place of the folk tales, or *Marchen*, was practically secured when the brothers Grimm issued their famous collection, based to some extent on the work of Perrault (see Lang's edition of *Perrault's Popular Tales*, Oxford, 1888), in the second decade of the nineteenth century. Since that time the fairy story and folk story have been almost unchallenged in the nursery and the school. The old motives, like those of Cinderella, have been used over and over, and new motives of like interest have been invented. Easily the most distinguished successor of the brothers Grimm in this field is Hans Christian Andersen, whose distinctive work is rather that of the imaginative inventor of tales than of the discoverer of old and forgotten stories.

The attempt to supply interesting reading for children comes a little later in England, but by the beginning of the nineteenth century it is well under way. Three or four streams of influence may be distinctly traced. The Rousseau influence — and the pedagogic interest in general — are seen in the works of Thomas Day (*qv*), the author of the long popular and still well remembered *Sandford and Merton*; and in the books of Maria Edgeworth (*qv*). Her *Parents' Assistant* and other collections of tales and plays for young people were in their day very popular. They are distinctly instructional in character. Their conception of education was the learning of facts and the carrying out of iterated moral precepts. For the glamor of the marvelous and impossible, for the spirit of mere play, they had no place. It is probable that both Miss Edgeworth and her father (see EDGEWORTH, RICHARD LOVELL), — whose influence determined the character and aims of her work, — could they have read *Alice in Wonderland*, would have thought it merely a very silly book. She had little real understanding of the nature of children; or, if she had, she kept it out of her writing. And, it must be confessed, the children whom she put into her books are rather tedious little prigs. The same general comments will apply to Day's *Sandford and Merton*. Both he and Miss Edgeworth, however, have created a few scenes which stand out clear and strong. But for the most part their books and all others of their school of writing have gone to the limbo of libraries. It is, indeed, inconceivable that

they could have held their own in competition with the bright, buoyant, and sympathetic books for children that came two generations later.

Another influence of the end of the eighteenth century, which led to the rise of a definite type of books, is the Sunday school movement. This movement, begun by Robert Raikes, carried on also by Hannah More and Mrs. Trimmer (*qq v*), is by no means an unimportant factor in the social history of the time. The leaders of the movement were not mere religious fanatics. They saw in the Sunday school a means for a much needed social regeneration among the poor. Hannah More and Mrs. Trimmer were both women not only of courage and energy, but of considerable intellectual power. Their books for the young now seem stilted in style, much too didactic in their presentation of morals, too definitely preceptorial and instructional, and too religious. Like most juvenile books of the period, they make one wonder what depraved young people they were intended for. But judged by their own time and purpose, they were effective and good. It is rather the host of later imitations, under the general head of "Sunday school books," that by their exaggerated sentimentalism, their ignorance and their false pictures of life and false standards, have brought the very name of Sunday school into reproach.

To the end of the eighteenth and the early nineteenth centuries must be assigned also the beginnings of juvenile books of literary standard. The classic *Goody Two-Shoes* is now commonly ascribed to no less a genius than Goldsmith. Charles and Mary Lamb rewrote the stories of the *Odyssey* and the tales of Shakespeare's plays for the young readers, and composed verses—most of them not very happy, it must be confessed—for children. William Blake, himself a gifted and mystical child in some respects, wrote the *Songs of Innocence*, many of which stand in the front rank of juvenile poetry. Wordsworth, though not in the least intending it, wrote some poems which have come to belong to the children more than to their elders. Isaac Watts struck out, among a mass of sententious commonplaces, a few poems that are now children's classics. And the Taylor sisters, Jane and Ann, have given us a number of things that the wise teacher would not willingly let die.

In America it is customary to trace the rise of children's books from the introduction of the famous *New England Primer*. Introduced about 1670 (a modified form of an earlier English book, which in turn has been traced back to a Protestant *Primer* produced on the suggestion of King Henry VIII), the *New England Primer* was for a hundred years or more the principal book for young pupils. It was almost entirely religious in its material, stern and uncompromising in its Puritan spirit. To the modern scientific mind its dogmatism

and its sternness seem to have an element of the grotesque. But the historical and literary mind cannot but see in it something of the grave dignity and somber imagination of the old Puritans. The long life of this little book served to make it a good illustration of the way in which schoolbooks reflect the spirit of their time. For the book gradually became secularized in successive editions, until, at the end of the eighteenth century, its exclusively Puritan material had made place in large part for other ideas. How interesting the life of this little book was may be seen in Paul Leicester Ford's scholarly work, *The History of the New England Primer*.

Interesting also is the history of the *Mother Goose* collection of folk stuff. Mr. Montrose J. Moses, in his excellent work, *Children's Books and Reading*, says, "The name Mother Goose is first heard of in the seventeenth century. During 1697 Perrault published his *Histoires ou Contes du Temps Passé avec des Moralitez*, with a frontispiece of an old woman telling stories to an interested group. Upon a placard by her side was lettered the significant title:

CONTES  
DE MA  
MÈRE  
LOYE

There is no doubt, therefore, that the name was not of Boston origin. An English edition appeared at the Hague in 1745. This seems to be the first introduction into England of *The Mother Goose Fairy Tales*. It was John Newberry, Goldsmith's publisher, who, about 1760, issued the English nursery rhymes under the name of *Mother Goose Melodies*, and it is supposed that Goldsmith himself assisted in making the collection. Thus it has come about that in England and America the name Mother Goose is associated, not as originally with fairy tales, but with the old English nursery rhymes.

With the gradual change in national ideals, both schoolbooks and other juvenile books drew away from the strictly religious type and reflected other American ideals. In the early half of the nineteenth century there appeared many compilations of extracts from literature adapted to declamation. In that rather flamboyant period of our national life speech-making stood in high repute, and was, indeed, one of the commonest roads to fame and fortune. In the same period there were also American books corresponding to those of the instructional type in England. The most popular of these were probably the *Peter Parley* books, written by Samuel G. Goodrich. History, geography, and other information were served up in them in simple form. The history was often rather unhistorical, and the science sadly unscientific. But they were better than nothing, and better than the unwholesome "Sunday school book." In the same class are the *Rollo* books by Jacob Abbott (*q.v.*).



These, which numbered a score or more, were descriptions of travel and of other things, and were composed mainly of conversations in which voluminous information was imparted to Rollo's inquiring mind by "Uncle George." The information was generally interesting, though the style was diffuse, and on the whole the books must be set down as of the better sort.

About 1850 there arose another *genre*, the book of adventure. This type may be traced to Cooper's tales of Indian life and of the sea. His imitators were of course far below him in genius. But their books were full of action, and the thrills of the thousands of boy readers were undisturbed by any sense of the wild improbability of incident or the absurd psychology of the characters. These "dime novels," as they were commonly called, flourished for more than a quarter of a century. They were issued as complete volumes and also as serials in weekly or monthly family story papers. They have been largely supplanted now by the better books, mainly through our system of public libraries. But they are not yet an extinct species, and the crusade against them is not yet over.

It now remains to survey the field as it is to-day, to attempt an analysis of the influences at work, and a classification of the kinds of books available. Even a brief survey of the field impresses one with the wealth of material. Thousands of books are to be had whose external form is attractive, whose style is good, and whose material is sound and wholesome. Notable contributions have been made also to the art that portrays children for children from Kate Greenaway's work to that of Jessie Wilcox Smith. Instead of the crude drawing and ill-made woodcuts that once adorned juvenile books, we now have illustrations, plain and colored, that are not only adapted to the child, but that give satisfaction even to the critical adult. Scores of gifted writers, who in former times would have written only for adults, now write also for children. There is a steady stream of them, from Lewis Carroll and Charles Kingsley to Stockton and Kipling.

The first and most obvious cause is the increase in the sympathy and intelligence with which children are regarded. We have come not only to see the social and economic value of children, but to care more for them. And so we have come to identify our interests with theirs, to see things through their eyes, in a way in which our forefathers could not. The kindergarten may often have been over-sentimental and even absurd in this, but its contributions to good children's literature are undoubted. Notable among books showing this influence are the rhymes of Emilie Poulsson and the stories of Kate Douglas Wiggin.

In the same direction is the influence of modern psychology, and especially that branch of it commonly called "child study" (*q v*)

This has given new dignity to the lives of children, has made their thoughts and emotions not less worthy of literary treatment than those of adults. Modern psychology has also its literary as well as its scientific side; that is, our writers as well as our scientists attempt to analyze the human mind truly. Such books as Mrs. Martin's *Emmy Lou* and Howells' *A Boy's Town* would hardly have been possible in an unpsychological age. One of the most significant kinds of book in this connection is that which treats of children, though written for adults, like Kenneth Grahame's *The Golden Age* or Gilson's *In the Morning Glow*.

Perhaps the most potent cause of this fullness of juvenile literature is, however, to be found in the general temper of the age, in its higher regard for all human life, its greater tenderness, its greater understanding of the weak. The distance is long between it and the bitter, somber sternness of Puritan days.

Not merely the number but the variety also of juvenile books makes classification difficult. Of folklore we have many varieties and many versions from the Greek and Norse myths to Joel Chandler Harris's delightful negro tales from the mouth of Uncle Remus, from the early tales of chivalry to the homely folk stories of almost all the countries of Europe and Asia.

The modern fairy tale, sometimes serious and sometimes humorous, extends from Lewis Carroll, through a long series including books like those of Howard Pyle, Stockton, Kingsley, Collodi (translated from the Italian), Mrs. Ewing, Mrs. Craik, Macdonald, Ruskin, and Thackeray. Stories of child life include books by Mrs. Burnett, Mrs. Craik, Mrs. Ewing, Hawthorne, Kipling, Mrs. Martin, Ouida, Mrs. Wiggins, Louisa Alcott, Carolyn Wells, Aldrich, Howells, Boyesen, Daudet, Hughes, Warner, and Trowbridge. Under tales of adventure there are the Indian story, the sea tale, the pioneer, and the explorer. Here appear authors like Cooper, Scott, Parkman, Simms, Stewart Edward White, Dana, Defoe, Sir S. W. Baker, Mary Mapes Dodge, Irving, Kipling, Roosevelt, Stevenson, Schwatka, Bullen, and Clark Russell, a plentiful assortment of fact and fiction, variously mixed.

The list of historical tales is long; some of them, beginning with Scott, are extremely good. Then there are the books geographically distinguished—books of the Arctic region, of the tropics, of Asia and Africa and Europe, and of the South and West of the United States, and, as a matter of course, of New England, the first section of our country to develop an extensive literary consciousness. The list of biographies is long; but not equal as yet in general literary qualities to other kinds of books. Good biographies for children are yet needed.

Stories of animal life and easy scientific books on out-of-door life are good, numerous

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and rapidly increasing in number. With these latter must be classed the books dealing with invention, discovery, and general science.

Among the children's poets Stevenson seems easily first. Frank Dempster Sherman, Eugene Field, James Whitcomb Riley, Celia Thaxter, and others have written poetry for children which they love to hear and to read.

The list of strictly humorous work is not long, though good. But it must be remembered that humor is likely to be found now in most juvenile stories and verses.

Finally, a good many anthologies of poetry, songs set to music, and fairy tales have been made. Whittier published two, one of prose and one of verse. Patmore, Palgrave, Lang, Kate Douglas Wiggin, Mary E. Burt, E. V. Lucas, and others have made good collections. An ambitious and successful attempt at collecting a large mass of children's reading under the title of *The Children's Hour*, in ten volumes, has recently been made by one firm of publishers. Even the school readers might often be cited as good anthologies of verse and prose. Indeed, the standard is determined far more by the school and the public library than by the home.

F. T. B.

A number of lists of children's readings for the guidance of teachers and parents will be found in the following works:—

- ARNOLD, G. W. *A Mother's List of Books for Children*. (Chicago, 1909.)  
 BAKER, F. T. *A Bibliography of Children's Reading Teachers' College Record*, January and March, 1908. (New York, 1908.)  
 Brooklyn Public Library *The Child's Own Library*, 1907.  
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*Catalogue of Books in the Children's Department* (1909.)  
 COLBY, J. R. *Literature and Life in School*. (Boston, 1906.)  
 CROTHERS, S. M. *Miss Muffet's Christmas Party*. (Boston, 1902.)  
 Detroit Public Library *Books suitable for young Children*. (1903.)  
 FIELD, E. M. *The Child and his Book: some Account of the History and Progress of Children's Literature in England*. (London, 1891.)  
 FIELD, W. T. *Fingerposts to Children's Reading*. (Chicago, 1907.)  
 HALSEY, R. V. *Forgotten Books of the American Nursery*. (Boston, 1911.)  
 HEWINS, C. M. *Books for Boys and Girls*. (Hartford Public Library, 1904.)  
 LEE, G. S. *The Child and the Book*. (New York, 1907.)  
 MACCLINTOCK, P. L. *Literature in the Elementary School*. (Chicago, 1908.)  
 McMURRY, C. H. *A special Method in the Reading of complete English Classics in the Grades of the Common Schools*. (New York, 1903.)  
 MOORE, A. C. *Books recommended for a Children's Library*. (Iowa Library Commission.)  
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More detailed discussion of various points treated in this article may be found in the following bibliography:—

## LITERATURE, COMPARATIVE

See FOLK LORE, MANNERS AND MORALS EDUCATION IN; MYTHS AND MYTHOLOGY; NEW ENGLAND PRIMER, NURSERY RHYMES.

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 KOSTER, H. L. *Geschichte der deutschen Jugendliteratur*. Contains an extensive bibliography of the German field. (Hamburg, 1906.)  
 LUCAS, E. V. *Old-fashioned Tales and Forgotten Tales of Long Ago*. (London, 1905.)  
 MOSES, J. *Children's Books and Reading*. (New York, 1907.)  
 PEARSON, E. *Banbury Chap-books and Toy Book Literature of the Eighteenth and Nineteenth Centuries*. (London, 1890.)  
 REEDER, R. R. *Historical Development of the School Reader*. (New York, 1900.)  
 Schoolroom Classics in Fiction. *Liv. Age*, Vol. CCXXXIII, pp. 385-401.  
 WIDDEMER, M. A. *Bibliography of Books and Articles relating to Children's Reading*. *Bulletin of Bibliography* (Boston), July and October, 1911, January and April, 1912.  
 WOLFGAST, H. *Das Elend unserer Jugendliteratur*. (Leipzig, 1905.)

**LITERATURE, COMPARATIVE.**—An English equivalent for the foreign terms, *Vergleichende Literaturgeschichte*, *Littérature comparée*, *Letteratura comparata*, coined in apparent analogy with such expressions as "comparative anatomy" and "comparative philology." Its use in English is of fairly recent date, and the word can hardly be said to have had any wide currency until 1886, when Posnett used it as the title of a book in the International Science Series, but it soon impressed itself on literary scholarship, and ten years later Professor Marsh of Harvard could say that "the phrase Comparative Literature is afloat, and indeed seems to be constantly gaining in currency."

As early as 1863 the distinguished Italian critic, Francesco de Sanctis, had been created professor of comparative literature in the University of Naples without stipend; but it was not until 1871, when he was reappointed by royal decree, that he actually occupied the chair. During four academic years he lectured at the university with occasional intermissions, finally resigning on account of his health in 1877. With De Sanctis, therefore, the academic history of comparative literature begins. His work was for the most part confined to

Italian literature, but included a course of lectures on the history of literary criticism from Aristotle to Hegel, the manuscript of which has recently been discovered. The remarkable impression he made on his pupils, among whom were numbered Gasparv and Torraca, has been recorded by the latter in a pamphlet, *Dal "Libro della Scuola" di Francesco de Sanctis, MDCCCLXXII* (Rome, 1885), and seems to have been due to the personality of the man as much as to the talents of the scholar and teacher. His æsthetic theory owed much to Hegel and other German thinkers, while his critical method was in part derived from Sainte-Beuve. In interpreting literature, more particularly that of his own country, along these lines, and in expounding the fundamental principles of literary art, he conceived that he was justifying the title of his chair. The effect of his teaching was to broaden the study of literature in Italy, liberating it from mere pedantic detail, and he may be said to have founded a new Italian school of æsthetic criticism.

The development of comparative literature during the next decade, however, was not along the lines set by De Sanctis. The Hegelian Carrière carried on a similar tradition when, in 1884, he republished a work on *Die Poesie, ihr Wesen und ihre Formen* (which had first appeared some thirty years before), and added to its title the phrase, *mit Grundzügen der vergleichenden Literaturgeschichte*. But the tendency of the decade was toward a more precise delimitation of the field and a more scientific treatment of its subject matter. Posnett, in his book on *Comparative Literature* (London, 1886), conceived it to be a rigid science, concerned with the origins of literature and with the development of set poetic themes, a science allied to anthropology and folklore. In the next year Professor Max Koch of Breslau founded the *Zeitschrift für vergleichende Literaturgeschichte*, the first journal devoted exclusively to the advancement of comparative literature; and the founder in his announcement of the new venture limited the field to the scientific study of poetic themes, of literary sources, of the influence of one literature on another, and the like. During the nineties the subject received a remarkable impetus in the universities of Europe and America, and no less than four chairs were founded in this decade. Joseph Texte at Lyons, Louis P. Betz at Zurich, Arthur R. Marsh at Harvard University, and George E. Woodberry at Columbia University, were the pioneers in their respective countries, in 1900 Fernand Baldensperger succeeded Texte at Lyons, and in 1902 Francesco Torraca was appointed to the chair which De Sanctis had once occupied at Naples.

Of the five pioneers enumerated above, Joseph Texte, though the youngest, was the first to impress on the study of comparative

literature the special significance which it has mainly continued to possess in academic instruction. His study of Rousseau as the founder of "literary cosmopolitanism" in Europe, and his *Études de Littérature Européenne*, indicate the general trend of his interest in the problems of literary relationship between the various countries of western Europe, especially during the eighteenth century. His early death in 1900 cut short a brilliant career, just at the moment when a chair of comparative literature was about to be founded for him at the University of Paris. His successor at Lyons, Fernand Baldensperger, has continued in the same regions of research, but with a particular interest in the literary relations of Germany, France, and England during the romantic period (e.g. *Goethe en France*, 1904). In Switzerland Louis P. Betz cultivated similar studies, investigating the influence of Poe and Heine in France, the origins of literary journalism at the end of the seventeenth century, and a wide range of problems of this kind. In 1900 he published a bibliography of the young science to which he was devoting his life (*La Littérature comparée, Essai bibliographique*), this compilation, the first of its kind, limits comparative literature to *Quellenforschung*, that is, to the investigation of literary sources and international influences. After his death a second edition (1904) was brought out by Baldensperger, with its scope slightly extended.

In Germany the opportunities for minute research which the new *Quellenforschung* afforded were soon realized by academic teachers; and a mass of material of this kind, much of it of slight value, has issued from the German universities during the last twenty years. In 1887 Professor Max Koch of Breslau founded the periodical already referred to; and somewhat later Professor W. Wetz, who succeeded him as editor of that journal, was called to a chair at Freiburg i. B., which he has chiefly devoted to the teaching of comparative literature. Professor Wetz's conception of his field, as expounded and illustrated in his *Shakespeare* and other works, is widely divergent from that of most of his German contemporaries. He conceives of it as a comparison not of externals, but of essentials, the comparison of one artistic method with another, of the genius of Shakespeare, for example, with that of Corneille or Calderon. As yet no German chair has been officially devoted to the subject, but doctoral monographs on comparative subjects are now issuing from the departments of modern literature in almost every German university.

The courses of Professor Child of Harvard on Chaucer and on ballad literature, as well as those of Longfellow, Lowell, and Norton on Dante, furnished the initial impulse to comparative studies at American universities; and it was at Harvard that the first

chair of comparative literature was instituted Professor Arthur R. Marsh continued mainly the medieval studies of his predecessors, coordinating them, however, by the fruitful idea of *Weltliteratur*. His academic title was "assistant professor of comparative literature", and to that title, when he resigned from the university, Jefferson B. Fletcher succeeded in 1902. At Columbia University the Department of Literature, with George E. Woodbury as its head, had been inaugurated as early as 1890, and here, for the first time in any American institution, the study of literature was separated from all linguistic or philological detail, as a division of the field of learning, and the whole realm of European culture taken as its province. Professor Brander Matthews lectured on the evolution of the novel and the drama, and Professor Woodberry's lectures on the great monuments of European literature, on epic poetry, on the theory and practice of criticism may be read, in revised form, in his *Heart of Man* (1899), *The Torch* (1905), *Great Writers* (1907), and other works. In 1899 the first Department of Comparative Literature in an American university was inaugurated. An early result was the institution of a series of "Columbia University Studies in Comparative Literature," which included monographs on such varied subjects as *Platonism in English Poetry*, *Romances of Roguery*, *Spanish Literature in the England of the Tudors*, *A History of Literary Criticism in the Renaissance*, *The Classical Heritage of the Middle Ages*, *The Italian Renaissance in England*, and *Irish Life in Irish Fiction*. The *Journal of Comparative Literature* was founded in 1903, but discontinued publication at the end of one year. The Ropes Chair of comparative literature at the university of Cincinnati, founded in 1908, completes the academic roll-call in this country. At the present time (1910) four scholars in the United States, one each in Switzerland, France, and Italy bear the title of professor of comparative literature, but the number of other scholars actually carrying on investigations in this field is not to be estimated merely by this small array. To say that most of the teachers of modern literature in European and American universities connect themselves in some way with the field, either in their teaching or in their published work, would not be wide of the mark. England is still without a chair of comparative literature, though the unique Professorship of Poetry at Oxford continues to furnish opportunities for the discussion of comparative criticism, and such works as Professor Saintsbury's series of *Periods of European Literature*, as well as his own *History of Criticism and Literary Taste in Europe*, illustrate the growth of these studies in the British Isles.

Comparative literature has thus been variously conceived as (1) a form of literary antiquarianism, involving especially the external

facts of the influence of one literature on another, of the literary sources of books, and the like, (2) the study of *Weltliteratur*, involving especially the history of literary periods, movements, types, or themes, and (3) the æsthetic criticism of literature, with incidental study of poetic principles, as a protest against literary antiquarianism. Literary scholars, from the days of ancient Rome to the end of the eighteenth century, employed the comparative method, in the sense of contrasting one author or one literature with another. But the search for a connecting link of spiritual or artistic unity in all the literatures of the world did not begin until the days of Herder, and with Goethe's idea of a *Weltliteratur* comparative literature was really born (see his *Feineres über Weltliteratur*, 1829, in *Sämtliche Werke*, Jubiläums-Ausgabe, pp. xxxviii, 202). Matthew Arnold's dictum that "that criticism which alone can much help us for the future is a criticism which regards Europe as being for intellectual and spiritual purposes one great federation bound to a joint action and working to a common result" is a logical consequence of Goethe's idea, though Arnold has narrowed it from World Literature to European Literature. This has indeed been the general, though not the invariable, practice of scholarship, and perhaps the unity of literature is more easily apprehended when its study is confined to a single civilization like that of Europe. Literary study, conceived in this spirit, does not concern itself with each national literature as a separate and sporadic fact of history, but rather with the great international movements or types of literature, with the great literary periods, or with the interrelations of one literature with another. Academically, this has tended to break down the barriers which have separated the departments of English, French, German, etc., and ultimately the very existence of such separate departments is likely to be threatened. When that is brought about, there will no longer be need for a distinct department of comparative literature. In this sense, comparative literature has been, not a special field of research or criticism, but a method applicable alike to all fields of literary study, and its usefulness as a separate entity will cease when that method has been universally adopted. But its real field is nothing more or less than the history and criticism of literature, and though its students may limit themselves to some special phase of this wide subject, the best of them acknowledge the larger and truer allegiance, when they use the term "comparative literature" as a banner and a battle-cry. J. E. S.

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**LITERATURE, EDUCATIONAL** — See BIBLIOGRAPHIES OF EDUCATION, ENCYCLOPEDIAS OF EDUCATION, JOURNALS, EDUCATIONAL, and the reference list appended to the various articles on education in these volumes

**LITERATURE, ENGLISH, TEACHING OF** — As early as Plato the fundamental theoretical principles which underlie the teaching of literature were already clearly stated. In the *Gorgias* the character who gives the name to this dialogue maintains that he has elaborated an art, the art of rhetoric, which is communicable by teaching and which will assure to the practitioner of that art the greatest possible happiness. Plato, on the other hand, if we may assume that Isocrates expresses Plato's opinions, maintains that what Gorgias calls an art is a false art, is merely flattery (cf. the place which is assigned to the poet in the *Republic*), and that real power has to do only with the perception of and control over that inner truth which is each man's possession in varying degrees by gift of nature, and that consequently there is no communicable art of expression based upon sound moral principles. To these two views, both manifestly presented in the extreme, should be added a third, set forth in the *Ion*. This is the doctrine of "secondary inspiration," according to which certain persons whose spirits are attuned in a peculiar manner to the writings of some specific master of literature are thus enabled to put themselves with respect to these writings into a sympathetic mood of enthusiasm which is similar to the mood of the author in composing them, and which in a certain degree is communicable to others. To illustrate this idea, Plato uses the figure of the magnetic rings. The first ring, representing the original author himself, receives its power directly from God, the source of all inspiration. The second ring, representing the interpreter of the author's writings, hangs from the first ring by means of a magnetic power derived from the original source through the medium of the first ring. In the same way a third ring may be attached to the second ring by means of a magnetic power derived through the medium of the first and second rings, and this magnetic power may continue

indefinitely to be thus transmitted so long as it is strong enough to enable one ring to hold to another. In the case of a great writer like Homer, the rings may form a long chain, although by the time we get to the last ring but little of the original inspiration of Homer is left. The three principal points, therefore, which are represented in these two dialogues, expressed in terms of modern thought, are, first, the possibility of teaching the technique of an art of literature; second, the necessity of basing literature not upon technique, but upon personal character, which is not communicable and consequently not teachable, and third, the transmission of the elements of personal character not completely but in an imperfect manner by means of sympathetic appreciation or secondary inspiration. If we add to these principles a conception not possible in Plato's time, the conception of a history or development of literature, we shall have all the main ideas which underlie the modern teaching of the subject. (For the development of the study of English literature see **VERNACULARS, TEACHING OF THE**.)

**English Literature in the Elementary and Secondary Schools** — The question of the advisability of teaching literature in the modern elementary and secondary schools appears to have been definitely answered by actual experience. Through the various stages of the elocutionary speaking of "pieces," the use of reading books, and finally the detailed and formal study of English classics, the study of literature has gradually taken its place in the school curriculum, although it is only within the present generation that extensive and specific provision has been made for such study. The cause and the justification for the contemporary emphasis placed upon the study of the English language and literature are intimately bound up with the democratic tendencies in general of both language and literature within the last three generations. English literature, beginning with the reforms of the late eighteenth and early nineteenth centuries, has become more and more in its modern manifestations an expression of general social ideas and emotions than it has ever been before, and its range of appeal has consequently become wider. Moreover, the modern school, in the extraordinary expansion by which it has assumed to itself many different kinds of activity, left by the earlier school either to the limited instruction of the parent or of special masters, has at the same time assumed certain responsibilities, necessarily arising from the instruction which the school provides in the elements of these new subjects for the public at large. Thus in teaching practically every member of the community how to read and write, the school has placed within the reach of all the elements necessary to the understanding and the practice of the literary art. Having provided the general public with the key of

admission to the treasury of English literature, modern education cannot consistently abandon the public thereafter to its own undisciplined devices. A system of universal popular education logically demands that attention be given to so influential an element as literature in the life of the people, and in answer to this demand, from the lowest grades through the secondary school, the college, and the university, the study of the literature of the vernacular has come to occupy an important, and, on the whole, unquestioned place. The debatable question is no longer whether English literature shall be taught to English students, but how and with what varying degrees of emphasis it shall be taught.

Perhaps the most important single result of modern practical experience has been the turning aside from matters of information about authors and literature, as exemplified in the old-fashioned manuals of the history of literature, to an attempt at appreciation directly of the literary monuments themselves. It is now generally recognized that historical and biographical information with respect to literature is of secondary value, and that it finds its justification in instruction only when it helps the student to a truer appreciation of the literary product. The study of literature is not, therefore, an appendage to the study of history; and this is especially true in the elementary teaching of literature. The details of historical and biographical information are matters of scholarship, whereas the proper understanding of literature in its simplicity is not primarily a matter of scholarship, but rather of sensibility and feeling.

At the same time it is recognized that the teaching of elementary English literature is not altogether a matter of sensibility and feeling, and that it has elements of a severer intellectual discipline in it. In the first place, all literary expression is made up of words, and an intelligent understanding of the meanings and connotations of words is absolutely necessary to any adequate appreciation of literary monuments. The teacher, therefore, must gauge the capabilities of students with respect to the vocabulary of the literary expression under examination in such a way as to make sure that their understanding is not only clear, but also in accordance with the normal traditional usages of the language. It is not enough that students should have a definite impression of a work of literature; they must also have correct impressions. In acquiring this right understanding of words, which, as Plato has justly said, is the basis of scholarship, the teacher's most intelligent judgment and oversight are necessary. Obviously the study of a literary monument the expression of which is so far beyond the comprehension of the student that his attention is completely taken up with details, leaving him no energy for the synthesis of his impressions, should be deferred

until the student has at his command a wider range both of vocabulary and of modes of thought.

Another kind of definite fact which the elementary teacher of literature may not neglect is that which has to do with certain forms of phrasing peculiar to the literary style, especially the use of figurative language. These modes of expression are usually quite outside the student's natural colloquial experience, and unless they are specifically analyzed, the significance of them is not clearly realized, even when the individual words are intelligible. It is the frequent experience of all teachers of English literature that even fairly mature students are unable to see the value of a metaphorical expression, an inability which arises not so much from an inactive intelligence as it does from unfamiliarity with the literary convention contained in the manner of expression. The study of literary style, as it was developed in the early manuals of rhetoric, and as it was based upon the study of the Greek and Latin classics, limited itself almost exclusively to the analysis and classification of figures and metaphors. The futility of all such classification merely for the sake of classification acknowledged, it must be granted also that, within proper bounds, the analysis of metaphorical expression is justifiable and necessary.

Still a third group of facts to be noted in the disciplinary study of elementary literature consists of allusions, proper names, and other matters of information embodied in the text, the understanding of which is necessary for the proper grasping of the writer's intention. Here again it is apparent that works such as some of the satires of Dryden and Pope, in which the local and contemporary allusions are so numerous as to absorb all the student's attention, are hardly appropriate material for elementary instruction.

When stress is placed heavily upon these details of fact, that is, on vocabulary, figures, allusions, etc., the result is what is often called the "philological" method of the study of literature. This kind of literary study, which arose out of a desire to give the study what was considered a disciplinary value, was much more in vogue in a preceding generation than it is at present. The study of figures of speech, for example, was made a very technical drill in the classification of the figures under the heads of an elaborate and pedantic system of classical terminology. In the same way the study of vocabulary was, and often continues to be, carried to extremes in the consideration of the etymological origins of the various words, or their comparative uses by different writers, and similar questions. The study of grammar is often combined with the study of literature, and teachers have been known to compel students to parse through every word of *In Memoriam* under the pretense of a literary

study of that poem. It is perhaps sufficient to point out here that the philological method when carried to such extremes does not answer the requirements of the study of literature, however valuable it may be as a technical drill in language. The common-sense conclusion seems to be that a piece of literature should not be taken up, at least in elementary or secondary instruction, when it requires such elaborate linguistic commentary that the student's attention and energy are completely abstracted from the appreciation and enjoyment of the work merely as literature.

The more subtle questions of technique, such as those which have to do with form or structure in the larger sense, the differentiation of types, the conventions of individual types, etc., are usually, and may very well be, disregarded in elementary instruction. With the most mature students the interest of these questions with respect to literature may be considered as esoteric, and with younger students much more limited in power of abstract thought, the dwelling upon them is merely confusing. There is perhaps somewhat more justification in dwelling upon historical considerations, *e g* the period at which a work was written and the particular contemporary circumstances of its composition. Such details are often helpful in grasping the meaning of a work as a whole. But it is doubtful if students should be much troubled with attempts to group writers into periods, or to appreciate large general movements, like classicism and romanticism, in the earlier stages of their literary training. The usual plan of reserving such considerations for the last year of the secondary curriculum or for the college seems to be the wisest.

As to the question of transmitting appreciation for the literary monument itself, after all matters of technical detail have been disposed of, apparently little that is of practical value can be said. It will be generally conceded that Plato was right when he declared that there was no communicable technique for the best aspects of literature, and that a right feeling, "a secondary inspiration," will accomplish more than the most ingenious technical analysis. And as the Greek rhapsodists gave expression to this secondary inspiration mainly by reciting the works of the authors who inspired them, so in elementary instruction intelligent reading is often more effective than elaborate commentary.

One other aspect of the elementary study of literature presents itself insistently to the teacher, and this is the question of the relation of the study of literature to the study of morals, ideas, and civilization in general. It is obvious that the possibilities of correlations of this kind in literary study are almost illimitable in extent. No other kind of expression has summed up so directly and so compactly as English literature has done the ideas

and forces which have exerted influence upon the thought of the English people. Any adequate study of the monuments of English literature must consequently and of necessity lead over into a consideration of moral ideas. The study of *The Merchant of Venice*, of *Silas Marner*, of *The Ancient Mariner*, to choose a few examples at random, inevitably raises in each instance important questions of moral conduct which are inherent in the very conception of the works. The endeavor to exclude such discussions by limiting the choice of texts read to simple narrative, like Scott's narrative poems, seems hardly defensible, since it excludes what must be regarded as the most characteristic products of English literature. Here again a balanced and common-sense attitude toward the question of moral instruction in the teaching of literature seems to be the only one tenable. To make literature merely the vehicle for the conveyance of moral instruction, to torture a moral lesson out of every innocent poem or tale, changes the subject from the study of literature to the study of ethics, besides frequently destroying for the student the characteristic charm of the writings under consideration. On the other hand, the moral and didactic implications of many of the most important monuments of English literature cannot be disregarded without slighting what is after all one of the most persistent and prominent characteristics of the whole history of that literature.

The question of grading the material used in literary study may naturally be answered variously according to the attendant circumstances. In general, however, in the early years of the elementary pupil's development, the most appropriate material will be found in fairy tales, folk tales (see *FOLKLORE*), myths, and simplified forms of epic narrative. The next stage in the development of popular narrative, and the one which is most appropriate for study in the later years of the elementary school, is represented by the romantic tales of chivalry, such as the stories of King Arthur and other medieval romances, as well as chivalric stories from actual history. In the secondary school, on the other hand, considerably more attention is paid, and appropriately so, to writings which are specifically works of literary art, and which consequently bear the marks of conscious literary artifice, such, for example, as the list of "English Classics" prescribed for reading and study in preparation for entrance into college.

**English Literature in the College** — In the American college, the study of English literature has advanced steadily with the growth in general of the scope of college instruction. The subject was given its first strong impulse through the academic influence of men like Longfellow, James Russell Lowell, Charles Eliot Norton, and Professor Child, in New England, of Henry Reed, professor of English

literature in the University of Pennsylvania from 1831 to 1854, of Hiram Corson, now professor emeritus in Cornell University, and active professor of English literature from 1870 to 1903, and others in various parts of the country, and now is a recognized and important part of the instruction in all courses leading to the bachelor's degree. In the English universities the introduction of the subject came much later and its progress has been slower. At Oxford English literature was not introduced as a separate school of the university until the last decade of the nineteenth century. "At the first examination, which was in 1890, two candidates offered themselves, but as one scratched before the paper work began and the other as soon as it ended, there was no class-list. In 1897 the names of four men appeared in the class-list; in 1898, five, in 1899, four, in 1900, three, in 1901, two. People began to complain that the school was not as productive as they had expected, and even blamed the University. Several sages declared that the subject was in fault, and that, as they had said all along, English was not a subject which could be seriously studied in an English University" (Firth, *The School of English Language and Literature*, pp. 34-35). "It was pointed out that while male candidates could be counted on the fingers of one hand, women candidates entered for the school in large numbers, and it was inferred that the subject was not a suitable subject for men" (Firth, *ibid.*, p. 35). The real explanation, however, seems to have been that, although the university had provided for examinations in English literature, neither the university nor the colleges, except the women's colleges, had provided for instruction. This defect was in part remedied by the appointment of Professor Raleigh to the professorship of English Literature in 1904, and by various other appointments and changes in administration both by the college and the university before and after this. "But in 1907 and in 1908 the class-list at last revealed signs of real progress. There were in the first year twelve men and seventeen women, and in the second year, twelve men and thirteen women. This increase continued, and now, in Hilary Term, 1909, there are forty-nine men reading for the school, and fifty-six women." (Firth, *ibid.*, p. 38).

The principles which may be assumed to underlie the teaching of literature in courses leading to the bachelor's degree differ from those at the basis of elementary and secondary instruction less in kind than in the extent to which they are applied. With increased maturity in years the student is capable of studying writings of greater complexity and subtlety of thought, and of greater difficulty on the side of expression. But in the colleges also the main purpose of the teaching of literature is to bring students to a firsthand acquaintance

with and appreciation of that which is regarded as good in literature. In the college, however, more attention is usually given to the formulation of conscious standards of taste and judgment than the elementary student is capable of receiving. In carrying out this purpose formal courses in criticism are sometimes given. Other methods are also employed in the college for systematizing the material of literary scholarship. These attempts usually take the form of classifying the various monuments of the literature according to some ordered system. The simplest and most obvious method of classification is naturally that which is based upon chronology. It is generally assumed that a student should be acquainted with the historical sequence of at least the great figures in the development of English literature from Beowulf to Browning. Even though the student's background of historical knowledge is not sufficient to enable him to see that the writer of any particular period is the inevitable child of his own age, the chronological classification serves a useful purpose as providing a convenient framework which the student can complete with the fuller knowledge which gradually accumulates and which alone can give him any adequate realization of historical background and perspective.

In the same way attempts are often made to classify the mass of literary material under the heading of types. General-survey courses are often given covering all the various types of English literature,—epic, romance, lyric, drama, essay, novel, etc.,—and, usually in the later years of the college course, special courses in the development of particular types. This method of classification manifestly presents more difficulties than a simple chronological classification, although in compensation it may be assumed to have much greater value in bringing the student into a more intimate acquaintance with the actual content of literature and the methods of literary workmanship. The classification of literature according to types or genres, however, is obviously a method of abstract generalization based upon historical data which is apt to lead the student into a mistaken notion of types as established by some immutable dogmatic decree, of a fixed inherent nature, of which the various representations of the types are but individual exemplifications. It is plainly the teacher's duty to correct this tendency toward an "academic" attitude in the study of literature, and to prevent the system of classification, whatever it may be, from obscuring the student's vision of the actual processes of literary composition.

Still a third method of classification and of historical explanation of literature employed in college instruction is that which endeavors to study so-called developments and movements in literature. As a matter of fact, in the study of English literature, the movements are usually limited to two, or at most three.



The older periods, the Old English before the Conquest, the Middle English, centering about Chaucer, and the Elizabethan, centering about Shakespeare, are considered as periods mainly from the chronological point of view alone, although sometimes the Elizabethan period is treated comparatively in connection with a larger European movement, the Renaissance. More frequently, however, the study of movements in college classes in literature is limited to the study of classicism as represented in the eighteenth century, and of romanticism, as exemplified in the writings of Wordsworth and his contemporaries. The attempt to classify English literature according to movements seldom goes further than this, and after the discussion of the romantic writers, a return is usually made to the chronological method in the study of the writers of the Victorian Period. It may be questioned whether a more analytical treatment of movements of English literature is advisable or practicable. Perhaps the reason why further analysis has not generally commended itself is to be found in the fact that English literature throughout its history has not fallen into such clearly defined and conscious movements and schools as other literatures, notably the French, have done.

The question of the relation of the study of literature to creative literary composition, although it seems to be frequently disregarded, is one that the college teacher of literature is legitimately bound to consider. It is, however, in many instances, modestly assumed on the part of teachers that their function is purely interpretative, and that any bent toward literary expression which the student may have, being part of his natural inheritance and gift, must be allowed to work out its own destiny. The most the teacher can do, it is urged, is to acquaint the student with such technical details as the practitioners of the art of literature in the past have shown to be obviously useful, for example, the elements of versification in the writing of poetry, and after that to lend as sympathetic an ear to the productions of the student as the wisdom or charity of the instructor will permit. Many teachers, however, go further than this, and distinctly discourage efforts at original composition on the part of their students, on the ground that very few of them have the literary gift, that it is harmful to them to be supported in the delusions of literary aspiration to which they are by nature inclined, and that if a student has a genuine gift, discouragement and opposition will not destroy it, but rather strengthen it. Such a defense as this, however, is perhaps based upon too absolute a conception of what constitutes literature. From the psychological point of view it certainly seems unjustifiable that a student's mind should be kept in the receptive and appreciative attitude throughout his whole consideration of a subject, especially since he has in his command over language,

developed by natural use to a relatively high degree, the materials for the exercise of creative activity in the subject which he is studying. It would seem, therefore, that the teacher who discourages literary productivity on the part of his students merely evades the difficulties of the situation, and that the really helpful teacher will encourage creative activity at the same time that he guards the student from self-delusion and conceit. On the other hand, as a result of the increased commercial value of certain kinds of literature to-day, there are evidences of a tendency on the part of some college instructors to place great stress on the teaching of a practical technique of literature, of a sophistical art, such as Gorgias defended, which the student shall be able to put into practice with the hope of immediate pecuniary profit. Courses are thus given in short-story writing, in the novel, in the drama, and in various other kinds of writing for which there is at present a heavy commercial demand. So far as these courses really pretend to teach the art of writing short stories or plays, they fall obviously under the head of technical rather than liberal training, and aside from their immediate practical value would seem to have little justification as courses in the study of English literature. (See COMPOSITION.)

**English Literature in the University** — In German and American universities English literature occupies a definite and recognized position among graduate studies leading to the doctor's degree. In Germany courses in literature for advanced students have usually been given by the professor of English philology (*q v*), and until recent years have been mainly concerned with the earlier periods, in the investigation of which the study of language naturally plays a large part. But the modern periods are also being studied now in Germany from Shakespeare to Kipling, and a contemporary generation of scholars who give their attention almost exclusively to literature as distinguished from linguistics is becoming increasingly active. It is interesting to observe also that a number of elaborate and in some cases important literary studies have been published within the last decade by students of English literature in the French universities. In American universities literary courses form an important part of the graduate curriculum, and in the larger universities the faculty always numbers one or more professors whose entire attention is directed to questions in this field. A comparison of the subjects of doctoral dissertations in America, issued between the years 1880 and 1895, with those for the years 1895 to the present time, shows a marked increase of interest in what might be called specifically literary subjects. In England, on the other hand, although English literary scholarship has by no means languished at the universities, the formal organization of courses for literary research and investigation is of very recent date, and

these universities are consequently better known to the world at large through the publications of their distinguished faculties than through the activities of a body of disciplined students.

The methods and the purpose of the graduate study of English literature are many and various. The large proportion of students in graduate courses who intend to enter the profession of teaching unavoidably gives direction to a certain extent to graduate instruction. It is assumed, at least in American universities, that one important function of the graduate school is to provide students who enter the school with such further discipline and information as will enable them to present more adequately the subject of English literature to college classes. This end is not accomplished, however, by specifically pedagogical instruction, though logically it would seem that, if there is a place in colleges for teachers for the instruction which is usually given the methods of teaching literature in the elementary and secondary schools, there should also be a place for similar instruction for prospective college teachers. In many American universities there appears to be a partial tendency in this direction in the treatment of courses intended for candidates for the degree of Master of Arts, which are regarded not primarily as research courses, but rather as preparatory courses for teachers, or as preliminary preparation for students who expect to proceed to the doctor's degree. There results consequently a practically existent, if not theoretically accepted, distinction in the kinds of work required of candidates for the two higher degrees. The courses intended for candidates for the doctorate differ from the master's courses both in requiring a more extensive preparation and in an added stress on the side of investigation and production.

As is to be expected, the subjects covered by advanced graduate courses in English literature are largely such as come under the general head of English scholarship. Among them may be noted such subjects as have to do with the dating, the authorship, or the attendant circumstances of composition of a particular work or group of works. It will be observed that the term "literary" is broadly interpreted, and that often such topics lead into what might better be called literary antiquarianism, as when a monument, in itself apparently insignificant and unimportant, is resuscitated merely to serve as an exhibition of the life of a past period, or when the biography of an author, or the literary gossip of his day, is examined apart from any connection which they may have with specific writings. Many of the topics undertaken by advanced students of English literature likewise connect closely with questions of economic and social development. The borrowings of one author from another, as well as less direct sources and influences, are diligently examined, a method of investigation which

naturally leads over to the comparative study of literature (*qv*). It will be seen, therefore, that the study of the history of literature, as this subject is treated in graduate instruction, is very broadly conceived, ranging from the determination of simple questions of chronology and the details of antiquarian scholarship to the study of large national and international movements of thought. The study of sources and of comparative relationships, especially in the literature of the earlier periods, also connects intimately with such questions of primitive origins and beliefs as fall strictly under the head of folklore (*qv*). The origin and development of types or genres, as for example the ballad, pastoral, or drama, are also frequently subjects of graduate instruction and investigation, as well as the consideration of more specific features in a type, such as the monologue in drama, or the refrain in ballad. The number of questions similar to these which may be made the subject of graduate investigation is manifestly unlimited, and the value of such investigations in clearing away uncertain or disputed matters of literary scholarship can hardly be questioned. On the other hand, perhaps it is only fair to say that the modern graduate study of English literature, partly because of the demand for scientific method, is exposed to the danger of resting content with an arid Alexandrian scholarship which may obscure the student's view of what he rightly regards as the chief value of literature, its power of inspiring and pleasing. In default of any definite and substantial knowledge of the psychology of æsthetics, a knowledge which the literary student can hardly be expected to furnish to the world, one whole side of the study of literature, except to some extent from the historical point of view, is largely neglected in the graduate school, and that is the side of literary criticism. Moreover, in the graduate school even more than in the college, there are evidences of a disinclination to encourage or in any way to take account of original imaginative composition. The graduate study of English literature, as is quite obvious, is still strongly under the influence of the methods of study employed in the natural sciences; and as the botanist does not invent the plant to analyze, so the student of English literature need concern himself, as the botanist does, only with the data furnished him. But there is certainly a false parallelism here, and the conception of the university study of literature should be broad enough to include the man of constructive, imaginative temperament as well as the one of analytic and scientific bent of mind.

Although for the purpose of this survey the graduate study of English literature has been detached from other branches of English study, in the actual practice and organization of graduate schools no such clear separation is made. Students who are candidates for a higher degree

are not entered as candidates for a degree in English literature or English language specifically, but merely as candidates for a degree in English. It is assumed that graduate students will have a comprehensive interest in the whole subject, and students whose inclinations are mainly in the direction of literary studies are required to take a certain amount of work in the English language, just as students specializing in linguistics are required to take some courses in English literature. In the administration of details there is naturally considerable divergence among the various universities. At some places all students, whether their special work is in language or literature, are required to take courses in Gothic and Old French, besides courses which deal more directly with the history of the English language. At others, students who intend to devote their time primarily to literature are not required to take Gothic and Old French. It is manifestly contrary to the spirit of graduate study to impose a rigid curriculum upon all students, and the effort is usually made to adapt the formal work of students to their individual needs and abilities. In the administration of final tests and examinations the greatest variety is to be found in the practice of the different universities, such questions being frequently left to the discretion of the individual departments. In the German universities and in some of the American universities no examinations are held until the candidate is ready to stand for his finals, preliminary to the awarding of the degree, at which time the examination is not on specific courses, but on the subject in general. But sometimes in the American universities course examinations as well as final examinations are held and the requirement is made that students shall do "distinguished" work in their courses before they shall be permitted to proceed in their candidacy for a degree. This applies especially to the candidates for the master's degree, which is sometimes awarded, as at Harvard University, for work of a certain grade in a specified number and grouping of courses. Sometimes, however, as in the English department at Columbia University, in addition to the work in courses, the candidate for the master's degree is required to present an essay which shall embody the results of a thorough investigation of some subject earned on in connection with one of his courses. Candidates for the doctor's degree, on the other hand, are always required to present a dissertation or thesis, which shall give evidence of ability to carry out investigations with scholarly method, and which also contributes in some degree to the knowledge of the subject which the writer undertakes to investigate. In the German universities this dissertation must always be printed and accessible to the public before the degree is conferred; in some of the American universities, as at Columbia, Johns Hopkins, and others, a

similar regulation is enforced; but at others, for example, Harvard University, the candidate is not required to print and publish his doctor's dissertation.

G P K

See LANGUAGE, ENGLISH, HISTORY OF STUDY OF, also ANGLO SAXON, COMPOSITION, FOLK LORE; LITERATURE, COMPARATIVE, PHILOLOGY, RHETORIC, VERNACULAR, STUDY OF

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#### LITERATURE, INSTRUCTION IN —

See GRAMMAR, LANGUAGE, ENGLISH, LITERATURE, CHILDREN'S, LITERATURE, COMPARATIVE, GREEK LANGUAGE AND LITERATURE, LATIN LANGUAGE AND LITERATURE, ORIENTAL LANGUAGE AND LITERATURE, PHILOLOGY, RHETORIC, etc

#### LITTLE SCHOOLS — See PORT ROYALISTS

**LIVERPOOL UNIVERSITY, LIVERPOOL, ENGLAND** — One of the recently established English universities, founded in 1881, as the University College of Liverpool, and opened in the following year with chairs in the general arts and science subjects. The relations between the local city government and the university were strong from the beginning. In 1882 the city council purchased lands and buildings for the college. In 1883-1884 money was raised to put the college on a university basis, and the Royal Infirmary School of Medicine became a part of University College. Hitherto the students were presented for degrees before such bodies as held external examinations. In 1884 the University College

became a constituent part of the Victoria University, of which Owens College, Manchester, and Yorkshire College, Leeds, were the other members. From this period on remarkable progress was made, due to the generosity and local interest in the welfare of the institution. Fellowships and scholarships were endowed, laboratories were provided and equipped in different departments, an athletic field was presented, 1891-1892, new building plans were entered upon in 1887-1888, the library was extended in 1893-1894. In 1895-1896 the first principal, Mr G H Rendall, retired and was succeeded by Mr R T Glazebrook. In 1897 a school of commerce and a school of hygiene were established. In 1898 the school of tropical medicine, and in 1898-1899 a professorship of education, were added. In 1899 Mr Glazebrook was succeeded by Mr. A W W Dale, the present Vice-Chancellor. With the opening of the new century an active movement was set on foot to separate from the Victoria University and to establish an independent University of Liverpool. The plans met with remarkable enthusiasm among the citizens, money was quickly raised, the city council and other local bodies came to the active assistance, and in 1903 a charter was obtained to establish the university. Since that time the institution has made great progress, and while the other neighboring universities are developing mainly, perhaps, along scientific lines, Liverpool has continued to strengthen its arts faculty and to develop on the cultural side. The following departments may be mentioned: Celtic (with which Professor Kuno Meyer was until recently connected), paleography and diplomatics, social anthropology, ethnology, archæology (classical and medieval), civic design, town planning, etc., local history and records, school of social science and of training for social work. The total number of faculties is five: arts, science, law, engineering, and medicine (including hygiene, dental surgery, pharmacy, veterinary medicine and surgery, and tropical medicine). There are also a department of education and a university training college. Affiliated with the university are St Aidan's College, Birkenhead, Edge Hill Training College, and Mount Pleasant Training College. A strong department of University Extension, providing general lectures to the public, and also instruction of a specialized character, is conducted by the Society for University Extension in Liverpool and District. In connection with the courses in this work traveling libraries are issued. The government of the university is in the hands of the Court, the University Council is the executive body, the Senate regulates the academic work; and Convocation is the body representing the graduates of the university. The University is maintained by endowments, grants from the Treasury, city council, and other local bodies, fees, etc. There is an active student

life, which centers round the Guild of Undergraduates and numerous sectional societies and clubs. The instructing staff in 1911-1912 numbered 219, and the student enrollment was 1078 in day classes and 274 in evening classes.

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**LLOYD, RICHARD** (1595-1659) -- A royalist clergyman and master of a private school at Oxford. He matriculated at Oxford from Oriel College and commenced B D in 1628. As a writer on education Lloyd shows distinct merit in his long-titled work in one volume. (1) *The Schoole-Masters Auxiliaries To remove the Barbarians Siege from Athens, Advanced under two Guides. The first, leading by Rule and Reason to read and write English dexterously. The second, assenting the Latine Tongue in Prose and Verse to its just Enlargement, Splendor and Elegancy* (London, 1654.) (2) *Artis Poeticæ, Musarum Candidatis Addiscendæ, formula recens et dilucida* (1653). Lloyd takes great pains over the letters. He takes pains also in showing the power of letters, e g "a the deaf man's answer, b that doth make the honey," and so on. He pays attention to anomalies in English spelling, and suggests rules for right spelling. He advocates short lessons, slow and sure progress, care in the beginning of a subject, he requires scholars themselves to communicate knowledge to their fellows, from which masters may themselves gather hints, he treats of emulation, retribution by way of encouragement and by way of discouragement. He deals with recreation, the correction of evil manners, and the removal of truants. His rules of art in writing are one of the best accounts of the teaching of writing in schools at the time. The first part of the book, teaching to read and write English dexterously, occupies 54 pages, the Latin grammar which follows contains 153 pages; and the *Artis poeticæ formula*, 64 pages. Another edition of the *Schoole-Masters Auxiliaries* was published in 1659. F W.

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- Dictionary of National Biography* Vol XXXIII, p 431.

**LISBON, UNIVERSITY OF.**—See PORTUGAL, EDUCATION IN.

**LOBACHEVSKI, NICOLAI IVÁNOVICH** — A Russian mathematician born at Nijni Novgorod in 1793, died at Kasan in 1856. He was one of the first to consider the essential nature of the celebrated fifth postulate of Euclid, which states (in substance) that through a given point only one line can be drawn parallel to a given line. He showed that it is possible to create a geometry, perfectly scien-

tific in itself, in which this postulate is denied. This gave rise to one of the group of non-Euclidean geometries (See PARALLEL LINES). Lobachevski published several works and memoirs on geometry and astronomy. His theory of parallels has not influenced the elementary treatment of geometry, and with the present tendency to make the subject less speculative it is not liable to do so. It has had great influence, however, upon the study of higher mathematics. D. E. S.

### LOCAL EXAMINATIONS, ENGLAND

-- See EXAMINATIONS; LEAVING CERTIFICATES

**LOCAL SIGN** -- Lotze called attention to the fact that every point on the skin when stimulated gives rise to a tactual sensation which has, in addition to its major quality, a peculiar characteristic, due to the point of application of the stimulus. Thus, the same stimulus when applied to the palm of the hand and to the back of the hand, gives rise to sensations which are alike in general quality. In the two cases, however, there is a slight qualitative character due to the point of application. This difference due to the point of application is known as the local sign. It is important in the development of ideas of tactual space, such ideas depending primarily on the systematic arrangement of local signs in series. The local signs of the retina have been described very fully by Wundt. It is a well-known fact that the same color stimulus applied to the center of the retina and to the periphery will produce qualitatively different sensations. In general, the external portions of the retina are color-blind, and especially sensitive to changes in brightness. In recognizing colored surfaces these qualitative differences are not recognized as differences in color, but as differences in space. The surface is seen as uniform in color and extended. The qualitative differences are thus converted into the percept of extension. Such an interpretation of qualitative differences into spatial characteristics is full justification for Lotze's description of local signs. C. H. J.

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### LOCALIZATION OF FUNCTIONS

See NERVOUS SYSTEM

**LOCATION, SENSE OF** -- The ability to recognize directions reaches a very high state of development in certain animals, and in certain human beings, especially those who are deprived of the sense of sight. Hence, it has been regarded as a separate sense. Experiments with rats that have been deprived of their senses seem to indicate that these

animals at least are guided in their movements by a general recognition of direction which is probably muscular in type. That is, they acquire a certain set of muscular adjustments, and are guided by these adjustments. Certain animals, such as carrier pigeons, may make use of the semicircular canals (see STATIC SENSE) which from their structure seem suited to indicate changes in direction. The blind probably cultivate a high degree of attention to their muscle sensations, and also to the minor indications of position through the sense of touch which normal persons neglect.

The general psychological problem of the recognition of location is discussed under the topic "space perception," where it is shown that space-perception is not due to the activity of a single sense, but to the perceptual fusion of many sensations. C. H. J.

See SPACE, PSYCHOLOGY OF.

**LOCATUS** -- A term denoting the assistant teacher or usher in the schools of the Middle Ages. The word was formerly derived from the Latin *locare*, to hire, this term was, however, not used of teachers, and the word *locatores* is found by the side of *locati* in some ordinances. It seems, therefore, probable that the term denoted master or teacher of a section or division, *locus*, *loca*, *Lokation*. (See *Monumenta Germaniae Pædagogica*, Vol. I, p. xliii.) The *locati* were usually recruited from among wandering students or bachelors (*qv*), or the older pupils of a school. They were engaged and were dependent on the Rector, who was himself engaged in town schools by the town council. As may be expected, in most cases the *locati* were as shiftless and unreliable as most of the members of their class. Some, however, seized the opportunities afforded by their engagement to study. Only in rare cases did they hold their positions for longer than a year.

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**LOCI** -- If a point in a plane is subjected to a single condition, it may occupy an infinite number of positions which follow one another in general in a continuous manner, and in this case their aggregate (*ensemble*) constitutes the geometric locus of points satisfying this condition, to the exclusion of all points which do not satisfy it. For example, if the condition is that a point in a plane shall be two inches from a fixed point of the plane, the locus is evidently a circle (circumference). Similarly we may have loci in space of three dimensions, a locus in that case being in general a surface.

As an educational matter the question arises as to when the subject of loci should be introduced into geometry, and how far it should be carried. There have been and still are those

who wish to introduce it early, and there are others who wish to treat it very extensively.

In general, however, it has been recognized that the subject is one of relatively recent development in the history of geometry, and that it requires relatively greater powers of abstraction than the study of the other fundamental concepts of the subject, such as the congruence of triangles. On this account it is generally placed not earlier than the end of the first book of a geometry arranged on the Euclidean model. While it is a very extensive subject, it is felt that it does not lead to the definite and usable results that characterize the geometry that has been inherited from Euclid and Legendre, and that therefore the place for elaborate treatment is in the general literature that a mathematician should study rather than in a textbook on the elements. When the student reaches analytic geometry (*q.v.*), he necessarily takes up an extended treatment of the subject, since conics are usually studied at present as loci instead of as sections of a cone.

D E S

**LOCKE, JOHN** (1632-1704) —Locke came of Puritan parents and through his long life was associated with the influences making for liberality and tolerance in matters of opinion and action. After six years in Westminster School, he entered Oxford in 1652. His original inclination seems to have been toward the Church, but this he abandoned on account of his growing sympathy with free inquiry and his interest in experimental studies. After a year spent as secretary to Sir Walter Vane on a mission to the Elector of Brandenburg, Locke returned to Oxford in 1666 and studied medicine, but did not take a degree. His studies, however, laid the foundation for his friendship with Boyle (*q.v.*) and Sydenham and stimulated his interests in the experimental method of research. In 1667 he became associated with the family of Lord Ashley, afterward the Earl of Shaftesbury. Here he acted as physician, confidential adviser, and tutor. The connection afforded him opportunities to exercise his political skill and secured for him several important posts. He was involved, however, in the fall of Shaftesbury and escaped to Holland in 1683 where he remained for six years. After 1691 he resided in the family of Sir Francis Masham at Oates in Essex, where he ended his days in the enjoyment of generous friendship and public esteem.

The complete list of Locke's writings is as follows: *Letters concerning Toleration*, 1689, 1690, 1692, 1706 (posthumous), *Two Treatises on Government*, 1690; *Essay concerning Human Understanding*, 1690; *Some Thoughts concerning Education*, 1693; *The Reasonableness of Christianity*, 1697, *Conduct of the Understanding*, 1706 (posthumous), *Some Thoughts concerning Reading and Study for a Gentleman*, 1706; *Instructions for the Conduct of a Young*

*Gentleman*, 1706, *Of Study*, published in *L. King's Life of Locke*, 1830, the plan for *Working Schools* may be found in *H. R. Fox-Bourne's Life of John Locke*, Vol II, pp 377-390.

Locke's chief distinction is as a contributor to philosophy. His *Essay concerning Human Understanding* is one of the significant books in the development of modern thought. In it the philosophy of empiricism receives its first important and thoroughgoing statement. In method and results it was revolutionary. It proposed an inquiry "into the originals, certainty, and extent of human knowledge, together with the grounds and degrees of belief, opinion, and assent" with a view to discovering "how far the understanding can extend its view, how far it has faculties to attain certainty, and in what cases it can only judge and guess," in order that "we may learn to content ourselves with what is attainable by us in this state" (Bk I, Ch 1, 4). This inquiry was not to be based on assumed principles but principles supposed to be innate or the natural possession of the mind. It was to proceed rather under the supposition that all knowledge whatsoever is acquired by experience, experience of the outer world through the senses and of the inner world of mind through reflection on what the senses offer. Knowledge was to be viewed as an individual acquisition and to be tested and estimated through the consideration of the way that knowledge is acquired. Thus the genetic, or as Locke calls it, the "historical, plain," method of viewing experience was given its first important formulation.

The results of the inquiry were no less significant than the method. Since, according to Locke, the senses mediate between us and the world, all our knowledge finds its originals in the ideas the senses give us and is conversant about nothing else. All that we can do is to reflect on these ideas, compare them, distinguish them, and combine them. Knowledge is thus limited to the extent of the ideas we have and to the discoverable relations between them. It extends no farther and can never carry us beyond the limits set by the genetic character of experience. Yet, even so, knowledge, if we mean absolutely certain knowledge, is inadequate for the concerns of life. It must be supplemented by judgment or belief whereby we entertain probable convictions for our guidance in a world which we can know only imperfectly. In all matters of probability our judgment is influenced by the conformity of our convictions with our experience or by the testimony of the experience of others. These ideas are developed in the *Essay* with a wealth of detail and suggestion which have made the book a classic in philosophical literature.

Locke's *Thoughts on Education*, which originally consisted of letters addressed to Edward Clarke advising him about the training of his son and which do not profess to deal with educa-



Jean-Frédéric Oberlin (1740–1826)  
See page 522



Ignatius Loyola (1491–1566)  
See page 91, also Vol. III, p. 533



John Locke (1632–1704)  
See page 58



Johann Heinrich Pestalozzi (1746–1827)  
See page 655

A GROUP OF EDUCATIONAL REFORMERS.





tion in general, but only with the education of a "young gentleman," was not the result of any extended experience as an educator. It contains rather the reflections of a keen observer and is influenced as much by Locke's philosophy as by his experience and observation. In a chapter of the *Essay, Of the Improvement of Our Knowledge* he writes "I think I may conclude, that morality is the proper science and business of mankind in general (who are both concerned and fitted to search out their *sum-sum bonum*) as several arts, conversant about several parts of nature, are the lot and private talent of particular men, for the common use of human life, and their own particular subsistence in this world" (Bk. 4, Ch. 12, 11). Similarly in the *Thoughts* he says that he places virtue first and most necessary among the endowments that belong to a man or a gentleman (Sec 135). This idea, that "we are fitted for moral knowledge and natural improvements" but not for "an universal or perfect comprehension of whatever is," is the dominant idea. "The candle that is set up in us shines bright enough for all our purposes." "Our business here is not to know all things but those which concern our conduct." It is, therefore, natural to find that Locke regards the business of a tutor to be not so much to teach his pupil "all that is knowable, as to raise in him a love and esteem of knowledge, and to put him in the right way of knowing and improving himself when he has a mind to it" (Sec 195). Thus, emphasis falls on the formation of useful habits rather than on the acquisition of knowledge. This emphasis is reinforced by Locke's conviction repeatedly expressed that while a few men attain excellence by virtue of their natural endowments, most men, nine out of ten, are what they are by virtue of their education, that is, by virtue of the training and discipline they have received. Furthermore, education appears powerless to alter the natural capacity or "original tempers." It may mend them a little and turn them to account and use.

It is such ideas that Locke carries through in his program for the education of a gentleman. First, a sound basis should be laid by training him as a child in healthful habits of cleanliness, exercise, eating, and sleep. Children should be hardened by robust treatment and not softened by delicacies and refinements. Yet they should not be harshly managed. Severe punishments and especially "beating" should be reserved for obstinate disobedience and untruthfulness. To health are to be added "virtue, wisdom, breeding, and learning." Virtue is placed first. "This is the main point, and this being provided for, *learning* may be had into the bargain, and that, as I think, at a very easy rate, by methods that may be thought on" (Sec. 147). These methods are epitomized in the following passage from *The Conduct of the Understanding* (Sec. 6). "The faculties

of our souls are improved and made useful to us, just after the same manner as our bodies are. Would you have a man write or paint, dance or fence well, or perform any other manual operation dexterously and with ease, let him have never so much vigor and activity, suppleness and address, naturally, yet nobody expects this from him unless he has been used to it, and has employed time and pains in fashioning and forming his hand or outward parts to these motions. Just so it is in the mind: would you have a man reason well, you must use him to it betimes, exercise his mind in observing the connection of ideas, and following them in train. Nothing does this better than mathematics, which therefore I think should be taught all those who have the time and opportunity, not so much to make them mathematicians, as to make them reasonable creatures." It is well also that the young gentleman should learn a trade, "a manual trade, nay, two or three, but one more particularly" and not so much for the trade's sake as for useful diversion in his leisure hours. Throughout the whole work there is repeated counsel to consult the interests, taste, inclination, and capacity of those who are taught, to treat them with consideration and kindness, and to make their education more of a natural enjoyment than an unwelcome task. Yet the principal ideas are the training and discipline of man's natural powers through the formation of proper habits, rather than through the acquisition of knowledge, and the insistence that man is fitted by his faculties for a life of moral usefulness rather than for a life of inquisitive research into all that is knowable.

As already noted, the *Thoughts* concerns primarily the education of a gentleman, and nearly all Locke's writing on education has the gentleman in mind. It is interesting, however, to discover that while holding the post of Commissioner of Trade and Plantations he drafted a scheme of "Working Schools" for the children of paupers. The plan was prepared in order to relieve the burden of maintaining poor families at public cost, but was never put into practice.

J E W.

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**LOCKERS, SCHOOL** — See ARCHITECTURE, SCHOOL.

**LOG COLLEGE** — A term frequently applied to institutions of higher learning erected on the frontier of American civilization during the eighteenth and early nineteenth centuries. Such institutions were usually of academic or secondary grade, but frequently developed into institutes of collegiate grade. The most notable of these was the institution founded by Reverend William Tenant, a Scotch Presbyterian divine, at Neshaming, near Philadelphia, Pa., in 1726. The school grew out of the instruction which Tenant gave his four sons. Opposition from the authorities of the Presbyterian Church sprang up, when Tenant and his four sons became adherents of Whitefield and the "New Lights" movement. While the "Log College" ceased to exist at Tenant's death (1746), the controversy which he initiated and his sons carried on resulted ultimately in the founding of Princeton University (*q v*).

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**LOGARITHM** — The common logarithm of a number is the exponent by which 10 is affected to produce the number. Thus  $10^2 = 100$ , hence the logarithm of 100 is 2. Similarly,  $10^{0.30103} = 2$ , approximately, hence the logarithm of 2, to five decimal places, is 0.30103. We indicate these relations by the following symbolism  $\log 100 = 2$ ,  $\log 2 = 0.30103$ . In these cases we have taken 10 as the fixed number to be affected by the exponent, but we might take other numbers, and in higher analysis it is more convenient to take a certain one which is represented by  $e$ , and which equals (to five decimal places) 2.71828. In general, therefore, the logarithm of a number is the exponent by which a certain number (called the *base* of the system of logarithms) is affected to produce the number.

**Use of Logarithms.** — Logarithms are designed to aid in numerical calculation. Since  $10^a \cdot 10^b = 10^{a+b}$ , we see that the logarithm of a product is equal to the sum of the logarithms of the factors. This is evidently true if we take another base than 10, since  $e^a \cdot e^b = e^{a+b}$ , and so for any other number than  $e$ . Likewise we have  $10^a + 10^b = 10^{a+b}$ , and  $(10a)^b = 10^{ab}$ . Hence if we have a table giving the logarithms of numbers, and the numbers corresponding to the various logarithms (the antilogarithms, as they are called), we can reduce the operation of multiplication to that of addition, division to that of subtraction, raising to powers to that of multiplication, and extracting of roots to that of division. In engineering work, and indeed wherever extensive computation is needed, logarithms are an important aid. The increase in numerical tables of late years, the remarkable development of the calculating machine, and the improvements in graphic methods, have tended to restrict the use of logarithms somewhat.

**History of Logarithms** — The exponential relation which first suggested logarithms was doubtless  $a^m \cdot a^n = a^{m+n}$ , a relation known as far back as the time of Archimedes (*q v*). By the end of the fifteenth century it was recognized that, in a series like 2, 4, 8, 16, 32 . . . the product of the second and third terms is the fifth ( $2+3=5$ ). Chuquet (1484) speaks of it, and says, in his quaint French "En ceste consideration est manifeste ung segret qui est es nomvres proportionals." The principle is more clearly stated by Stifel (1544), but it had already appeared in print in such works as those of Chehovceus (1510), Grammateus (1518), Rudolff (1526), and Gemma Frisius (1540). After Stifel's work appeared, the significance of the principle, as he elaborated it, was noted by several writers, including Tartaglia, Ramus, Schonerus, Suevas, Clavius, and Peletier. Thus the fundamental principle was known long before the need for logarithms led to their final realization. It was the great development of trigonometry, beginning with Regiomontanus in the fifteenth century, that created the demand that brought about the invention. The necessity for handling the large numbers found in the series of natural functions rendered some improvement in calculation necessary, and it was this need that developed the new system.

It is possible that the first idea of a tabular arrangement may have occurred to Jost Bürgi (Justus Byrgius), a Swiss mathematician. At least we infer this from a statement made by Kepler in 1627. He constructed what was essentially a table of antilogarithms, which was published some years after John Napier issued his *Mirifici Logarithmorum Canonis Descriptio* (Edinburgh, 1614). The first mathematician to recognize the great value of Napier's invention was Henry Briggs, later Savilian professor of Geometry at Oxford. He visited

Napier in 1615, and suggested the practical value of 10 as a base of a system of logarithms. Napier had not used this base, nor had he used the base of the so-called hyperbolic (natural, Napierian) logarithms, which were invented by John Speidell (*New Logarithmes*, London, 1619). The logarithms of Napier are connected with the latter by the relation

$$\log_a a = 10^2 \log_e 10^2 - 10^2 \log_e e^n,$$

where  $\log_a a$  is the logarithm of  $a$  in his system, and  $e$  is the base of the system invented by Speidell.

Logarithms immediately attracted wide attention. Vlacq published some extensive tables at Gouda in 1628; and these were reprinted in England in 1631. Faulhaber printed some tables at Frankfurt, in his work on engineering, in 1630; and by 1646 the subject had found a place in a prominent English arithmetic (Hartwell's edition of *Recorde's Ground of Artes*).

**Logarithms in the School** — The practical use of logarithms is easily taught, and from the standpoint of difficulty there is no reason why it should not enter into the curriculum of the elementary school. There is, however, the question of the need for the subject that may be felt by the student. Logarithms are means to rapid approximate calculation, they are indispensable to successful work in trigonometry and its applications, and they are helpful in the practical computations of mechanics and engineering. They are not, however, practically used in ordinary business life, and the fact that they require a table renders them unavailable for mere occasional computations. The pupil does not, therefore, experience a need for logarithms in the elementary school, at least as the subjects are arranged in the United States to-day. If computations in physics and mechanics should enter earlier in the American high school, the subject could easily be taught in the first year (the pupil's ninth school year), and with the growth of industrial classes this will probably come to be the case. For the high school course in mathematics leading to advanced work, however, there is at present no reason for thinking that the subject should be presented until the need is felt in trigonometry. Indeed, for the industrial classes the slide rule (see **MECHANICAL CALCULATION**) will probably take the place of logarithms to a large degree, although, being based upon the latter, these will need to be taught to some extent in any case.

D E S

**LOGIC** — The science (or art) of correct thinking. All schools of logicians would probably formally agree in this definition. It does not, however, imply anything concerning the nature of thinking, and hence nothing concerning the criterion of its correctness. Since modern philosophy has had for one of its chief points of debate the nature of thought, and the

relation of thought on one hand to existence and on the other hand to knowledge, the matter of the scope, limits, and purpose of logic have been thrown into the greatest uncertainty, not to say confusion. By a curious way, this result is largely the work of Kant, who himself proclaimed logic to be the one instance of a perfected and completed self-inclosed science. By logic he had in mind formal logic, or the logic of reasoning resting on the canons of identity, contradiction, and excluded middle; essentially as formulated by Aristotle. But Kant himself introduced the conception of a type of thinking which was not merely formal, but constitutive in some respects and regulative in others, and thus brought the nature of logic within the region of disputed questions in epistemology.

**Antiquity** — Logic was first recognized as a branch of the higher education at Athens in the period subsequent to Aristotle. The founding of the philosophical schools in the fourth century, and the "analytical" inquiries of Aristotle, afforded the preconditions, the one provided the earliest institutional teaching of academic rank, the other first gave to logic formal existence as a science. But it was in an altered and much simplified form that the logic of Aristotle finally became established — probably during the course of the second century — as one of the cycle of studies (*ἐγκύκλια παιδεία*) which every liberally educated Greek might be presumed to know.

A long process of intellectual and educational differentiation, during which Greek philosophy reached and passed its zenith, issued in the gradual detachment of distinct disciplines. The separating out of logic from the common content exhibits recognizable stages. (a) An implicit logical discipline had lain embedded even in the ancient "music," which was esteemed by the Greeks and defended by Plato expressly on the ground of its value in organizing and regulating the mental life. (b) The fragmentary logical methods practiced, and probably to some extent formally taught, by the younger Eleatics, the Megarians, but above all by the sophists, rhetors, and by Socrates, provided instruction and exercise in logical argumentation, the educational effect of which, direct and indirect, was undoubtedly great. (c) Mainly through the instrumentality of Socrates and Plato, the sophistic movement of the fifth century clarified itself, issuing in the settled opposition of rhetoric and philosophy, which thereafter remained the staples of higher education down to the close of the Græco-Roman period. (d) Later, at the hands primarily of Aristotle, philosophy received articulation into the disciplines which have been permanently recognized. The position accorded to logic, that of a propædæutic to philosophy, on the ground that it deals only with the form or method of knowledge, was decisive in determining both its content as a science

and its status as a subject of instruction until well into the modern era. With the exception of the ontological implications of the work on the *Categories* and commentaries thereon, it consistently excluded metaphysical questions. Its instrumental character, moreover, cooperated with the internal relations of content to fix its position as one of the group of preparatory formal disciplines, later distinguished as the *trivium* (*e*). With the post-Aristotelian subdivision of the whole of philosophy into logic, physics, and ethics, the content traditionally known in modern times as formal logic became a subordinate part of the first division under the name of dialectic. But the coincidence of formal logic and dialectic was not at first complete. For the Stoics, whose influence was paramount in further determining the form in which logic passed into education, first divided logic into rhetoric and dialectic, distinguished on purely external grounds as the arts of continuous discourse and of discussion, and then divided dialectic into the doctrines of thought, or meaning, and words (*in res, quae dicuntur, et vocabula, quibus dicuntur*, as Seneca expresses it). The former alone corresponds, roughly, with the formal logic of later times. Hence the dialectic of the Stoics included much which was later assigned to grammar. Formal logic never quite freed itself, however, from entanglement with questions of language, a fact for which Aristotle must share the responsibility, since in the *De interpretatione*, extensively used as a text in the Middle Ages, he fails clearly to distinguish between the thought or judgment and its expression in language. Further evidence of the dominant influence of the Stoics appears in their important contributions to the terminology of the science (including the name "logic"), in the permanent retention of a number of their distinctions and divisions, and in the instances of historical connection between the introduction of the study of dialectic and contact with Stoic philosophers or writings.

Two virtually opposed conceptions of the aims and scope of logic, which profoundly affected both its future development and its relation to education, were present in germ from the outset. On the one hand, Parmenides, in explicitly recognizing the distinction between knowledge and opinion, laid the foundation for the conception of logic as an objective science embracing the methods of attaining necessary truth, on the other, his follower, Zeno, in contenting himself with exhibiting the contradictions to which the tenets of their opponents led, inaugurated the treatment of logic as an instrument of controversy. Parmenides' principle that what can be thought can be, *ie* that truth and reality are to be determined by consistency or the necessary in thought, found further development in the Socratic discovery of the universal element in knowledge, forming the content of a defini-

tion, in Plato's principle that universal and necessary knowledge presupposes immutable being, and in Aristotle's formulation of the principles of theoretical demonstration (*ἀπὸδείξις*), Zeno's employment of the principle of contradiction with a polemical aim led to the eristic of the Megarians, to the forensic argumentation and sophistic dialectic of the sophists and rhetors, and to the rhetorical logic of later times.

The two conceptions are not as such mutually exclusive, the factual divergence arises from the supplanting of the theoretical by some practical aim, historically they have been on the whole antagonistic, and have tended to displace one another. Their nearly parallel development may be traced, as indicated, down to the decline of Greek thought in the Macedonian period, after which logic as an instrument of the disinterested determination of truth fell into abeyance until the revival of learning and the birth of the modern era. Aristotle marks the turning point. The culmination in him of the development of logic as an objective science was followed by its complete subservience to practical aims. For while the elder Peripatetics maintained the distinction between apodictic and dialectic, it proved to be barren, since they failed to grasp the distinctive character of logical thought; and, with the Stoics, who transmitted logic to the Græco-Roman curriculum, even the distinction disappeared. In the *Organon* both conceptions receive their just dues. Apodictic (with syllogistic), the method of strict syllogistic demonstration proceeding from proved premisses or from self-evident first principles (*Prior* and *Posterior Analytics*), is fundamental, and is opposed to dialectic in all its forms. Yet dialectic as such is not to be rejected, but distinguished as legitimate and illegitimate, and to the former is assigned the place of a subsidiary art. In his *Sophist*, Aristotle credits Zeno with being the "inventor" of dialectic, meaning thereby "the art of arguing, not from true premisses, but from premisses admitted by the other side" (Burnet). Aristotle's own treatment of dialectic, in the *Topics* and elsewhere, is a comprehensive critical presentation exhibiting the historical progress. Properly, dialectic is an auxiliary logical method, *viz* the critical examination of the truth of an opinion by means of discussion, involving the viewing of it from all sides, its insufficiency arises from its proceeding from merely probable premisses, or commonly accepted opinions, instead of from premisses which have been shown to be true, it therefore yields at the best only probable conclusions. Sharply distinguished from legitimate dialectic is the perverted or rhetorical dialectic which aims, not at discovery of the truth, but merely at victory over an opponent. Still further removed from the conduct of discussion for theoretical ends are the degenerate types of

dialectic known as (1) *eristic*, which is unduly contentious and satisfied with the mere semblance of victory, and (2) *sophistic*, which implies the deceptive use of logical forms, particularly of concealed fallacies, with a view to creating the false appearance of knowledge, for the sake either of reputation or of pecuniary gain.

With the decline in theoretical interests and in constructive power in the Hellenistic period, the prolonged conflict between philosophy and rhetoric, of which the opposition between apodictic and dialectic may be regarded as a principal phase (the incomplete differentiation is manifest, not without irony, in the claim of Isocrates, repeated later by Quintilian, that rhetoric is philosophy, as well as a complete education, and gives an adequate insight into human affairs, while Aristotle, by sharply distinguishing the two at the same time that he taught both, prepared the way for their definite separation), culminated so far as the Greek schools were concerned, leaving rhetorical logic and the individualistic systems of morals as the principal representatives of philosophy. The same dominance of practical aims which narrowed logic to the *ars disserendi* extolled by Cicero, favored the assembling of the constituent disciplines of "encyclopaedic" or general education in compendious form. The lost work of Varro, *Disciplinarum libri novem*, which apparently epitomized the contents of the current Greek education, was the first encyclopaedic work in Latin. Encyclopaedic education, the precursor of the curriculum of the Seven Liberal Arts (*q v*), gradually established itself throughout the Graeco-Roman world, including the pagan and Christian schools of Alexandria. By the time of Quintilian it more definitely attained the status of a propaedeutic to professional study, whether of rhetoric, philosophy, medicine, or jurisprudence. Though the list of the liberal arts did not become finally fixed in premedieval times, logic in the form of dialectic usually appeared as one of the disciplines of the encyclopaedic curriculum. Both Quintilian, in his account of *orbis ille doctrinae*, and Seneca (*Ep* 88) omit it by name. But they probably considered it as merged with rhetoric, if so, the fact is a significant commentary on the educational position of logic at the time.

The content of the dialectic of the Graeco-Roman curriculum can be only conjecturally inferred, and with much uncertainty, from (1) the later Latin manuals, probably based to some extent on Greek models, and (2) the current logic of the philosophical schools, particularly that of the Stoa. It probably included the principal topics found in later formal logic, presented in the most elementary and formal manner. But it should be borne in mind that, while the constructive study of logic, so long as it continued, must always have been confined to the esoteric circle, large numbers of

students in all the universities of the Graeco-Roman world, including, after c 100 B.C., the whole body of the ephebes, attended less technical lectures, which, however, provided, certainly in many cases, a much more adequate treatment of logical doctrines than did the dialectic of the later preparatory curriculum.

**Middle Ages** — When education passed into the custody of Christian institutions, the principal task, next to that of educational organization, was the appropriation and transmission of an already evolved educational content. In this process, dialectic, destined later to become the chief discipline of the trivium, was slightly broadened by the partial restoration of its Aristotelean form. Two modifications made by the Stoics, their treatment of the hypothetical syllogism as typical, and their reduction of the categories to four, failed to pass into the medieval tradition. On the other hand, the really important labors of Theophrastus and Eudemus in developing the theory of hypothetical and disjunctive syllogisms, bore permanent fruit. But this advance fell within the Aristotelean framework.

The definitive inclusion of dialectic in the curriculum of the Seven Liberal Arts insured it a permanent place in medieval education. Until the middle of the twelfth century, its content remained unaltered as fixed by a limited number of texts. The origin and scope of these texts may be briefly indicated. (a) A less widely known source of some importance was the spurious third book, attached to the *De dogmate Platons* of Apuleius, a north African rhetorician of the second century, A.D., entitled *De philosophia rationalis*, which there is internal evidence to show was industriously consulted by Capella. It is a strange magma of Stoic and Peripatetic logic, the discussion includes categorical and hypothetical judgments, quantity and quality and parts of propositions, then opposition, conversion, and contraposition, the predicables (the Aristotelean list), the three Figures of syllogism (the addition of the Fourth Figure was first ascribed to Galen, on the authority of Averroes, in the sixteenth century), the nineteen moods of Theophrastus, and indirect proof. (b) The influential *Introduction to the Categories of Aristotle* (*Enisagoge*) by Porphyry (232-304), a Neoplatonic commentator on Aristotle, should be assigned to the medieval texts, since its effect on education fell subsequent to its translation into Latin by Boethius. The elaborate discussion of the predicables (*quinque voces*), as tending to equate all logical procedure with division into points of view, added materially to the preponderance of the *Topics* and of the merely formal and dialectical character of early medieval logic. (c) The fragment, *Principia dialectica*, attributed to St. Augustine, which formed part of an unfinished encyclopedia of the liberal arts founded on Varro's *Disciplina* and begun in 387, was very

limited in content, and owed its vogue as a text mainly to the ecclesiastical prestige of its author. It defines logic as *scientia bene disputandi*, and contributed its share to the rhetorical tendencies of medieval logic. The pseudo-Augustinian text, *Categoriae decem ex Aristotele descriptae*, a contemporaneous work, was confined to a translation, paraphrase, and commentary. Its educational importance lies largely in the fact that Alcuin borrowed from it nearly one half of his dialogue on *Dialectic* (*d*). The most extensively used of medieval texts on logic, and often the only text used, was the *De dialectica*, forming the fourth book of the fantastic allegory of Martianus Capella, entitled the *Marriage of Mercury and Philology*. Written in northern Africa, c. 420, this was the first encyclopedia of the seven liberal arts which has been preserved entire. The plan of the work was taken from Varro, while its content was compiled from various sources, the part on dialectic being drawn mainly from Apuleius and Varro. It presents several additional features familiar in later formal logic. Definition, division, and partition, univocal and equivocal, categorematic and syncategorematic terms, the ten categories of Aristotle, categorical and conditional syllogisms, the former in nineteen moods, the latter in the hypothetical and disjunctive forms and moods. With the exception of fallacies, no chief part of early medieval logic is now wanting, and, as against the Stoics, there are the minor restorations of Aristotle already indicated. (*c*) Much the most prolific contributor to the stock of medieval texts on logic was Boethius (c. 480-524), "the last of the learned Romans," (Sandys) whose numerous translations and commentaries transmitted to the Middle Ages the *Organon* of Aristotle. Unfortunately the versions of the more important treatises, viz. the *Prior* and *Posterior Analytics*, the *Topics*, and the *Sophistici Elenchi*, remained unknown until about the middle of the twelfth century, while those which early passed into the service of the schools, because they had been provided with commentaries, viz. the versions of the *Categories*, the *De interpretatione*, and the *Eisagoge* of Porphyry, together with the corresponding commentaries, including that on the *Topica* of Cicero, and the original logical treatises of Boethius, all on the whole tended to accentuate the interest in merely formal distinctions rather than to broaden the scope of logical inquiry and instruction. There is one conspicuous exception. Porphyry, in the first paragraph of the *Eisagoge*, quite incidentally, he it remarked, raises the logico-metaphysical question respecting the real existence of genera and species which chanced to provoke the great medieval controversy between the realists and nominalists as to the nature of universals. (*f*) Cassiodorus (c. 485-c. 580), who, after serving the Ostrogothic dynasty thirty years, founded two monasteries and

devoted the remainder of his long life to Christianity and to the preservation of pagan learning, and Isidore (c. 570-636), Bishop of Seville, both produced encyclopedias of the seven liberal arts which greatly promoted the introduction of the classical disciplines into Christian education and further determined their early medieval form. One half of the *De artibus ac disciplinis liberalium litterarum* of Cassiodorus, written in 543-555, is devoted to dialectic, while the *De arte dialectica* of Isidore forms, with rhetoric, Book II of the *Origines* or *Etymologiae*, the first encyclopedia in the modern sense. Cassiodorus' *De dialectica* is a confused compilation, derived principally from Boethius, Apuleius, and Porphyry, but characterized by the prominence given to definition, the syllogism, and probable reasoning, i.e. to the parts of logic most serviceable in rhetorical argumentation. Isidore's treatise, which is mainly a patchwork of verbal reproductions from Cassiodorus, was largely responsible for transmitting to the medieval tradition the rhetorical elements in Cassiodorus which are not found in Capella.

The above body of texts in school logic, together with the dialogue *De dialectica* of Alcuin (c. 735-804), the pertinent chapter in the *De clericorum institutione* of Hrabanus Maurus (c. 776-856), and the German translations of Capella and Boethius by Notker Labeo (*d*. 1022) of the monastery of St. Gall, constituted throughout the early medieval centuries a relatively fixed apparatus for logical instruction.

From the middle of the sixth century to the rise of the universities in the twelfth and thirteenth centuries the monastic, cathedral, and college schools were in control of higher education. Throughout this period dialectic steadily rose in educational importance. Its utility in the defense of Christian doctrine was early manifest, and as the great problem of organizing the faith of the Church into a rational system pressed for solution and drew to itself all the intellectual energies of the time, logic became not merely indispensable, it was supreme. Thus a twofold characteristic of the position of dialectic in the Graeco-Roman period is repeated: it was now the instrument of theology, as it had been that of oratory, and now, as then, it was wholly enlisted in the service of practical aims, since it was devoted to the organization and defense of a fixed traditional content, rather than to a disinterested inquiry into a body of objective truth. It was natural that in a theological age the *artes sermonicales* of the trivium should be more highly esteemed than the *artes reales* of the quadrivium (a circumstance possibly not unconnected with the fact that Alcuin wrote on the trivium only), and within the trivium itself, while grammar long held undisputedly the first place, and rhetoric and dialectic contended for the second, later dialectic first definitely triumphed

over rhetoric, and then finally penetrated even grammar with its own principles, forcing upon it its terminology, and converting it into a speculative science (*littera sordescit, logica sola placet*, John of Salisbury). Accordingly, at leading monastic and cathedral schools, such as Paris, Tours, Rheims, Chartres, Fulda, Reichenau, and St. Gall, particularly after the intellectual awakening which began with the eleventh century, the study of logic, including disputation, was prosecuted with much zeal and enthusiasm, and claimed an ever-increasing allotment of time. After the rise of scholasticism, the leaders in the famous controversy over the substantial existence of universals, — Eriugena, Roscellinus, St. Anselm, William of Champeaux, Abélard, Albert the Great, Thomas Aquinas, Duns Scotus, and Occam (*q.v.*) were *ipso facto* immersed in problems which were at once logical and metaphysical, yet on the whole the Aristotelian tradition which excluded logic from philosophy remained unshaken. Gerbert (c. 950–1003), master at Rheims and at Paris, and later elevated to the papal chair, and Gilbert de la Porrée (c. 1075–1154), chancellor at Chartres, are examples of celebrated teachers of logic whose logical writings (*De rationalis et ratione uti* and *De sex principis* respectively) exhibit the prevailing interest in the ontological implications of logical problems, and yet evidently are not designed to mark any departure from the time-honored separation of logic from philosophy. The latter work, in fact, was later frequently included in the earliest Latin editions of the *Organon*.

Coincident with the intellectual expansion of the twelfth century, and contributing largely to it, was the remarkable discovery, by the Western world, of the remaining works of Aristotle. The Venetian translation by Jacobus Clemenius (1128) apparently did not at once become generally known. Adam du Petit-Pont discussed the *Prior Analytics* as early as 1132. But it was Theodoric of Chartres (whose *Heptateuchon*, completed in 1141, contained all of the *Organon* except the *Posterior Analytics* and the second book of the *Prior Analytics*) who first introduced the long forgotten logical treatises into the schools. This we know on the authority of John of Salisbury (*Metalogicus*, 1159), who also explains that the *Posterior Analytics* were omitted because of their difficulty. It is clear that he was acquainted with the whole of the *Organon*. Gilbert cites the *Analytics* as generally known, while his pupil, Otto of Freising (d. 1158), introduced the recovered treatises into Germany, possibly in the Boethian versions. By the middle of the twelfth century, accordingly, the newly discovered and more important part of the *Organon*, consisting of the *Topics*, the *Prior* and *Posterior Analytics*, and the *Sophistici Elenchi*, had become widely known. Thereafter, for centuries, the two groups of

the logical treatises were distinguished as *nova logica* and *vetus logica*. And on the addition of the *Physics*, *Ethics*, and *Metaphysics*, about 1200, the “new Aristotle” was recognized. Latin translations from the Arabic (or Arabic through Syriac) versions of the Greek originals, which had found their way into Europe on the Moorish conquest of Spain, — translations which were produced by a college of translators at Toledo, and included also the extensive commentaries of Avicenna, Averroes, and others — were in the first half of the thirteenth century a very important although not pure source of further knowledge of the Aristotelian writings. Later Latin versions, made direct from the Greek, were rightly regarded by the great medieval Aristotelians as the more trustworthy.

It is not surprising that the effect produced upon the medieval mind of the twelfth and thirteenth centuries by the “new Aristotle” was almost startling. But the widening of the intellectual horizon, and the further stimulus given to the already over-subtle tendencies of thought, did not produce a change of attitude. Acquaintance with the Aristotelian apodictic, with the principles of theoretical demonstration and of the ultimate self-dependence of thought, resulted rather in merely adding to the resources of theological argument and in carrying to completion the scholastic edifice. The organization of education witnessed, however, one general effect of some consequence. Gradually, in addition to the traditional liberal arts, philosophy came to be recognized as providing a second stage in the preparatory training for theology.

The founding of the universities (*q.v.*) brought with it the apotheosis of logic. The curriculum of the faculty of arts, later called the faculty of philosophy, because of the commanding position occupied by logic and philosophy, was at the outset a continuation on a slightly higher plane of the arts curriculum of the monastic and cathedral schools. The comparative neglect of the *artes reales*, already noted, on the whole continued, notwithstanding the stirrings of a new scientific interest manifest in such sporadic phenomena as the appearance of a Roger Bacon in the thirteenth century, classical studies, despite the vigorous defense of the “authors” as against the arts at Chartres and Orleans (Henri d’Andely, *Battle of the Seven Liberal Arts*, c. 1250), failed to gain a foothold, rhetoric languished, and grammar became dialecticized, the lion’s share of the curriculum accordingly fell to logic and philosophy, and if we consider that the numerous minor Aristotelian treatises in natural philosophy were at that time regarded as a constituent part of philosophy coordinate with ethics and metaphysics, it would be hardly too much to say that, for the space of a century and a half following the triumph of Aristotle at Paris, as signalized by the uni-

versity statutes of 1254, logic and philosophy between them composed nearly the whole of the arts curriculum at the northern universities. The time allotted to logic, including disputations (*qv*), apparently ranged at different universities and at different times from a maximum of about three quarters of the whole (University of Toulouse, time-table of 1309, exclusive of grammar see Pactow) to a minimum of about one third (Leipzig, time-table of 1519 see Norton). The textbooks on logic prescribed in the various university statutes regularly included both the "new" and the "old" logic, the latter always embraced the *Eisagoge* of Porphyry, as well as the *Categories* and *On Interpretation* of Aristotle, and frequently also the *Divisions* and *Topics* of Boethius, and the *Six Principles* of Gilbert de la Porrée. But the difficulty of these treatises for youths of fourteen called into existence a large number of adaptations and abridgments, by far the most celebrated of which was the *Summulae logicae* of Petrus Hispanus (*d.* 1277), now known not to have been a translation from the Greek of Psellus, but itself the original of the Greek *Synopsis*, etc., of Georgios Scholarios (1400-1464). This work reigned in the schools for two and a half centuries, and passed through innumerable editions. The first six tractates summarize the logical treatises of Aristotle and Boethius, *i.e.* the main body of logical doctrines known by the middle of the twelfth century, now designated as *logica antiqua*, whereas the seventh tractate, entitled *De terminorum proprietatibus* (*Parva Logica*), sets forth a group of modern additions, distinguished from the foregoing as *logica moderna*. The content of the *Parva Logica* offered a premonitory symptom of the coming excesses of scholastic thought. It presented a body of formal logical distinctions, semi-grammatical in character, and recalling vividly the Stoic doctrine of words (see above). When the prestige of Aristotle began to wane in the fourteenth century, logic yielded something of its position in the curriculum to other subjects, but the real loss lay in the incipient decadence, in the over-refinement of conceptual distinctions, the quibbling subtleties which later brought such discredit to the schoolmen. In the last phase of medieval logic, accordingly, *a priori* formalism divorced from the test of fact exhibited those excesses which led to the inevitable revulsion.

**Modern Era** — The modern era begins with the recovery of the self-dependence of thought. The new spirit manifested itself in the rejection of authority and tradition, in the free appropriation of the treasures of antiquity, in the new interest in nature, and in the search for knowledge by direct and disinterested inquiry. The share of logic in this movement was not primary, but a consequence of the new attitude in metaphysics and epistemology.

The result was none the less important, the way was opened to restore to logic the character of a theoretical science, and eventually to raise it to the position of a constituent part of philosophy itself. Yet these changes came but slowly, and, down to the eighteenth century, they were reflected in academic practice only after their consummation in the world of letters.

A distinction should be recognized between the more elementary instruction in formal logic, which has been provided for throughout the modern period in the curricula of the upper forms of higher schools (gymnasias, lycées, and colleges) as well as in universities, and the larger treatment of logical problems in advanced university courses. In the former the ancient and medieval traditions long maintained themselves without radical innovations, in the latter, the development of logical doctrines followed the main currents of modern philosophy in the rationalistic, empirical, and critical directions, but produced only an indirect and very limited effect upon instruction. It should also be remarked that the relative prominence of logic in the modern as compared with the medieval curriculum has been inevitably greatly reduced.

The first reforms were those attempted by humanists of the early Renaissance. Their attacks were directed against the summulist logic and in general against the scholastic Aristotle. The characteristic revival of classical authors assumed in their hands the form of a restoration of the Roman rhetorical logic. These features are variously exhibited by Valla (1407-1457), whose textbook, *Dialecticæ disputationes contra Aristotelicos*, first printed in 1499, is based on Cicero and Quintilian, and is at once a *scientia rationalis et sermonialis*, by Agricola (1442-1485), who sought to attain from Aristotle's own writings a purer Aristotelianism, and whose rhetorical *De inventione dialectica*, drawn from Aristotle, Cicero, and Quintilian, was praised and laid under contribution by Melancthon, by Vives (1492-1540), a true modern, in whose *Pseudo-dialektiker* (1519) the sins of the scholastic logic are relentlessly exposed, and whose encyclopedic work, *De disciplinis* (1531), contains a strong plea for a purely formal logic freed from metaphysics and based on the nature of thought, by Ramus (1515-1572), the "Abé-lard of French humanism" (Ziegler), whose *Animadversiones in dialecticam Aristotelis* (1534) sought the reform of logic by taking, not the *Organon*, but the innate logic of the human mind, as the final authority, and whose *Institutiones dialecticæ* (1543), going back to the Ciceronian *ars disserendi*, merged logic with rhetoric, and introduced an order of topics long followed in the handbooks, viz Pt I, *De inventione*, treating of the concept and definition, and Pt II, *De iudicio*, treating of judgment, syllogism, and method; by Melanch-



thon (1497–1560), who brought Luther to consent to a new Aristotle in education, who included the trivium in the Saxony School Plan for Latin schools (1528), which laid the foundation for the modern German gymnasium, and whose widely used compendia on logic (*int al*, *De dialectica libri IV*, 1528, *Erotemata dialectices*, 1524) became the basis for many logical textbooks attempting to reconcile Aristotle with the Ramists and humanists. It was perhaps symptomatic of the general antagonism to Aristotle that Ramus' really unimportant attempt at a reform of logic enjoyed so great vogue. The Ramist stronghold was France, where a long and bitter conflict raged between the Ramists and Antramists, but, favored by Johann Sturm (*qv*), whose carefully organized and historically influential Strassburg curriculum included dialectic in the two upper forms, Ramism spread into Germany, while among the evidences of its introduction into England are the traces of its influence on Milton's *Tractate on Education*. It was not finally displaced until superseded by Cartesianism.

The recovery of an objective logic, aiming solely at determining the truth, came in principle with Francis Bacon and Descartes. With the former, the emphasis is upon the control of thought by fact, with the latter, it is upon demonstration by the necessary implications of concepts. But the influence of neither upon instruction in logic was direct or immediate. Bacon's insistence upon observation of the actual course of nature, his contention that the syllogism could represent no more truth than the experiential knowledge contained in its component ideas, found expression in the realism of Ratke (*methodus nova*) and Comenius (*Great Didactic*, which provided for logic in the curriculum of the Latin schools), while his eloquent advocacy of the primacy of induction, and his services, following upon Roger Bacon, da Vinci, Telesius, Galilei, and others, in advancing the formulation of its principles, were a potent stimulus to the future development of inductive logic, and contributed in a quite incalculable degree to the promotion of its study. Descartes' own *Discours de la méthode*, indeed, appeared in French secondary curricula after the opening of the eighteenth century, but of far greater importance for logic was the production by two Cartesians, Arnauld and Nicole, of the celebrated Port-Royal *La logique ou l'art de penser* (1662), which they based upon a tractate of Pascal. This skilfully written handbook, which found high favor in France for nearly a century and was translated into several foreign languages, combined Descartes' rules of method and views on knowledge with a simplified and modified Aristotelian logic.

Of considerable interest was the methodological effort made at this time to deduce the content of logic from fundamental principles, or,

at least, to organize its material under the laws of thought regarded as postulates. The first example is the Cartesian Geulinx, who sought (*Logica fundamentis*, etc., 1698) to construe logic by recognizing affirmation as its specific principle. Leibniz, as is well known, added to the principle of identity that of sufficient reason, declaring these to be the highest principles of knowledge. Later, Reimarus (*Vernunftlehre*, 1756) and Twisten (*Logik Analytik*, 1825), among others, made systematic efforts to exhibit logic as the theory of the application of the principles of identity and contradiction to concept, judgment, and inference. The laws of thought have come to be regarded, in a sense not often adequately defined, as the supreme principles of formal logic.

The ontological or metaphysical logic of Kant and his successors, which for the first time since the Dialectic of Plato exalted logic to the position of the fundamental philosophical discipline, was limited in its effect upon instruction to the advanced university courses of the critical idealists and their followers, and to the remote but not unimportant neo-Hegelian movement at Oxford, from which issued Wallace's translation of *The Logic of Hegel*, Bradley's *Principles of Logic*, and Bosanquet's *Logic, or the Morphology of Knowledge*, works which, directly and indirectly, have exerted considerable influence upon the content of recent English and American university courses and textbooks.

The development of induction through Newton's *Regula* prefixed to the *Principia*, Herschel's *Discourse* (1832), Whewell's *Philosophy of the Inductive Sciences* (1840), Mill's *A System of Logic* (1843), and Jevon's *Principles of Science* (1874), led to another line of influence on academic instruction. Conceived on broader philosophical lines were the important and educationally influential works, all entitled *Logik*, of Lotze (1843), Sigwart (1873–1878), and Wundt (1880–1883), which combined with elaborate expositions of the methodology of scientific research a teleological idealism that sought to recover the historical form of the concept of evolution. Philosophically much less important, but serving as the model for innumerable English and American textbooks, was Hamilton's ultra-formal logic (*Lectures*, etc., 1859–1860, followed by Mansel, *Proleg Logica*, 1851), which presented the Aristotelian analytic from the Kantian standpoint, treated concepts as fixed products to be mechanically combined and separated by thought, and proposed the quantification of the predicate, leading the way to symbolic logic. The mathematical or symbolic logic introduced by Boole (*The Mathematical Analysis of Logic*, 1847), which treated the proposition as an equation, thus laying the foundation for a logical calculus similar to the mathematical, and which was espoused by De Morgan (*Formal Logic*, 1847), Jevons (*The Substitution of Simi-*

lars, 1869), and Venn (*Symbolic Logic*, 1881), has not been academically of great significance.

It may be remarked, in conclusion, that the detached presentation of formal logic in academic courses is yielding to the inclusion of the essentials in the larger treatment of the general principles of knowledge.

W S H

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**LOGICAL METHOD** — The plan of procedure in developing school subjects may follow the sequence characteristic of an adult's thinking, in which case current pedagogical theory denominates it a logical method, or it may

proceed by the more rudimentary and tentative units of a child's comprehension, in which case it becomes a psychological method. For example, in the subject of primary arithmetic the child may first master the topic of notation and numeration, then addition, subtraction, multiplication, division, and fractions in the order named, or he may learn as much of any or all of these topics as his immediate needs determine in the first attack, taking up the same topics again more thoroughly with each recurring presentation until each topic is thoroughly comprehended. In both types of treatment the final outcome is the same, the pedagogical distinction arising out of the differing modes of approach. Strictly speaking, a psychological plan is rational from the child's point of view, and a logical method is psychologically natural to an adult. The pupil's last view of the subject through the psychological plan of attack ought, then, to correspond with the adult's logical way of viewing the field.

Young children should at first be taught through a psychological procedure, one that adjusts to their own outlook and experience. Instruction will then be more vital, but the teacher needs constantly to keep in mind that the final point of arrival should bring the child to see his experience in the perfected logical arrangement of a mature scientific mind which takes account of all the facts and classifies accordingly. The traditional plan of schools is to proceed by the logical order, pedagogical reform lays emphasis on the psychological order, the actual effect in current practice is a modified psychological order. It is not always easy for the individual teacher to keep in mind what has been covered by a strictly psychological plan, it is still more difficult for the co-operating teachers of a graded system to know what a given instructor has accomplished for the child. In consequence there is a tendency, after several special treatments of a topic, to assign the thorough mastery of a topic to a given grade in order that responsibility for thorough work may be fixed at a given place, and that the tendency toward scattering and fragmentary results which accompanies a strictly psychological arrangement of the course of study may be overcome. Such a more manageable, mixed order is, however, dominantly psychological in its progression. H S.

See TEACHING, METHOD OF; METHOD

**LOGISTICA.** — See ARITHMETIC, HISTORY OF

**LOLLARDS' SCHOOLS.** — See DISSENTERS AND EDUCATION.

**LOMBARD COLLEGE, GALESBURG, ILL** — A coeducational institution chartered in 1851 as the Illinois Liberal Institute. The present title was adopted in 1899. Preparatory, col-

legiate, theological, and music departments are maintained. The entrance requirements are fifteen units. The courses in the college are divided into four groups, classical, modern, social science, and philosophy, leading to the A.B. degree, and science, leading to the B.S. The Divinity School confers the degree of B.D. The faculty consists of fourteen members. The enrollment in 1911-1912 was 92.

**LOMBARD, PETER THE.**—See PETER THE LOMBARD

**LONDON DAY TRAINING COLLEGE.**—See LONDON, UNIVERSITY OF J. D.

**LONDON, EDUCATION IN.**—**Historical**—The history of London education for four hundred years is succinctly summarized in one of the earliest documents relating to it (c. 1118), the introduction to the *Life of Becket*, written by Fitzstephen, one of his clerks, who became a judge shortly after Becket's death. "In London the three principal churches have famous schools privileged and of ancient preeminence, though sometimes through personal favor to some one noted as philosopher more schools are allowed." The three principal churches to which these three schools were attached were St. Paul's Cathedral, St. Martin's-le-Grand Collegiate Church (now the General Post Office), and St. Mary-le-Bow Church, in Cheapside, to be born in hearing of the bells of which constituted, till these modern days of din which drown all bells, the true differentia of a "cockney" or Londoner-born. Many other churches have been queried as being those meant by Fitzstephen, the great Elizabethan antiquary, Stow, in his *Survey* going so absurdly wrong as to include St. Peter's school, Westminster, when there is no trace of any school before 1380, and St. Saviour's Abbey, Bermondsey, where no grammar or public school existed at all. Besides, each of these places was about two miles from London. Fortunately a contemporary document still extant at St. Paul's puts beyond doubt what the three schools were. This is a writ of King Stephen's brother, Henry of Blois, Bishop of Winchester, and acting Bishop of London during a vacancy of the see from 1138 to 1140, to the chapter of St. Paul's Cathedral and the Archdeacon of London commanding them by their obedience that after three warnings they launch the sentence of excommunication against those who without a license from Henry the Schoolmaster presume to teach anywhere in the whole city of London, except those who teach the schools of St. Mary of the Arch (or "bow") and St. Martin's the Great (or Grand). Just as the Chancellor of Notre Dame Cathedral at Paris always gave license to teach school, even when the School of Paris had grown into the University with its many schools, so the schoolmaster, afterwards called Chancellor of St. Paul's,

was the licensing authority (see **TEACHERS, LICENSING OF**) for schools throughout London. St. Martin's-le-Grand was exempt because this was a collegiate church of canons like St. Paul's itself, founded before the Conquest, and enjoyed as all such collegiate churches of early foundation did, the right to keep a school, probably by special Papal and episcopal privilege. The church of St. Mary-le-Bow, belonging to the Archbishop of Canterbury, was exempt as such from the jurisdiction of his suffragan and subordinate, the Bishop of London, and was, in fact, the seat of Archbishop's Court, the Supreme Ecclesiastical Court of Great Britain, still called the Court of the Arches, from having been held among the arches on which (probably) the Church of the Arches or St. Mary-le-Bow was built.

St. Paul's school was, however, undoubtedly the oldest, as it was also the first in London. There can be little doubt that it was originally founded as part of the cathedral in 604 when King Ethelbert built "the church of St. Paul the Apostle, in which Melitus and his successors might have their Episcopal see," and "added lands and possessions for the use of those who were the bishops." But London underwent at least two, if not more, lapses into paganism, and whether we can date the continuous existence of St. Paul's either as church or school any earlier than 886, when King Alfred "settled the borough of London," and all the English turned to him, is doubtful. The earliest known reference to the school is in a document of about the year 1111, by which the bishop of London informed the dean and chapter that he had granted to Hugh the schoolmaster to hold by virtue of the dignity of his mastership the house of his predecessor, Master Durand of the Church of the Belltower, and also the custody of the cathedral library, with the keys of the cupboards by the altar which the bishop had ordered to be made for the books. Of St. Martin's-le-Grand school the only specific mention apart from its appearance in connection with the other two is in a city letter-book, on Thursday before 24 August 1295, when a cap or hat-maker of Fleet Street entered into a recognizance to pay £5 to Master Hugh of Wyttington, schoolmaster of St. Martin's-le-Grand, which recognizance was afterwards discharged when Hugh's brother and executor, Master John of Whittington, acknowledged payment of the debt. Nearly as scanty is the evidence as to St. Mary-le-Bow school, consisting of three entries as to the appointment of its master in the Archbishop's registers (1309, 1353, 1399).

Fitzstephen's account of these three schools shows that they were of the highest grade, and indeed some authors have inferred from his account that they constituted a London University. It is evident that the boys began with the elements of grammar, studied the classics, learnt to make verses, including epigrams;

Then proceeded to rhetoric as in the rhetoric schools of Greece and Rome, and to logic, which was destined in the Universities almost to quench the classics altogether. At St Paul's school, the City School *par excellence*, Thomas Becket as a boy and youth learnt the elements of rhetoric and logic which he perfected as a young man at Paris University (*annis igitur infantiae* (under 7), *pueritiae* (7 to 14), *et pubertatis* (14 to 18), *domi paternae et in scholis urbis decursis*, *Thomas adolescens factus studuit Parisius*). Not only are we told what they learnt in school, but what their games were. On Shrove Tuesday, the Carnival, the boys brought their fighting cocks to the school, and the whole morning was given up to watching them fight. In the afternoon they went to Smithfield, then a "suburban" open space, and played football, each school having its own game, and the elders and magnates looking on got as excited as they do nowadays over the games. When it froze they skated, and in summer evenings they walked out to those famous wells, Holywell, Clerkenwell, and St. Clement's Danes.

Unfortunately, we have no such illuminating document as this about St. Paul's or any other London school from the days of Becket to the days of Colet. We know that about 1198 the endowment of the school, which seems to have consisted of nothing but a school and the master's house given to Master Hugh, Becket's master who had succeeded Master Durand, who had been master at least from 1098, four acres of land at Fulham and the tithes of Ealing and Madeley, was largely increased. Bishop Richard FitzNeal found, when he became bishop in 1189, that the mastership enjoyed almost an empty name, with no, or, at least a very moderate, endowment, and so he added some two hundred acres of land and the tithes of Horesel. In 1205 a change took place which reacted unfavorably on the school. The canon-schoolmaster changed his title to that of Chancellor, and in accordance with a decree of a Lateran Council, thenceforth devoted himself to theological teaching and the Chancellor's theological school, taking the endowment for that purpose. (See CHANCELLOR'S SCHOOLS.) The school proper, the grammar school, was relegated to a deputy appointed by him, called no longer simply schoolmaster, but the grammar schoolmaster, who was also a canon and appears to have had no endowment beyond the school and house, except probably a payment of only £2 or £3 a year from the Chancellor. The cathedral statutes codified about 1294 mention only that the "Chancellor appointed a Master of Arts to the grammar school and is bound to keep the school in repair." He must, therefore, have been dependent almost entirely on tuition fees. This accounts for an interesting entry in the register of the almoner of St. Paul's, who had the charge of the choristers who were boarded in a house on the north side

of the cathedral and attended the grammar school for their literary, as they did the song school for their musical, training. The almoner writes in 1345 that "If the almoner does not keep a clerk to teach the choristers grammar, the schoolmaster of St. Paul's claims 5s a year for teaching them, though he ought to ask nothing, because he keeps the school from them as the treasurer once alleged before the Dean and chapter is to be found in ancient deeds" — an entire mistake on the treasurer's part. The choristers at all events received a good education, as an almoner in 1329 gave them by will his books, including his best "Hugucio and the big and little Priscian, Isidore's *Etymology*, all his grammar books, and in addition his books on Dialectic and Natural History, in order that they might be lent to boys apt for learning (*ad scolasticandum*) when they leave the almonry", also books upon medicine and civil law. So, too, in 1313 and c. 1405 benefactors gave sums of money "to the poor choristers of Paules towards their exhibition in the University."

In the absence of cathedral documents, destroyed partly in the fire of London, but more by the carelessness of the custodians, we learn little about the school. In 1394 we find the three old privileged schools asking the king to prevent the Lord Mayor and aldermen from supporting "certain outsiders, pretending to be masters in grammar but having no sufficient knowledge in that faculty, who taught general (*et publice*) grammar schools in the city in deceit and fraud of the children, to the great prejudice of the King's lieges and the jurisdiction of Holy Church." As in the case in the Common Pleas about Gloucester Grammar School in 1410 it was stated as a matter of common knowledge that the schoolmaster of St. Paul's claimed a monopoly of school-keeping in London, they no doubt obtained what they wanted. We find, however, in 1419 a payment ordered by the Treasurer of the Exchequer of £4 11. 6½ to the master of the grammar school at Cornhill for the board, teaching, and maintenance of a royal ward. By Feb. 1, 1425, John Seward "scolemaister" wrote a book of the muniments of the parish of St. Peter's, Cornhill, a copy of which is in the Guildhall. A need for more schools than the three must have been felt, as in 1441 the Bishop of London, the chief authority over St. Paul's school, sanctioned the appropriation to the Hospital of St. Anthony in Threadneedle Street of the church of St. Benet Fink, which stood next door to the hospital, for the endowment of a free grammar school, free from tuition fees, in the hospital. A little later it was connected with the University by the grant to Oriel College of lands for exhibitions there of boys from the school. In 1446 further competition of unlicensed grammar schoolmasters had taken place, persons not sufficiently instructed, presuming to hold "com-

mune gramer scoles " in great deceit of their scholars as also of the friends that put them to school. So the King directed the Archbishop and Bishop of London to provide a remedy, which they did by directing that there should be five schools only, the three ancient ones, one in St. Dunstan's-in-the-East, and St. Anthony's.

The opponents of monopoly, however, met this by a petition to Parliament next year presented in the names of the four parsons of All Hallows the Great, St. Andrew's at Holborn, St. Peter's, Cornhill and St. Mary Colechurch, the latter being schoolmaster of the Hospital of St. Thomas of Acon (St. Thomas à Becket). "The full wise and discreet Commons" were asked "to consider how London was the common concourse of the land wherein is great multitude of young people not only natives but from many other parts of the land some for lack of schoolmasters in their own country for to be informed of grammar there, some for the great alms of lords, merchants, and others. Therefore, it was expedient that in London were a sufficient number of schools and good informers in grammar, and not for the singular avail of two or three persons grievously to hurt the multitude of young people of all this land. For where there is great number of learners and few teachers and all the learners be compelled to go to the same few teachers and to no other, the masters wax rich in money and the learners poor in learning as experience openly sheweth against all virtue and order of wele publik," the Commonwealth. So the four asked that each of them might set up a "scole in the same science of gramer" in his parish, the master to be appointed and removed by the parson and his successors. The petition was granted. "The King wille that it be do as it is desired," but so that it be done by the advice of the Ordinary (the Judge of primary ecclesiastical jurisdiction, *i.e.* the Bishop of London, or the Archbishop of Canterbury). The saving clause was probably fatal. There is no evidence of any of the four schools, except St. Peter's, Cornhill, above mentioned. One of the parsons, that of St. Andrew's, Holborn, died next year, another, the parson of All Hallows, the year after. St. Thomas' Hospital was surrendered to Henry VIII in 1538. It was bought by the Mercers' Company, the richest of the London City Companies, whose hall stood next door, three years afterwards in 1541. The King sold it for £969 subject to the condition that the Company should keep three chaplains to pray for his soul, and a free grammar school with a sufficient master to teach twenty-five children and scholars freely (*i.e.* without tuition fees) forever. The Mercers' Hall now stands on the site and the school is still maintained. But the fact of Henry's making it a condition, *i.e.* imposing a trust to keep the school in 1541 is the only circumstance known from which it can be inferred

that any school existed in the hospital before its dissolution. As there is no trace of a school in the extant hospital registers the probabilities against any school having been set up before 1541 are very great. The absence of four schools wholly supported and entirely under the rule of four parish parsons cannot be supposed to have been a great loss to learning. That St. Paul's School continued to flourish appears from its master James Garnon being given the degree of Master in Grammar at Oxford in 1449, and from a *mot* of its "Scholemayster" on the sudden beheading of Hastings by Richard III in 1453 being reported by the chronicler Hollingshead. But it is evident that St. Anthony's was a serious rival and probably a superior rival. In 1472 we find the learned Selling, Prior of Canterbury, getting as headmaster of Canterbury School one who had lately taught grammar at Winchester and St. Anthony's, London, and Winchester was then *facile princeps* of English schools. Stow, who seems to have been himself a boy at St. Anthony's, mentions as of his own remembrance among its serious Sir Thomas More, the author of *Utopia*, Lord Chancellor and persecutor of Protestants, now beatified as a Roman martyr, who would have been there about 1485. The "Master Nicholas" who was master there in 1494-1495 was probably Nicholas Holt, one of the most famous schoolmasters of his day. Nicholas Heath, afterwards Bishop of Worcester, Archbishop of York, and Lord Chancellor under Queen Mary, was there about 1509. John Whitgift, Archbishop of Canterbury and founder of the very flourishing school at Croydon, a contemporary of Stow's, went there about 1537.

Meanwhile John Colet, who is said, though not on any first-hand authority, to have himself been a boy at St. Anthony's, refounded and re-endowed St. Paul's School. (See for more detailed statement COLET, JOHN.) The chief novelty in the new school was the large number of boys to be taught and the great increase in the salaries of the masters, the high master being given £34 13 4 as against the £10 given by Wykeham to the Headmaster of Winchester in 1382 and the £16 provided for the Headmasters of Eton and of St. Anthony's in 1443 and 1446 respectively. Also it was the first school, not in which Greek was taught, but in which the statutes mention it. Among the early pupils of the "newe scole of Poules" were Leland, the first and one of the most famous of English antiquaries, William Paget, who managed to remain in favor and power as secretary of state under Henry VIII, Edward VI, and Queen Mary, and as Lord Paget of Beaudesert was the ancestor of the Marquis of Anglesey. But the school does not seem to have kept up its reputation after Lily's successor and son-in-law Thomas Righteous, or Rightwise as it was commonly spelled, took over the school in 1532. Stow, who went to St. An-

thony's about that year, recalls how the disputations of the London scholars, which we saw took place in Becket's day and which were expressly directed by a fourteenth century statute of St Paul's School to be held "in logic and philosophy at St Bartholomew's on St Bartholomew's day and to be determined at Holy Trinity Priory" still continued in his time

Education suffered no loss at all events in London, as is too often represented, by the dissolution of monasteries. The only school we know of in connection with any monastery, and that not for monks or taught by monks, was in the monastery, now the Almonry Grammar School at Westminster (see WESTMINSTER SCHOOL), and that so far from suffering from the dissolution, was put on a much larger and better basis in consequence of it. After, but not because of, the dissolution we find two joint foundations of schools and almshouses, founded, one by Sir George Monoux, a Lord Mayor, at Walthamstow, another, specially praised by Stow, at Ratcliffe, then on a country road which under the name of Ratcliffe Highway, became a byword as a dangerous slum. The dissolution of the monasteries, however, led indirectly to the foundation of that which became one of the largest and richest schools in London, Christ's Hospital (see under HOSPITAL SCHOOLS) in 1553, and half a century later of Charterhouse (*qv*). The school disputations were, according to Stow, renewed in King Edward's day in the cloister of Christ's Hospital, "where the best scholars, still of St Anthony's School," says the patriotic Stow, "were rewarded by bows and arrows of silver given to them by Sir Martin Bowes, goldsmith." The revival, however, could not have taken place under Edward VI, as Christ's Hospital was only legally founded on June 26, 1552, and was only entered on in November, 1552, and Edward died in January, 1553. It more probably took place under Mary. Anyhow it failed, owing to the quarrels between the boys, those of St Paul's calling the St Anthony boys pigs, and St Anthony's calling the Paulines pigeons, and "proceeding to questions in grammar they usually fell from words to blows with their satchels full of books many times in great heaps. So finally they were restrained with the decay of St Anthony's School." But in another place Stow attributes this decay to the Hospital being "spoiled" when one Johnson, the schoolmaster, became prebendary of Windsor. But in both, Stow's memory was at fault. Under Edmund Johnson, in the first years of Elizabeth, St Anthony's was at the height of prosperity. On Sept. 15, 1562, "there set out from Mile End 200 children of St. Anthony's School, all well beseen and so through Aldgate down Cornhill . . . to the Friars Austin" (next door to St Anthony's) "with streamers and flags and drums beating," very much like the famous *Montem* at Eton

(*qv*). This too in spite of an edict by the Lord Mayor in 1561 "for the staying of all schoolmasters and teachers of youth within this city from making of any more musters or open shows of their scholars . . . in rich apparel or otherwise, either on horseback or on foot, on pain of imprisonment." Johnson, who was a scholar of Winchester, only became a canon of Windsor in 1560, and died in 1562.

What caused the decay of St Anthony's School was not its masters, but the setting up on a far larger site and in much better buildings and with larger endowments of Merchant Taylors' School, by the Merchant Taylors' Company, whose hall was on the opposite side of the street to St Anthony's. (See MERCHANT TAYLORS' SCHOOL.)

Almost at the same time, 1560, the impetus given to Westminster School by the refoundation of the Collegiate Church, and its new statutes given by Queen Elizabeth, in which the school was connected with Christ's Church, Oxford, and Trinity, Cambridge, almost as Winchester and Eton with New College, Oxford, and King's, Cambridge, cut into the aristocratic elements of St Anthony's and St Paul's. St Saviour's Grammar School, Southwark, set up by the parishioners in connection with the old Priory church of St Mary Overy, also in 1560, which also adapted Colet's St Paul's school statutes, cut off a suburban source of supply, while a patent was granted for a grammar school at St Dunstan's in the west in 1562, though it had no endowment. Outer London was now being endowed with a ring of grammar schools. Kingston-on-Thames obtained a new charter for its ancient but perhaps decayed grammar school on March 1, 1561. St Olave's, Southwark, set up a separate grammar school of a lower kind on July 29, 1561. Highgate Grammar School was founded by Sir Roger Cholmeley, chief Baron of the Exchequer, under a patent of May 6, 1565. Through the master being also incumbent of Highgate Chapel the school had in 1819 fallen into a purely elementary school taught by the sexton. It was revived in 1832 and is now one of the great schools of London with 455 boys, of whom 86 are boarders. Harrow (*qv*) was founded in 1571. In 1574 at St Peter's, Cornhill, the parishioners paid £20 a year to the parson to provide a curate and also to pay for "8 poore chyl dren to be taught frely in the grammer Skole called the Lybiary." At Croydon a school and almshouse foundation was founded by Archbishop Whitgift in 1599 and flourished considerably up to 1750 when it, too, fell into practical abeyance. It was revived by the Endowed Schools Commissioners in 1875 and is now divided into a Grammar School with 290 and a Middle School with 310 boys.

The Elizabethan era in London schools was more particularly distinguished by the effort made for elementary education. That there

was a great deal of elementary education in the city parishes before the Reformation is undoubted. Chantry priests and parish clerks taught schools like that described by Chaucer in the *Prioress' Tale*, which, though attributed to a city in Asia, is obviously drawn from a London street, in which the "little clergeon" and his "felaw" learned to sing and "could but small gramaire." But the parish records have disappeared. At St. Mary-at-Hill, where pre-Reformation Churchwardens' accounts have been preserved, we find John Northfolke, who received 6s. 8d. for keeping the "quere" (choir) and the organs all the twelve days in Christmas, had a "skole house" provided for him in the Abbot's Inn, and was given 3s. 4d. for him "and his company and the children when Master parson gave to them a playing week, to make merry." In 1547 a Welsh schoolmaster was paid £8. 10 a year for teaching the children there. So at St. Mary Woolnoth, another Welshman, named Jones, was paid £6. 10 for teaching the singing children. In 1542 Edmund Bonner, the subsequent persecutor of Protestants, issued injunctions directing every parson and chanty priest in London "to instruct, teach, and bring up in learning, the best ye can, all such children of your parishioners as shall come to you for the same, or at the least teach them to read English, taking moderately of their friends that may be able to pay." But it was not till Elizabeth's reign that any organized efforts were made. We then find in 1568 a schoolmaster in St. Lawrence Jewry being ordered to "avoid his school" and after that payments for a schoolmaster. The school was often in the belfry. Thus at St. Ethelburga's in 1589 "received of Smythe, the schoolmaster, for one year's allowance for keeping school in the belfry 10s." At St. Margaret's New Fish Street, in 1595, "Mr. Philip Manfield, M.A., to have the belfry to teach children in by consent of Parson Alton and the parishioners." In 1604 the parson himself was to keep a school in the belfry and make satisfaction, if there be any hurt by any disorder of his scholars. At St. Peter's, Cornhill, in 1609, the Parish Clerk was allowed to teach in the belfry. At St. Botolph's, Aldgate, in 1596 the schoolmaster, "using also the trade of a chandler," was chosen churchwarden. At St. John Zachery in 1600 "paid out about one Edward Laurence a schoolmaster 7s. 2d."

The reign of James I was signalized by a fresh outburst of school founding in London, Charterhouse (*qv*) being founded in 1611, followed by Dame Alice Owen's School at Islington in 1613, said to have been founded in thanksgiving for a narrow escape from being shot by an arrow, Camberwell Grammar School in 1615, Stratford-le-Bow in 1617, and Godsgift College at Dulwich, a belated imitation of Winchester and Eton by Edward Alleyn (*qv*), a successful actor in 1619. This was the most ambitious of all and might have been then what it even-

tually became through the growth of London, one of the first schools in London, but the founder married a second and young wife before the endowment was completed and its prosperity was delayed till reorganized in 1865 and 1882. Now it maintains four schools, two for boys and one for girls, the former with 673 boys, of whom 150 are boarders, and is among the first of the university scholarship winning schools in England. Alleyn's School has also 600 boys.

The Civil War almost stopped the growth of endowed schools in London and the neighborhood. But Colfe's School at Lewisham dates from the Protectorate of Oliver Cromwell in 1656. The fire of London finally ended St. Anthony's Hospital School, which was never rebuilt after it. Thenceforth there is little or no addition to the London secondary endowed schools. An era of private schools, some of them extremely prosperous, began with the Civil War, notably that of Farnaby (*qv*) and one John Milton, poet, also that of Thomas Singleton, expelled headmaster of Eton, who is said to have had 350 boys in a school in St. Mary Axe parish.

With the eighteenth century came the charity schools (*qv*), which were particularly successful, as they were particularly needed in London. In that century nearly all the old schools suffered eclipse, save Westminster (*qv*). St. Paul's in 1748 had fallen to thirty-five boys. Not until they were refounded by the Endowed Schools and the Charity Commissioners under the Endowed Schools Act, 1869, did St. Paul's, St. Olave's, Highgate, Croydon, Dulwich, or Camberwell recover the prosperity of the sixteenth century. Now St. Paul's, with its 600 boys in its new and spacious realm at Hammersmith, can regard itself as efficient as when it trained that brilliant controversialist, Thomas à Becket, or gave John Milton his bent to high themes of poetry.

A F L

See ARCHES, SCHOOL OF THE, CATHEDRAL SCHOOLS, GRAMMAR SCHOOLS, HOSPITAL SCHOOLS.

**Present Position** — The history of education in London during the last century coincides with the development of education in England generally, and will be found treated in the article on ENGLAND, EDUCATION IN. Until 1903 education in the London area was administered by the London School Board. In 1903 a special act was passed extending the provisions of the 1902 Education Act to the London County Council, a body which had been established in 1888 under the Local Government Act. In 1889 the London County Council, like the other county councils, under the Technical Instruction Act of that year, was allowed to share in the local administration of technical education and established technical institutes and schools of art of its own and aided the polytechnics and the other institutions providing technical education which

had been established by voluntary agencies or by public subscriptions and which were under semi-public management. Further, the London County Council through the Technical Education Board aided the newly established "teaching university" of London and also the endowed and other secondary schools within the county. The aid given was restricted to subjects coming within the statutory definition of technical education. Thus, the London County Council had to a small extent taken part in educational administration before the acts of 1902-1903 came into force on May 1, 1904, and unified local administration by transferring to the London County Council the powers and duties of the London School Board.

**Powers and Duties of London County Council** — The London County Council was established by the Local Government Act of 1888. The administrative county covers an area of 120 square miles. This area includes the city of London, whose ancient privileges retain their historic character and power and whose administrative system has been largely left untouched. The county area also includes the areas of twenty-eight metropolitan boroughs. But the county area does not include a considerable number of local authorities, whose areas, together with that of the London County Council, are popularly known as Greater London. The London County Council is the local education authority throughout the whole of the administrative area of 120 square miles. The city of London and the metropolitan boroughs appoint two thirds of the managers of the elementary schools within their areas, but they have no other duties or powers in respect of education.

The London County Council consists of a chairman, nineteen aldermen, and 118 councillors (three ladies). The councillors are elected triennially by fifty-eight electoral divisions, one division, the city of London, having four members. The Council's powers, duties, and liabilities include finance, main drainage, parks, highways, housing of the working classes, asylums, licenses for music, dancing, and theaters, public health, local pensions, shop hours and shop seats, and a great variety of others, as well as those of the local education authority. The Council by statute has also rights of representation on the Metropolitan Water Board and numerous other authorities of a specific character. The Council delegates many of its powers and duties to committees whose "orders of reference" are partly executive and partly advisory. The magnitude of the Council's operations may be gathered from two facts — it spends annually £10,000,000 sterling and employs 45,000 servants and officers of all kinds. The Education Committee, the only committee of the Council which sits in public, consists of fifty members (thirty-eight councillors and twelve coopted).

All matters relating to the exercise of the Council's powers under the education acts,

except the power of raising a rate or borrowing money, stand referred by statute to the Education Committee of the Council, and the Council, before exercising any such powers, unless in their opinion the matter is urgent, receives and considers the report of that committee with respect to the matter in question. The Council may delegate to the education committee any of its powers under the Education Acts except the power of raising a rate or borrowing money. A large part of the powers and duties of the education committee are distributed among the following subcommittees: accommodation and attendance, books and apparatus, buildings, children's care, elementary education, general purposes, higher education, special schools, and teaching staff subcommittees. It is assisted in the administration of elementary education by 181 statutory bodies of managers for provided (council) schools and 355 for non-provided (voluntary) schools, and in the management of its own secondary schools, training colleges, technical institutes, and schools of art by advisory or local subcommittees. The Council also appoints representatives to serve upon the governing bodies of all schools and institutions to which it makes grants. In the various branches of higher education the Council is associated with several other authorities, such as the University of London, the city companies, the governing bodies of endowed secondary schools, and the governing bodies of polytechnics and technical institutes.

The Council spends annually about six millions sterling on education — about £5,000,000 on elementary and £1,000,000 on higher. As the receipts from government grants amount to about £1,600,000, an education rate of 1s. 9½d in the pound has to be levied. The local education authority thus bears over 70 per cent of the cost of education, the national exchequer bearing less than 30 per cent.

The administrative staff of the Council for education consists of about 1000 officers, including over 100 inspectors and organizers. There are four divisional inspectors for higher education and twelve district inspectors for elementary education, as well as organizers of domestic economy and needlework, manual training, drawing, singing, trade schools, and children's care work.

The County of London is for administrative purposes (education) divided into twelve areas, to each of which there are attached, with their assistants, one district inspector, one divisional correspondent, who conducts the business of the local bodies of managers and associations of children's care committees, one divisional superintendent, who deals with questions of school attendance, employment of children, and the assessment of charges for meals and medical treatment; one district organizer of care committees.

**Elementary Education** — Of the public elementary schools, 550 schools are provided and



maintained by the London County Council, and 365 schools provided as to fabric by religious and other organizations, but maintained by the London County Council. The accommodation provided amounts to 711,000 places, and there are 650,000 children in average attendance. The schools are open more than 400 half days per year, and the percentage of attendance on roll averages 89.5 per cent throughout the year. Attendance at school is compulsory between the ages of five and fourteen. The education given in both classes of schools is the same. As a rule, the schools are organized in three departments, for infants, boys, and girls. There are a certain number of mixed departments. Each department has its own headmaster or headmistress.

In addition to the ordinary elementary schools, there are some forty central schools (recently established) giving a superior elementary education for selected children who can remain at school up to the age of fifteen. The pupils are selected from the ordinary schools between the ages of eleven and twelve, and in a limited number of cases in which financial aid is necessary bursaries will be awarded from the age of fourteen to fifteen and one half years. (See INDUSTRIAL EDUCATION.)

Open-air schools have been conducted on a small scale during the spring, summer, and autumn months for pupils likely to benefit from open-air treatment. A number of playground classes have also been established in some of the poorest and most crowded districts of London.

*Curriculum* — The elementary school curriculum, like that of elementary schools elsewhere, has been framed with the object of developing the general intelligence, character, and adaptability of the children, and includes, in addition to English, arithmetic, history, and geography such subjects as moral instruction, nature study, physical exercises, organized games, swimming, domestic economy, and needlework for girls, and manual training for boys. Subject to a few general regulations, each head teacher frames her (or his) own curriculum. In the central schools the curriculum has an industrial or commercial bias.

*Teaching Staff* — The teaching staff numbers about 20,000 (men and women as three to seven), some 14,000 of whom are trained as well as certificated teachers. To fill the vacancies which occur throughout the year in London County Council schools there is formed annually a list of students specially selected from those who will leave the training colleges at mid-summer. The teachers on the list are appointed permanently, and are allocated to particular schools as vacancies arise.

Teachers in non-provided schools are appointed by the managers of the schools, the appointment being subject to the consent of the Council, which may be refused on educational (not religious) grounds. Their salaries are paid by the London County Council. With re-

gard to salaries, security of tenure, etc., they are in the same position as teachers in Council schools.

Promotion to the post of head teacher is made from the ranks of the assistant teachers within the service, and for this purpose a promotion list is formed. Applicants for a place on this list must satisfy certain conditions as to service and qualifications.

The salaries paid are set out below —

	ACCOMMODATION	MINIMUM	ANNUAL INCREMENT	MAXIMUM
Head-masters	-200 201-400 401-	£150 <sup>1</sup> 200 300	£7. 10s 10 0 10 0	£210 300 400
Head-mistresses	-200 201-400 401-	125 <sup>1</sup> 150 225	4 8 8	160 225 300
Assistant Masters		100	5 7 10	200
Assistant Mistresses		90	4	150

<sup>1</sup> Salary as assistant + £10 with minimum of

*Books and Apparatus* — Head teachers are supplied annually with lists containing particulars of all the articles which appear suitable for school use. All books and school material are supplied from the Council's stores on requisition by a head teacher which as a rule is made twice a year. School lending libraries are also provided by the Council for the encouragement of home reading.

*Social Welfare* — The welfare of the child engages much attention. Care committees have been formed in connection with every elementary school in London, and the members of these committees (some five or six thousand voluntary workers) devote much personal service to the care of the children. Meals are provided from the rates for every necessitous child at an annual expenditure of £80,000. The number of children on the necessitous list averages for the whole year some 40,000. The average number of meals per child per week is 4.8, and the average cost of the meal is 2 18d (food and preparation). (See FOOD AND FEEDING OF SCHOOL CHILDREN.) A large medical staff and service is employed by the Council for the medical inspection of school children, and arrangements have been made with hospitals and with local associations of doctors for the medical treatment of children suffering from ailments of the eyes, ears, nose, throat, and from ringworm. The medical staff also deals with the cleansing of verminous school children. Medical inspection is systematic, and some 225,000 children are inspected annually, the medical treatment scheme is yet incomplete. So far some 25,000 children annually are treated at the expense of the rates. (See MEDICAL INSPECTION.)

The Council also aids various voluntary agencies which provide recreative facilities for children out of school hours and during holidays. Local juvenile advisory committees have been established in various parts of London, with the object of finding suitable employment for children when they leave school and of looking after them and their interests when they obtain it. Efforts are being made to organize on a systematic basis the various voluntary agencies which have hitherto been engaged in finding employment for children on leaving school and to secure cooperation between the school care committees and the juvenile labor exchanges established by the government. Large provision is made in special schools for defective children of all kinds, — the blind, the deaf, the physically and mentally defective, and juvenile offenders.

**Secondary Education — Organization** — The County Council maintains twenty secondary schools, with an attendance of 4500 pupils at a gross cost of £80,000 a year. It also makes annual grants amounting to £80,000 to forty-two secondary endowed schools with an attendance of 15,000 pupils. In addition to these two classes of schools there are forty-five public or semipublic secondary schools neither maintained nor aided by the Council which provide for 12,500 pupils, and at least some 9000 pupils are known to be in attendance at schools conducted by individuals for private profit.

The pupils in the majority of the public secondary schools are of two classes, fee-paying and (in practice) scholarship holders, one of the conditions attached to the receipt of grants by secondary schools from the Board of Education being that 25 per cent of the school places must be reserved for free education for elementary school pupils. The fees charged range from £4 13 6 to £12 a year in the county secondary schools and from £2 10 0 to £31 10 0 in the aided and non-aided secondary schools.

The curriculum in the county secondary schools is designed to give a good general education to pupils up to the age of eighteen. The teaching staff consists in the majority of cases of specialists in the subjects taught. The salaries paid in the Council's schools to headmasters vary according to the size of the school from £400 to £800, and to headmistresses £300 to £600 according to the size of the schools. Assistant masters receive £150 to £300 (in some cases £350), and assistant mistresses £120 to £220 (in some cases £250).

**Scholarships** — The scholarship system may be divided into three classes, county scholarships for pupils desiring a good general education with, as an objective in many cases, a university or technical college education, technical and trade scholarships for pupils who desire an industrial training in substitution for the old apprenticeship system as a preparation for employment in skilled trades, and scholarships for students intending to become teachers. The maintenance

grants accompanying scholarships depend in all cases on the income of the parents or guardians of the scholar.

Junior county scholarships are awarded to children between the ages of eleven and twelve, and are tenable for three and in some cases five years. They cover free education at an approved secondary school and in most cases maintenance grants varying from £6 to £15 a year. Every eligible pupil in the London elementary schools numbering annually some 23,000 pupils, must compete for these scholarships. The number of scholarships awarded annually is about 1700. In principle these scholarships mean that the Council does not provide free secondary education for all who desire it, but only for those who can take full advantage of it. Intermediate county scholarships, 300 in number, are open to candidates between sixteen and seventeen years of age and cover free education at a secondary school or other institution for higher education up to the age of eighteen. The maintenance grants attached to these scholarships vary from £10 to £25 a year. Senior county scholarships are awarded to candidates eighteen years of age and upwards intending to pursue a course of study at an institution of university rank. Fifty are awarded annually, varying in value according to the financial circumstances of the candidates and the course of study they have in view. The technical and trade scholarships awarded by the Council vary considerably in conditions. Some provide free instruction in applied science or art with maintenance grants of £50 for day students, others provide free evening instruction with maintenance grants of £3 for artisans engaged in certain definite callings. In addition to these there are trade scholarships for boys and girls of fourteen years of age who wish to enter such occupations as book production, furniture and cabinetmaking, dressmaking, millinery, etc. Free tuition and maintenance grants varying from £6 to £15 a year are provided.

The scholarships for the preliminary education of teachers consist of bursaries followed by student teacherships, each tenable for one year. Bursaries are awarded at the age of sixteen to pupils who have attended a secondary school for three years, and are tenable for another year at the same school. At the expiration of this period the student is awarded a student teachership tenable for one year, during which period he receives training at an elementary school in the art of teaching prior to entering a training college.

**Training of Teachers** — The Council maintains seven training colleges with accommodation for 1660 students. The scheme of work, which covers a period of two years, provides a general education as well as instruction in the theory and practice of teaching.

One of the colleges (the London Day Training College) which is recognized as a school of

London University provides a four years' course with a view to the students, who are specially selected, obtaining a degree of the university in addition to the special professional training

**University Education** — The University of London (*q v*) consists of three classes of teaching institutions (1) three colleges incorporated in the university, (2) twenty-nine institutions, including medical, theological, and law schools designated "Schools of the University," which are under separate governing bodies, (3) thirty other institutions at which certain teachers are recognized as teachers of, and certain courses are approved by the university. The London County Council works in close cooperation with the university and makes annual grants both to the university and to several of the constituent schools of the university, including the Imperial College of Science and Technology. The whole question of university education in London is at present under the consideration of a royal commission.

**Technical Education** — The most advanced work in technical education is done in the institutions of university rank, but in addition to this a very large amount of technical, commercial, and general instruction is given in polytechnics, technical institutes, schools of art, and evening schools. The instruction given in these institutions covers a wide range of subjects, and as the students in attendance are drawn to a very large extent from those actually engaged during the daytime in industrial employment, the bulk of the work is done in the evening. Some 200,000 evening students are enrolled year by year.

**Trade Schools** — In order to provide some approach to a substitute for the apprenticeship system, which has now practically disappeared, a number of trade schools have been established to provide a training for those boys and girls who are prepared to enter certain skilled occupations. The boys' schools provide in some cases a technical training for groups of trades, *e g* woodworking, building trade, engineering, and in others for specific trades, such as silversmithing, tailoring, cooking and bakery. In the case of the girls' schools the preparation is for particular trades, such as dressmaking, millinery, corset making, upholstery, and laundry. The trade schools in London number seventeen, of which the Council maintains eight for boys with an attendance of 600, and four attended by 400 girls. In addition to these there are five trade schools in polytechnics, attended by 250 boys and 450 girls. The course of instruction in these schools is designed to turn out intelligent workers able to use their hands and their brains to the best advantage when they enter the workshops. The trade teaching is in the hands of teachers with first-class trade experience, and trade methods and standards of work are adopted.

**Cost of Education** — Some idea of the relative importance and magnitude of the various

divisions in the Council's educational work may be gathered from some of the heads of the estimated expenditure for 1911-1912 (Capital and Maintenance), which are set out in round figures: elementary education, £2,740,000, secondary and university education, £390,000, technical and evening school education, £320,000, special school education, £200,000, social welfare of children, £125,000, maintenance of buildings, £740,000, books and apparatus, £140,000, total maintenance expenditure, £5,000,000; total capital expenditure on sites and buildings, £730,000.

**System of Administration.** — It has already been stated that the Council operates by means of committees partly executive and partly advisory. Where powers are delegated by the Council to the committee, that committee deals with the subject matter in the name of the Council and within the limits of the Council's statutory or other authority; in other cases the committee considers and reports on proposals for the Council's decision. The business of education is distributed among subcommittees, who in a like manner "deal with" or "consider and report on" according to the powers and duties intrusted to them by the education committee. The administration of the various services is conducted by departments. At the head of each department is a chief officer who may be called upon by any committee or its subcommittees to report to it on matters within the scope of his duties or their orders of reference. For example, the education officer conducts the business of the education committee, and is the principal executive officer in respect of education, but the clerk of the Council is the final authority on rules of procedure, and, for purposes of coordination, reports on the general effect of staff proposals (except in the case of teaching staff), the comptroller submits a criticism on the financial effect of the education committee's schemes and proposals, and in respect of education is also the accountant, paymaster, and audit officer, the solicitor reports on legal matters, the medical officer is an advisory and administrative officer in respect of medical inspection, medical treatment, cleansing, and so on, of school children, and the educational adviser, who has no executive or administrative duties, reports generally, presenting criticism or advice on the larger schemes or proposals which have been submitted to the subcommittees. The education officer's department is divided into six large branches, and the staff of these branches, subject to the general supervision and direction of the education officer, carry out the education committee's instructions and act as clerks or secretaries of committees of all kinds (central or local) concerned with education.

The education acts of 1902-1903, which brought into being a vast educational organization, have profoundly affected the quantity and quality of public education in England

## LONDON, EDUCATION IN

The London County Council has effected great reforms in every part of the educational field, and has developed and supplemented higher secondary and technical education into a fairly complete and coordinated system. One great reform remains. A Royal Commission on University Education in London has been at work since 1909. It is expected that the conclusions of this commission will have a powerful and far-reaching influence over the future of university education, and in the growth and development of an ordered system of institutions of university rank the London County Council as the local education authority is intimately concerned. There is one important difference between the powers and duties of the London County Council as local education authority and that of the board of education of a great American city. In England the State, while intrusting certain powers to and imposing certain duties on the local education authority, intrusts the general administration of its education acts to the Board of Education — a state (not a municipal) department, and the State enables the board, under Parliament and by means of grants in aid, to secure general control and direction of education throughout the whole of England and Wales. The grants in aid and the control are not always commensurate. It will thus be seen that, while an American city bears the whole cost of its educational system, it enjoys greater independence than the corresponding municipal authority in England. R B

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## LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE.

— An institution founded in 1895 and since 1900 a school of the University of London in the faculty of economics and political science (including commerce and industry). It was incorporated in 1901, among other purposes "to organize, promote, and supply courses of education specially adapted to the needs of persons who are, or who intend to be, engaged in any kind of administration, including the service of any government, local authority, railways, and shipping, banking and insurance, international trade, and any of the higher branches of commerce and industry and also the profession of teaching any such subjects." The work is arranged under the following heads: economics and statistics, politics and public administration, history, economic and political, including paleography, law, geography, sociology, commerce and industry, accounting and business methods, banking, transport, librarianship. In connection with the War Office a special course in administrative subjects has been arranged for a number of army officers, to equip them for the administrative staff of the army. The courses in transport are attended largely by students engaged in railway administration. Most of the courses are recognized by the University of London for its degrees. The school is, however, attended largely by special and postgraduate students engaged in research, by persons engaged in banking, insurance, accounting, railway administration, etc., and by administrative officers in the service of the government, central or local. Students working for degrees must satisfy the entrance requirements of the University of London. The school has power to grant certificates in geography, medieval history, including paleography and diplomatic, and in commerce. The school possesses a valuable library of some 60,000 volumes and 70,000 pamphlets bearing on its special work. The school issues its own series of *Studies in Economics and Political Science*, and the *Clare Market Review*, the students' magazine, publishes some results of the research work. The students are drawn from all parts of the world, and about 20 per cent are already graduates of some university. Grants are given to the school by the Treasury, by the London County Council, and several public and private bodies, which also maintain scholarships and prizes at the school. The number of students, men

## LONDON TEACHERS ASSOCIATION

and women, enrolled in 1910 was 1626 under a faculty of 62 members.

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**LONDON TEACHERS ASSOCIATION, LONDON, ENGLAND** — A professional association of teachers engaged in schools aided or maintained by the London Education Association. It was organized in 1872 as the Metropolitan Board Teachers Association, and has gradually increased its membership and scope of activity until it has become the largest association of its kind in the British Empire. It aims to secure the recognition of teaching as a profession, and has stood in the front in the struggle for professional freedom on such questions as tests for teachers, salaries, questions of corporal punishment, abolition of extraneous duties, inspection *versus* examination, superannuation schemes, size of classes, and freedom from outside interference. The government is in the hands of a general committee of one hundred members, and sectional interests are supervised by subcommittees, including mistresses, teachers in non-provided schools, teachers in higher education institutions, in central and higher grade schools, in evening schools, handicraft instructors, and domestic science instructresses. At the offices of the association members may receive advice on matters of professional difficulty such as, tenure, compensation, salary, sick pay allowances, unfair report, promotion, superannuation, breakdown allowances. The Association also secures to its members some important material benefits in the way of cooperative teaching, reduced rates of subscriptions, benevolent funds, and guidance and direction for holidays. The Association has also been frequently called upon to act as host to groups of foreign visiting teachers from the United States, Canada, Russia, and elsewhere, and is ready to give any information on education within the London area. The organ of the Association is the *London Teacher and London Schools Review*, which appears monthly. The membership in 1909-1910 numbered over 17,000. The General Secretary is Mr. T. Gautrey, who is an elected member of the London County Council, and has a seat on the London Education Committee.

### Reference:—

*Annual Reports and Handbooks*

**LONDON, UNIVERSITY OF** — A body carrying on teaching functions in London and within a radius of thirty miles, and examining functions throughout the British Empire. As a teaching body it has relations of three kinds with the teaching and research institutions

## LONDON, UNIVERSITY OF

connected with it. It is entirely responsible for the finance and management of the "incorporated" institutions, University College, King's College, and King's College for Women, and certain smaller institutions, it has visitatorial powers in regard to the "Schools of the University," thirty in number, at which it "approves" courses by teachers appointed by the schools who may or may not have been individually recognized by the university, and it approves courses also at other "public educational institutions," thirty in number, delivered by certain teachers who have been individually "recognized" by the university. The history of the university as a whole involves the history not only of the central body, but of the sixty teaching institutions whose relations with it are those described above. The oldest university institutions are the medical schools which have grown up within the great hospitals. For many of these it is difficult to fix a precise date of foundation. St Bartholomew's Hospital, the oldest of the hospitals, was founded in 1123, and in 1662 medical and surgical students attended its wards. The creation of the University of London, as it at present exists, is traceable to a letter from Thomas Campbell, the poet, to Lord Brougham, published in the *Times* of Feb 9, 1825, pleading for the establishment of a "great London University" to provide education for the class between "mechanics" and the "enormously rich."

The college erected in Gower Street, as the result of the appeal, was entitled the "University of London," and was opened in 1828 as a proprietary institution. In 1829 a charter was granted to King's College (opened in 1831) of which the educational objects were generally the same as University College, but which was established specifically as a Church of England institution. The efforts of the Gower Street College to obtain a charter of incorporation were unsuccessful, but in 1836 charters were simultaneously granted to a new body under the title "University of London" and to the Gower Street College under the title "University College, London." The foundation of University College and of the University of London for the first time made university education in England free from religious tests and accessible without scholarships to students of moderate means. The university, consisting of a senate nominated by the Crown (including among its first members Brougham, T. Arnold, and Faraday), was directed "to hold forth to all classes and denominations . . . an encouragement for pursuing a regular and liberal course of education," and was empowered to give degrees to students who had studied at University College, King's College, or other colleges to be affiliated later. The senate had no power to inspect affiliated colleges or inquire into their methods of teaching; its sole means of control was through its examinations. A large number of institutions were affiliated,

some of them secondary schools, and affiliation soon ceased to have any significance.

By the Charter of 1858 the senate were empowered to dispense with certificates of studentship in the faculties of arts and laws, for medical degrees certificates of attendance and clinical practice at a recognized institution were still required, and under this charter the degrees of the University in arts and laws (and later in all other faculties except medicine) were thrown open, without inquiry into their previous education, to all comers, not only in England, but in the British dominions overseas, where examinations were held in specially organized centers. The university became thus an examining body pure and simple, except in the case of medicine. Its examinations won a high reputation for their standard and their fairness; the examiners were almost invariably men of great distinction, and criticisms of the external system of examinations have nearly always been criticisms of the system rather than of the way in which it was carried out by the senate. The charter of 1858 first gave the graduates a status in the university by the constitution of a body of graduates of prescribed seniority called Convocation, with certain important though limited powers. In 1860 the degrees of Bachelor and Doctor of Science were first established, science subjects having been included previously in the arts curriculum. In 1867 a supplementary charter conferred on the university the right to hold examinations for women, and in the same year the university was granted the right to send a representative to Parliament. The senate and convocation agreed in 1878 to accept from the Crown a supplemental charter making every degree, honor, and prize awarded by the university accessible to students of both sexes on perfectly equal terms, it was the first university in the United Kingdom to admit women to degrees. The example of London led the older universities to offer greater facilities to women, and all the universities founded since 1878 in the United Kingdom have given women equal rights with men.

The complete dissociation of examining from teaching (except in regard to medicine) left the institutions for higher education in London unconnected with the university, and led to great dissatisfaction. In 1884 an association, presided over by Lord Reay, was founded to promote the establishment of a teaching university. A royal commission on the reorganization of the university, which was appointed in 1888, and reported in 1889, suggested that the existing university should ask for a charter to enable it to become a teaching university for London, as well as an examining body, but the report led to no result. A second commission, appointed in 1892, reported in 1894, its recommendations were enforced by Act of Parliament in 1898, and statutes made thereunder came into operation in 1900. The

new and complex constitution under which the university became a teaching university, but continued also the external examination system, though marking a great advance, proved inadequate to the needs of London. By two fresh acts of Parliament, first University College was incorporated in the university as from Jan 1, 1907, and then King's College, as from Jan 1, 1910. A further proposal to incorporate the Imperial College of Science and Technology, an institution itself of a very complex character, proved contentious, and led the senate to ask government to appoint a royal commission to consider the matter. The commission was appointed in 1909 under the chairmanship of Mr (now Lord) Haldane, with a reference much wider than the senate had asked, and was authorized to inquire into the whole question of higher education in London. The evidence given before the commission shows divergency of opinion on many important points, and it is impossible to predict the results to which it will lead. The commission have, so far (January, 1912), issued only a single recommendation, dealing with the site of the central buildings of the university, which was first housed in Somerset House, removed in 1870 to Burlington Gardens, and again in 1901 to South Kensington, where it was allotted quarters in a building once occupied entirely by the Imperial Institute. The commissioners appeal for aid from public bodies and private generosity to provide a site and buildings in the center of London. It is anticipated that their final report will not be issued until 1913 or 1914.

The university is governed by a senate, including the Chancellor (Lord Rosebery), the Chairman of Convocation (both elected by convocation), and fifty-four other members, of whom sixteen are elected by university teachers, sixteen by the graduates, and the remainder are appointed by the Crown and various public bodies. The senate alone has executive power, but cannot act in matters relating to the teaching side without report from the Academic Council, of which four fifths consist of representatives of the teachers, nor in regard to specific subjects without reports from boards of studies also consisting mainly of teachers dealing with those subjects. In regard to external examinations, it can only act after report from the Council for External Students, mainly composed of representatives of the graduates, and in regard to university extension (*qv*), after report from the special board dealing with this matter. There are eight faculties: theology, arts, laws, music, medicine, science (including veterinary science and agriculture), economics and political science (including commerce and industry), and engineering. The faculties were designed mainly as bodies to elect teaching representatives to the senate; but they are frequently consulted for the purpose of coordinating reports from the boards of studies.

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There is a general feeling among university teachers that their powers should be increased in future. The boards of studies, thirty-four in number, include, in addition to teachers of the university, distinguished specialists not connected with the university. The teachers of the university are either appointed and paid by the senate, or "recognized," but some of the teaching work in schools of the university is carried on by teachers appointed by the schools who do not receive the title of teachers of the university. A university professorate is gradually being built up, but the scheme adopted by the senate has not yet been fully carried into effect, and some of the most distinguished teachers do not at present possess the title of "university professor" or "university reader."

The university, through its university extension board, besides conducting local lectures, undertakes the inspection and examination of secondary schools, and holds holiday courses for foreigners.

The incorporated colleges of the university are as follows: University College (opened 1828), King's College (opened 1831), King's College for Women (1881). The following institutions also form an integral part of the university: the Brown Animal Sanatorium Institution (established in 1871), the Physiological Laboratory at South Kensington (established in 1902), the Francis Galton Laboratory for National Eugenics (established in 1904), and the Goldsmiths' College (established in 1891, reconstituted in 1904), which includes a department for the training of teachers and classes of a "polytechnic" character.

The following schools are unincorporated —

	ESTABLISHED	FACULTIES
Imperial College of Science and Technology including	1907	Science and Engineering
Royal College of Science	1851 1878	
Royal School of Mines		
City and Guilds College		
Royal Holloway College (for Women)	1883-6	Science and Arts
Bedford College for Women	1849	Science and Arts, also training department and art school
East London College Reconstituted	1841 1882 and 18 2	Arts, Science and Engineering
London School of Economics and Political Science	1895	Economics
South-Eastern Agricultural College, Wye, Kent	1894	Science (Agriculture)
Westfield College (for women)	1882	Arts
London Day Training College	1902	Arts (Pedagogy)

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	ESTABLISHED	FACULTIES
New College	1696	Theology
Reconstituted	1880	
Hackney College (Congregational)	1803	Theology
Regents' Park College (Baptist)	1810	Theology
King's College, Theological Department	1847	Theology
Wesleyan College, Richmond	1843	Theology
St John's Hall, Highbury	1863	Theology
St Bartholomew's Hospital Medical School	1123	Medicine
St Thomas's Hospital Medical School	c 1200	Medicine
Westminster Hospital Medical School	1715	Medicine
Guy's Hospital Medical School	1724	Medicine
St George's Hospital Medical School	1734	Medicine
London Hospital Medical College	1740	Medicine
Middlesex Hospital Medical School	1745	Medicine
Charing Cross Hospital Medical School	1818	Medicine
London School of Medicine for Women	1874	Medicine
University College Hospital Medical School	1828	Medicine
King's College Hospital Medical School	1839	Medicine
St Mary's Hospital Medical School	1843	Medicine
London School of Tropical Medicine	1898	Medicine
Lister Institute of Preventive Medicine	1901	Medicine
Royal Army Medical College	1902	Medicine

NOTE. In the case of the medical schools the date given is that of the foundation of the hospital mentioned.

The number of registered internal students in 1910-1911 was 4400, but the actual number attending approved courses is probably about three times as great. In the calendar year ending April, 1912, there were conferred 569 degrees on internal students and 674 degrees on external students. The teachers' diploma, established in 1883, was in the same year conferred on sixty-nine internal and twenty-five external students. P J H

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**LONDON, WILLIAM** (fl 1658) — Publisher, bookseller, and author, of Newcastle-upon-Tyne, England. In 1658 he published in London *A Catalogue of the most vendible Books in England, orderly and Alphabetically digested, under the Heads of Divinity, History, Physics, Chyrurgery, Law, Arithmetick, Geometry, Astrology, Dialling, Measuring, Land and Timber, Gageing, Navigation, Architecture, Horsemanship, Faulconry, Merchandise, Lunning, Military Discipline, Heraldry, Fortification and Fireworks, Husbandry, Gardening, Romances, Poems, Plays, etc., with Hebrew, Greek, and Latin Books for Schools and Scholars. The like Work never yet performed by any Varietas delectat London, Printed in the year 1658*. London intended to add annual supplements of the year's publication, but only two appeared (1657-1658, and 1660). In the history of education too little attention has been paid to the question of the distribution of books, and in this respect London's book is remarkable. The *Catalogue* of 1658 contained 3096 titles, distributed as follows: Divinity, 1632; History, 468; Physics and Chyrurgery, 145; Law, 146; Mathematics, 227; Romances, 57; Plays, 103. (See Growoll, A *Three Centuries of the English Book Trade Bibliography*, p. 49. New York, 1903.) Between two and three hundred books are included in the schoolbook list (Hebrew, Greek, and Latin), which added to Hoole's (*q v*) list arranged according to forms in his *New Discovery*, practically gives a complete schoolbook bibliography for the period 1640-1660. London's *Catalogue* contains an "Introduction to the Use of Books in a short Essay upon the Value and Benefits of Learning and Knowledge," written in an eloquent style which has been compared with that of Sir Thomas Browne, and Richard de Bury (*q v*), author of the *Philobiblon* (1473). (See Dibdin, T F, in his edition of Sir Thomas More's *Utopia*, London, 1808.) F W

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*Dictionary of National Biography*

**LONGFELLOW, HENRY WADSWORTH** (1807-1882) — Poet and teacher, graduated from Bowdoin College in 1825, and subsequently studied modern languages and literature at several European universities. He was professor in Bowdoin College from 1829 to 1835, and in Harvard College from 1836 to 1850. Author of a modern language textbook. W S M

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**LONGITUDE AND TIME** — A subject formerly occupying considerable attention in elementary arithmetic, and still taught in many schools as part of this subject. It entered into the curriculum through the influence of

navigation upon commercial arithmetic. It concerns the finding of the difference in longitude between two places when the difference in time is known, or, conversely, the difference in time when the difference in longitude is known. Its practical use to the average citizen is confined almost entirely to a new phase of the subject, namely, Standard Time (*q v*). It is probable that the older treatment will give way to the discussion of this phase of the subject. When taught in the schools, it properly correlates with the work in geography, and, indeed, it may even better be treated as a topic in the latter field. There are no difficulties that stand in the way of an elementary presentation of the subject at any time in the sixth, seventh, or eighth school years. Most American courses of study omit it entirely at present, some require it in the seventh school year, and others in the sixth or eighth. Under any circumstances the points that merit most attention are (1) the prime meridian, (2) the date line, and (3) standard time. In special schools for navigators it would, naturally, be treated much more extensively, as is the case in Europe, where these schools are more highly developed than in America. D E S

**LOOMIS, ELIAS** (1811-1889) — Textbook author and college professor, graduated from Yale College in 1830, and was tutor there from 1833 to 1836. He was professor in Western Reserve College (1837-1844), New York University (1844-1848), Princeton College (1848-1849), and Yale College (1860-1889). He was the author of fifteen textbooks on the mathematical and physical sciences. W S M

**LORD, ASA D** (1816-1875) — Normal school principal and city superintendent, educated in the district schools of New York and at the Potsdam Academy. He taught for several years in Ohio, and in 1839 he organized the Western Reserve Teachers' Seminary. During the eight years that he was at the head of the seminary, 800 teachers were under his instruction. He was superintendent of the schools of Columbus from 1847 to 1856, superintendent of the Ohio School for the Blind, 1856 to 1868, and superintendent of the New York School for the Blind at Batavia, 1868 to 1875. W S M

**LORD, NATHAN** (1792-1870) — Sixth president of Dartmouth College, graduated from Bowdoin in 1809 and the Andover Theological Seminary in 1815. He was engaged in teaching and preaching, and was president of Dartmouth College from 1828 to 1862. He wrote several theological works. W. S. M

**LORDOSIS** — See SPINAL CURVATURE.

**LORINSER, KARL IGNAZ** (1796-1853) — A German physician, born in Nimes, Bohemia, studied at the universities of Prague and Berlin



In 1822 he was appointed a member of the government medical board in Stettin, and in 1824 promoted to a medical inspectorship in Koshin, and later in Oppeln. In 1829-1830 he undertook a journey to eastern and southern Austria for the purpose of investigating the plague which was then raging in those countries. He became noted through an attack on the hygienic conditions of the Prussian schools, which he severely criticized in a pamphlet, *Zum Schutze der Gesundheit in den Schulen* (*For the Protection of Health in the Schools*, Berlin, 1836). This work gave rise to a heated controversy, known as *Der Lönissische Schulstreit*, in which many physicians and schoolmen took part, and which was largely instrumental in bringing about reforms affecting the health of the pupils of the higher schools, particularly with regard to physical training and the question of over-pressure.

He also published a number of medical works and wrote an autobiography in two volumes, which was edited by his son (Regensburg, 1864). F M

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BECK, K. *Dr. Karl Ignaz Lönner, sein Leben und seine Verdienste um das Turnen* (Oppeln, 1896)

**LOTZE, RUDOLPH HERMANN** (1817-1881) — Philosopher, born in Bautzen, Saxony, the son of a physician, he determined in early youth to follow his father's profession. In March, 1838, he received the degree of Doctor of Philosophy from Leipzig University, and in July of the same year that of Doctor of Medicine. In 1839 he became a member of the Faculties of Medicine and of Philosophy at Leipzig, where he remained until called in 1844 to Göttingen to succeed Herbart. In 1881 Lotze accepted a call to Berlin. He had but entered upon his work there when his death occurred in July of that year. His life was uneventful in incident, and his activities were always in some measure restricted by ill-health.

Lotze's literary career may be divided into three periods. (1) Scientific and early philosophical period (1840-1852). The works of this period are chiefly scientific, pertaining to biology, physiology, and medicine. Even in these scientific writings, however, there is obvious a tendency to reach down to the philosophical principles underlying science. To this period belongs the *Medizinische Psychologie oder Physiologie der Seele* (1852), a pioneer work of the new psychology. (2) The period of the *Mikrokosmos*, *Ideen zur Naturgeschichte und Geschichte der Menschheit* (3 vols. 1856-1864; Eng. tr. by Hamilton and Jones), the aim of which is to reconcile the mechanical and the teleological views of the world. (3) The period of the *System der Philosophie*, in which Lotze purposed to present his philosophical views in comprehensive and systematic completeness. The first two parts only of the projected work were completed, the

*Logik* (1874, Eng. tr. ed. by Bosanquet) and the *Metaphysik* (1879, Eng. tr. ed. by Bosanquet). The third part, treating of morality, æsthetics, and religion, was left unfinished at his death. Several little volumes compiled from his lecture notes in part make good this deficiency. The most important of these are *Outlines of Æsthetics*, *Practical Philosophy*, and *Philosophy of Religion* (Eng. tr. by G. T. Ladd). To this period also belongs the *Geschichte der Æsthetik in Deutschland* (1868).

As a philosophical writer Lotze is notable for elegance of literary style, for discretion in metaphysical speculation, for the breadth of knowledge and wealth of culture manifest in all his works. His general philosophical position may be defined as that of teleological idealism. Three chief conceptions underlie his metaphysics, — the conceptions of unity, of teleology, and of personality. The unity of all things in the World-Ground is the central doctrine of his metaphysics. The proof by which this is established is a negative one, resting upon the disproof of the possibility of reciprocal action between things conceived as independent and unrelated. Lotze's discussion of causation, in this connection, is one of the most characteristic and valuable features of his metaphysical theory. His conclusion is that all so-called transcendent action is in reality immanent action, that causal action is possible only because all things are immanent in the World-Ground. Having shown that cosmological speculation leads inevitably to the positing of one Infinite Being as the Ground of all that is, Lotze proceeds to identify this Absolute with the religious conception of God. By three distinct lines of argument Lotze seeks to establish the personality of God. The Infinite must be a Person in order to be the ground of finite personality, the source and ground of the moral order and moral ideals must be sought in a personality, and finally, reality can be predicated only of that which exists as personality. The argument that to ascribe personality to the Absolute is to limit that Being, Lotze meets by a counter assertion, namely, that the Absolute is the only complete personality, of which human personality is but the finite and imperfect copy. The idea of teleology is also implicit in Lotze's fundamental conception, for the Good is an active principle which realizes itself in all reality. To justify his belief in a final purpose which prescribes the course of the world is the chief aim of Lotze's philosophical undertaking. His discussion of the teleological explanation of the world order, as contrasted with the mechanical, is characteristic and luminous. The express aim of the *Microcosmos* is to show "how absolutely universal is the extent and at the same time how completely subordinate the significance of the mission which mechanism has to fulfill in the structure of the world." His insistence upon the universal validity of the

mechanical principle rightly understood, the clearness with which he shows forth the inadequacy of a mere external mechanism and the incompleteness of mechanism as a final explanation, and his noble attempt to prove a teleological principle active in the world through the instrumentality of a universal mechanism, are all features which give this discussion great and lasting value

Lotze's contributions to both psychology and logic have been important. The *Medicinische Psychologie* extends the principle of mechanism to explain the relation of mind and body and lays the foundation of that branch of modern psychology known as psycho-physics. Lotze is notable for his local sign theory, according to which non-spatial sense attributes, varying according to the locality of the sense organ stimulated, afford the original data out of which our space knowledge is built. The fundamental tenet of Lotze's logical theory is his belief that the mind is essentially active, contributory, in all elements of knowledge. For though the mind cannot act until it is acted upon, yet the matter of its responses is its own, it reacts upon every impression in its own characteristic manner. All our knowledge rests ultimately upon certain universal propositions, or axioms, which are in reality the products of certain habits of action native to the human mind. Our hope of mastering the course of events in the real world rests on three things: (1) Some given reality which thought cannot create. (2) The universality of law in the real world, ultimately a matter of faith. (3) Synthetic judgments *a priori* as the basis of our knowledge of particular laws.

Lotze's influence upon education has been general rather than specific, the influence of an idealistic philosophy with a strongly religious and ethical bent, and reflecting at every point the broad culture and lofty ideals of the man whose system of thought it is. We find in his writings many of the ideas and principles that are vital in educational theory at the present day. The emphasis upon activity and development would seem to ally him with the psychological tendency in modern education, his positive contributions to science and his estimate of the importance of scientific knowledge ally him with the scientific tendency, while his sense of the value of the finite personality, the significance of the aspirations and religious faiths of mankind, and the importance of the study of human institutions and human progress, are in accord with the moral and sociological ideals of the foremost educational thought and effort of to-day.

V. F. M

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LOUIS AGASSIZ SUMMER SCHOOL.—  
See SUMMER SCHOOLS

**LOUISIANA, STATE OF.** — Originally a part of the French territory of Louisiana, obtained by purchase from France in 1803. The present state of Louisiana was first organized as the Territory of Orleans in 1804, and was admitted to the Union in 1812 as the eighteenth state. It is located in the South Central Division, and has a land area of 45,420 square miles. In size it is about the same area as Pennsylvania. For administrative purposes it is divided into fifty-nine parishes, a term corresponding to county elsewhere, and these are in turn divided into police jury wards, the number varying from five to ten, except in the parish of Orleans, which has seventeen wards. In 1910 Louisiana had a population of 1,656,388 and a density of population of 36.5 per square mile.

**Educational History** — The first school in the territory was established by a company of Ursuline nuns, who opened a charity hospital school for girls in New Orleans in 1727. A Capuchin school for boys was also opened about the same time. After the Spanish occupation, several Spanish teachers were sent over, in 1772, to attempt to change the language of the people, but their schools were very poorly attended. They are reported as not having had more than thirty pupils at any time, while eight French schools, which were then in existence, enrolled about 400. In 1805 the University of New Orleans was founded, a very ambitious project, on the plan of the University of France. This was to include schools of all grades, an academy and a public library in every parish, and a University in New Orleans. The project received aid until 1826, when it was definitely given up.

In 1806 a free school law was enacted, but was repealed in 1808. In 1811 the sum of \$2000 for buildings and an annual grant of \$500 was made to each parish for an academy. The first constitution of the state, framed in 1812, contained no mention of education. A few primary schools were established in the different parishes, and in 1819 the police juries of the parishes were directed to supervise and care for such schools. In 1821 the law was changed so that the police juries were directed to appoint five resident landowners as trustees. In the same year an appropriation of \$800 was made to each parish for the benefit of an academy in return for the instruction of eight pupils free. A parish tax of \$1000 annually was also authorized. Grants of various kinds were made during the next twenty-five years to the parish

and parochial schools, and to academies and colleges, in return for the free instruction of a certain number of indigent pupils. This has well been called "the beneficiary period." It began about 1811, and lasted until the final adoption of the free public school principle in 1845. In 1827 it was enacted that the state might give \$2 62½ monthly for each student educated in the parish schools up to \$1350 per parish, and it was provided that all indigent children must be received in the parish schools. By 1834, 1175 indigent children were being educated in the state.

In 1833 the Secretary of State was made *ex officio* Superintendent of Education. During the next ten years a number of governors and educational committees recommended the entire abolition of the subsidized parochial system, and the substitution of a free public school system in its place. In 1841 New Orleans was permitted by special act to establish a free public school system, to employ a superintendent of schools, and to raise money for schools by local taxation. The example of this city, which in a few years compared favorably in school attendance with the larger cities of the North, exercised a good influence in shaping public opinion for free schools in the state. In 1845 a commission of five was appointed to extend the public school system, and the new state constitution of 1845 put an end to the old system of subsidized private schools, and provided definitely for a system of public education.

The legislature was directed "to establish free public schools throughout the state" and "to provide means for their support by taxation on property, or otherwise," the office of Superintendent of Public Instruction was created, the common school fund and the seminary fund were defined and declared to be perpetual funds upon which the state was to pay 6 per cent interest, and a University of Louisiana in New Orleans was provided for. The constitution of 1852 practically repeated the provisions of the constitution of 1845, but changed the superintendency of public instruction from appointment to election, and gave the General Assembly power to abolish the office when "no longer necessary." The free school law of 1847 carried the mandates of the constitution into effect, created the office of parish superintendent, abolished two years later, levied a one-mill state tax for schools, clearly defined and definitely provided for the creation of a permanent state school fund by the consolidation of all land grants and donations, and provided for the distribution of the income to the parishes on a census basis (in 1852 the constitution was amended to insure this), declared the schools open to all white children between six and sixteen, and insured every white under twenty-one two years of tuition free, gave the control of the schools in each district to three directors, and authorized dis-

trict taxes for school buildings. The University of Louisiana was established, and continued to exist until its absorption by Tulane University in 1884. In 1852 a State Institute for the Deaf and Dumb was established. In 1859 a normal school was established by the legislature in New Orleans, and in 1860 the State Seminary of Learning was opened at Alexandria. In 1855 a poll tax of \$1 was levied for schools in addition to the above. By 1852 one half of the educable children of the state were reported as in attendance at the public schools. Even yet the schools were not entirely free for the entire term, as one sixth of the revenue in 1850 and one eighth in 1860 still came from tuition fees. Schools continued during the early part of the Civil War period, the legislature of 1862 appropriating \$485,000 for free public schools, but the war practically put an end to this early school system.

In 1864 a new constitution was adopted, largely as a war measure, by General Banks, which retained most of the provisions of the preceding constitutions, but omitted the census basis for the distribution of school money, omitted all mention of the seminary fund, provided for a four-year term for the State Superintendent and a salary of \$4000 per year, and ordered that all schools should be taught in the English language. The reconstruction constitution of 1868 retained the provisions of the preceding constitution, raised the salary of the State Superintendent to \$5000, ordered a public school in every parish, and forbade any distinction as to "race, color, or previous condition," or any appropriation or subsidy to any private school or teacher.

The law of 1869 carried these constitutional provisions into effect. The state was divided into six districts, and for each of these a district superintendent, reporting to the State Superintendent, was provided. To an appointed State Board of Education was given the control of all state institutions and the appointment of all local boards of education. The state tax was increased to two mills, and local district taxes up to five mills were authorized. In 1870 a parish tax of two mills was also authorized. The effect of these new provisions was unduly to centralize and increase the cost of administration, and to turn the schools over almost entirely to the colored race, except in the rural parishes, where separate schools for the whites were maintained in defiance of the law. Little progress was made in general education in the state until 1887, when separate schools for the two races were established. By 1875-1876 the total school enrollment was only 74,846 out of a school population of 274,688. In 1870 the State Seminary of Learning was converted into the University of Louisiana, and moved to Baton Rouge, and in 1872 the Land Grant College was consolidated with it. In 1871 the State Institution for the Blind was established. In

1872 the legislature, to obtain money for salaries and mileage, confiscated the permanent school fund

In 1879 a new constitution was adopted, which changed the form of administration and materially reduced the expense for this item. The office of State Superintendent of Public Education was continued, but only \$3000 was allowed for his salary and the expense of his office, district state superintendents were abolished, and parish boards were permitted to appoint a parish superintendent, but at a salary of not over \$200 a year, instruction in the French language and separate schools for the two races were made possible; the legislature was directed to establish a university at New Orleans for negroes and to appropriate not less than \$5000 nor more than \$10,000 a year for its maintenance; and the debt of the state to the free school fund, confiscated by the legislature of 1872, to the seminary fund, and to the agricultural and mechanical college fund, was determined and declared a perpetual obligation, but the interest on these debts was lowered and was to be paid from the annual appropriations for schools. The new constitution of 1898 contains similar provisions to those of the constitution of 1879, but amplified and made somewhat more definite. A school census was ordered, the debt to the school fund was directed to be paid out of the state's revenues and not out of the annual school appropriations, the restrictions as to the salaries of parish superintendents were removed; and the prohibition of aid to sectarian schools was extended to private schools as well.

In 1881 the Southern University for Colored Students was opened, in 1884 a state normal school was established, and opened the next year at Natchitoches; in 1884 the old University of Louisiana, established in 1847, was absorbed by the new Tulane University, and Tulane University became a semi-public institution, in 1888 the State Board of Education was directed to advertise for bids for a uniform system of schoolbooks for the schools of the state, to be adopted on four-year contracts, in 1896 teachers' examinations were systematized and made uniform throughout the state, in 1894 the Louisiana Industrial Institute, a literary and industrial school of secondary grade for whites, was established at Ruston, and in 1898 the South Western Louisiana Institute, a similar school also for whites, was established at Lafayette. In 1898 a State Biologic Station, for investigation and for the training of teachers in biological sciences, was established at the mouth of Calcasieu Pass, near the Gulf of Mexico. In 1902 special tax districts, with local taxes, were permitted. In 1904 a \$600 minimum salary for parish superintendents was fixed by law.

In 1906 credentials were accepted from state institutions for teachers' certificates. In 1908 the state constitution was amended so as to

increase the salary of the State Superintendent from \$2000 to \$5000, parish (county) superintendents were made school treasurers *ex officio*, the limit of local tax was raised from  $1\frac{1}{4}$  to 3 miles, and a child labor law was enacted. In 1910 the parish school boards were given the right to levy taxes, independent of the county authorities, a state textbook commission was created, and the period for adoptions extended from four to six years; monthly teachers institutes and the study of agriculture were required.

**Present School System** — At the head of the school system is a State Board of Education and a State Superintendent of Public Education. The State Board of Education is composed of the Governor, the Superintendent of Public Instruction, and the Attorney-General, together with seven citizens appointed by the Governor, one from each congressional district of the state. Appointed members receive the same pay as members of the legislature. Subject only to the legislature, this body is the supreme authority in the state in educational matters. Appeals from the decisions of the State Superintendent may be made to it for final settlement; its suits are given preference in courts of law, and bond and security are not required, it approves all requests for permission to establish high schools in the state, it is empowered to adopt a uniform course of study for the schools of the State; it outlines the courses of study for all teachers' training schools, and provides all rules and regulations for the examination of teachers, the quadrennial school census is sent to it by the parish assessors for approval, it has power to ask for special reports from the parish superintendents, and may make rules and regulations for the government of the schools of the state, not forbidden by law. The Superintendent of Public Education is elected by popular election for four-year terms, and receives a salary of \$5000 per annum, with an appropriation for office expenses. He is *ex officio* a member of the State Board of Education, and also acts as its secretary and its executive officer. He is also a member of the Boards of Supervisors of the State Schools, of the Board of Institute Managers, and of the State Board of Examiners. He has the general supervision of the schools of the state, decides disputes sent to him on appeal, subject to final approval of the State Board of Education, may call conventions of school officers for consultation, apportions the school fund to the parishes, and calls meetings and publishes the proceedings of the State Board of Education. In addition to the State Board of Education, there is a State Board of Examiners, consisting of the State Superintendent, the president of the Louisiana State University, and the president of the Louisiana State Normal School, which is empowered to adopt rules and regulations for the examination of teachers for state certificates, and also a Board of State Institute

**Managers**, consisting of the State Superintendent and the president of the State Normal School, who have control of the summer normal schools of the state and select the institute conductors. A State Textbook Commission adopts uniform texts for the state and is instructed by law to show a preference for Louisiana books.

For each parish (county) there is a parish board of school directors and a parish superintendent of public education. The parish boards are elected by the qualified electors of each police jury ward of the parishes, one from each ward, and for four-year terms. Teachers are not eligible for membership on these boards. Members of parish boards may be removed from office by the Governor, if the State Board of Education approves. Each parish board elects a parish superintendent of public education for a four-year term, who serves as secretary of the board and as its executive officer. Parish superintendents must hold a certificate of eligibility from the State Board of Education, and the revocation of this certificate vacates the office. Parish boards have general supervision of the schools of the parish, elect all teachers for the schools on the nomination of the parish superintendents, appoint two teachers to assist the parish superintendent in examining teachers, are charged with the care and preservation of the school property of the parish, on the recommendation of the parish superintendent, locate and change the location of schools; estimate the amount of school money needed each year, may issue bonds for school purposes, may appoint auxiliary visiting trustees for each ward, or school district, or school in the parish, and must make detailed reports to the State Board of Education as to the conditions of the schools and the work of the school officials.

The parish superintendent is required to devote his entire time to the work of supervision, conducts examinations for teachers' certificates; nominates teachers for election by the parish boards, signs all contracts, may remove teachers for cause, must visit each school at least once each year, must hold monthly teachers' institutes on Saturdays, is treasurer for the parish school funds, makes quarterly reports to the State Superintendent on the condition of the funds, pays out all money on the order of the president and secretary of the parish board, has charge of the sale and preservation of any sixteenth-section lands, and must make quarterly reports to the parish board, and annual reports to the State Superintendent, and reports as called for to the State Board of Education.

The Parish of Orleans, whose boundaries are the same as those of the city of New Orleans, receives larger liberty and special privileges in the matter of school government and school taxation, being governed, in part, by special legislation.

**School Support** — Louisiana originally received 786,044 acres of land in the sixteenth-section grants. Much of this was so located as to be of little value, and some of it is still on hand. The annual interest on this fund is apportioned to the townships to which the land originally belonged. The state also received its share of the United States Deposit Fund, distributed in 1837. This was devoted to internal improvements at the time, but the interest on the fund (\$28,795 14) is now devoted, according to the provisions of the constitution of 1898, to the support of common schools. The state also received two townships (46,080 acres) of land for a seminary of learning, and 210,000 acres for an agricultural and mechanical college. The funds were largely lost during the war or squandered during the Reconstruction period, and remain to-day as "perpetual obligations," for which the state taxes itself to pay the annual interest due on the several funds.

The constitution requires that not less than one and one fourth mills of the six-mill state tax shall be applied to the support of schools. The State School Fund is apportioned directly to the parishes on the basis of the number of children in each between the ages of six and eighteen, as determined by a quadrennial census. The proceeds of the state inheritance tax are also added to the annual school fund.

The police juries of each parish must levy a parish tax for schools of not less than three nor more than six mills. Councilmen or trustees in cities, towns, or villages, and the people of school districts, may vote (since 1902) special taxes for additional school facilities. In 1907 there were 509 such special tax districts, as against 389 in 1906, 272 in 1905, 199 in 1904, and 153 in 1903. A poll tax of \$1, fines, and forfeited bonds, remain in the parishes where collected, and are added to the current school funds. Special school taxes may also be voted for buildings, improvements, or support, by petition, election, and an affirmative vote. The old "fuel tax" is still levied in Louisiana, parish boards still having "authority to assess and collect \$1 per annum on each family" sending a child or children to school.

**Educational Conditions** — Of the total population nearly one half are negroes, and over 90 per cent are native born. But two states, Mississippi and South Carolina, contained a larger proportion of negroes. In thirty-one of the fifty-nine parishes the negroes outnumber the whites, in seventeen parishes they outnumber the whites two or more to one, in two parishes they outnumber them six to one, in two others, eleven to one, and in one sixteen to one. Of the total population of the state, one fifth live in the city of New Orleans, and of the remaining four fifths, about 73 per cent live in rural districts. There are but two other cities in the state, Baton Rouge and Shreveport, which have 8000 inhabitants. The state

## LOUISIANA, STATE OF

is essentially a rural and agricultural state, with one large commercial city.

The percentage of illiteracy is still very high, notwithstanding recent large deductions. A child labor law has been enacted recently, but the state has as yet no compulsory attendance law, or means of enforcing attendance. Only 62 per cent of the schoolhouses are owned by the parishes, but 69 per cent of the schoolhouses are listed as being provided with blackboards; but 70 per cent as having any means of heating the building, but 65 per cent as being provided with patent school desks, but 58 per cent as having charts and maps, and but 22 per cent as having a globe. The average value of all forms of school property, the city of New Orleans included, is about \$2000 per school. Little beyond the regular common school branches is taught in any of the elementary schools. Graded schools, containing the upper grammar school grades, are to be found in most of the towns, and may be established, where necessary, by the parish boards. Manual training is provided in very few school systems. Elementary schools may also be taught in the French language, where French is spoken. Uniform textbooks for the schools of the state are adopted by the State Textbook Commission on six-year contracts.

**Teachers and Training** — For the training of teachers the state maintains the Louisiana State Normal School, at Natchitoches, and the Parish of Orleans maintains the New Orleans Normal and Training School. The state also provides a State Institute Conductor, who is appointed by the Board of State Institute Managers (Superintendent of Public Education and president of the Normal School), receives a salary of \$2500 and traveling expenses, and has charge of the summer normal schools, one-week institutes, and parish teachers' association meetings. To meet the expenses of these, the state appropriates \$12,500 annually, the Peabody Fund gives \$2000, and all persons taking an examination for a teacher's certificate pay a fee of \$1 each. The summer normal schools are graded, and are held at various points in the state. Ten of the summer normal schools were for white teachers and four for colored teachers. The term varies from three to eight weeks. The conductor also holds one-week institutes and directs the work of the Teachers' Association Meetings in the parishes. The latter involved reading circle work, and the outline of work called for seven meetings in each parish during the year. About one third of the teachers attended the one-week institutes, and about two thirds were members of the Parish Teachers' Associations and Reading Circles. Luther College, a Lutheran College in New Orleans, conducts a normal department for colored teachers of both sexes.

**Secondary Education** — A high school system for the state is yet to be developed. Most

## LOUISIANA STATE UNIVERSITY

of the secondary schools of the state are in part secondary and in part elementary, and few reach the standard of a regular high school. The two Industrial Institutes maintained by the state are in effect technical secondary schools of a good grade. Excepting in the Parish of Orleans, high schools can only be established with the consent of the State Board of Education, and no school can be opened without its sanction, or established unless a site and buildings are provided free of any expense to the school fund.

**Higher and Other Education** — The Louisiana State University and Agricultural and Mechanical College, at Baton Rouge, stands as the nominal head of the state school system of Louisiana. Tulane University, in New Orleans, however, has been recognized by law (1884) and by vote of the people (1888) as the successor, in interest, of the old University of Louisiana, opened in 1834, and receives one student free of tuition from each senatorial and representative district in the state. The state also maintains the Southern University at New Orleans for colored students, appropriating (1909) \$10,750 for its support. In addition to the above institutions, eight denominational colleges, three of which are for the colored race, supplement the secondary and higher instruction provided by the state.

**Special Institutions.** — The state maintains the Louisiana State School for the Blind and the Louisiana State School for the Deaf at Baton Rouge, the Louisiana Industrial Institute at Ruston, the South Western Louisiana Industrial Institute at Lafayette, and the State Biologic Station on the Gulf of Mexico. The two industrial institutes offer good secondary instruction to the whites of both sexes in both the academic and industrial courses. E. P. C.

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**LOUISIANA STATE UNIVERSITY AND AGRICULTURAL AND MECHANICAL COLLEGE, BATON ROUGE, LA.** — A coeducational institution which had its origin in grants of land made by the United States government "for the use of a seminary of learning." In 1853 the Louisiana State Seminary of Learning and Military Academy was

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founded near Alexandria, opened in 1860, and was removed to Baton Rouge in 1869. The Agricultural and Mechanical College was established in 1873 at New Orleans to carry out the purposes of the Land Grant Act of 1862. The two institutions were united and located at Baton Rouge in 1877, and are maintained by the state. The institution is located on the grounds of the old military garrison, overlooking the Mississippi River and covering nearly 210 acres in extent. The university is an essential part of the state school system. It embraces a College of Arts and Sciences, a College of Agriculture, a College of Engineering, the Audubon Sugar School, the law school, the teachers' college, and the graduate department. Four experiment stations are maintained in Baton Rouge, in New Orleans, at Crowley, Acadia Parish, and at Calhoun, Ouachita Parish. Students are admitted to the university by examination, certificate, or diploma. The entrance requirements are fourteen units. A three years' course in agriculture is also provided based on common school branches. The Audubon Sugar School aims to prepare men as experts in sugar growing and manufacture, and gives a five-year course of work in both engineering and agriculture, with practical instruction at the Sugar Experiment Station, Audubon Park, New Orleans. The Law School gives the degree of LL.B. after a three years' course. Master's degrees are also conferred. In 1911-1912 the enrollment of students was as follows: academic schools and colleges, 600, school of agriculture, 86, law school, 53, summer school, 595, total, 1334. The faculty consists of sixty-one members.

## LOUISVILLE, UNIVERSITY OF, LOUISVILLE, KY.

— A coeducational institution, founded by decree of the city council in 1837 and opened with a medical college. A law college was added in 1846, and an academic department and the college of liberal arts in 1907. The entrance requirements are based on the work of a standard high school. Courses are offered leading to the A.B. and B.S. and the corresponding graduate courses leading to the master's degrees. The medical department of the university was reorganized in 1908, and consists of the former medical department, the Kentucky School of Medicine (1850), the Louisville Medical College (1869), the Hospital College of Medicine (1873), and the Medical Department of Kentucky University (1898). The entrance requirements to the medical department are those of the Association of American Medical Colleges. The entrance requirements to the law college are high school graduation.

**LOUVAIN, UNIVERSITY OF** — See BELGIUM, EDUCATION IN

**LOVELL, JAMES E.** (1795-1892) — Apostle of Joseph Lancaster (*q.v.*) and organizer

## LOVETT

of the first monitorial schools in the United States, born at Colne, Lancashire, England, and educated in a boarding school at St. Ives. He was tutor in the family of the Duke of Bedford and teacher in monitorial schools conducted by Joseph Lancaster in London and Woburn. He was induced by Lancaster to come to the United States, where he established Lancasterian schools at Philadelphia, Amherst, and New Haven. He was principal of the Lancasterian School at New Haven from 1830 to 1853. He was the author of several textbooks.

W. S. M.

See LANCASTER, JOSEPH, MONITORIAL SCHOOLS

**LOVETT, WILLIAM** (1800-1877). — The English chartist who took a prominent part in the early movement for cooperation and association among workingmen and later joined the Radical movement for reconciling the reformers of the middle classes with the working classes. It was while he was in Warwick Gaol (1840) that he with John Collins wrote *Chartism, a new Organization of the People, embracing a Plan for the Education and Improvement of the Peoples, politically and socially*, much of which is devoted to a plea for better educational facilities. Suspicious of government control, the authors recommend local management of schools with financial assistance from the central authority. The organization of a National Association of the United Kingdom for promoting the political and social improvement of the people was proposed, which in addition to political aims was to establish "public halls as schools for the people," which were to be used as infant, preparatory, and high schools (taking pupils from three to twelve or thirteen years of age), and as social centers for adults. Playgrounds and school gardens were to be annexed. Circulating libraries, public lectures, discussions, readings, and baths were to be organized in connection with the district hall. The orphans of members were to be educated in agricultural and industrial schools. The end of education was to be the physical, mental, moral, and political training of children. Beginning with the rudiments, the curriculum was to be gradually broadened to include geography, physical and natural phenomena, elements of applied chemistry, design, geology, and mineralogy, "the first principles of the most useful trades and occupations," horticulture and gardening. The objective methods were to be used in teaching all the subjects of the school, especially in the lower grades. "The equal and judicious development of all the faculties, and not the mere culture of the intellect," was to be the aim of instruction. The teachers were to be trained in normal schools, and in time only those who were certificated by the association were to be employed; and to attract men of genius the teachers were to

be well paid and honored in their communities. Many of the suggestions for the general organization of education show a broad grasp of its social importance, and the details of methods display a knowledge of Pestalozzi and Lancaster, and a genuine desire for improvement. In 1837 in *An Address from the Working Men's Association to the Working Classes on the Subject of National Education*, Lovett advocated an educational system to include infant schools (for children from three to six), preparatory schools (six to nine), high schools (nine to twelve), and colleges or finishing schools (for all above thirteen) to be used also as social centers. State training colleges were to be established, and no unqualified teacher was to be appointed. Local schools were to be under the control of school committees, while at the head of the system there was to be a Committee of Public Instruction, selected by Parliament, to have charge only of the financial administration. About 1849, when he retired from political work, Lovett taught anatomy and physiology, which he had studied himself, first in the district school of the association, and later in several other schools. In 1852 he wrote *Social and Political Morality, an Essay regarding the Extension of Education*, in which he develops the above scheme with greater fullness and again insists on local rather than national administration. He wrote an *Elementary Anatomy and Physiology for Schools* (1851). Lovett's *Autobiography* (entitled *Life and Struggles of William Lovett in his Pursuit of Bread, Knowledge, and Freedom*, 1876) forms a valuable source of information on the movement, in which he is recognized to have been one of the ablest leaders.

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**LOWE, ROBERT, VISCOUNT SHERBROOKE** (1811–1892) — British statesman, born at Bingham, and educated at Winchester and Oxford (University College). He graduated in 1833, was fellow of Magdalen College, and for some time private tutor, and was called to the bar in 1842. From 1843 to 1850 he lived in Sydney, Australia, and took a prominent part in the politics of New South Wales. In 1844 he carried a resolution for a select committee to inquire into educational conditions, and in 1846 a resolution in favor of the establishment of a board of education. (See AUSTRALIA, EDUCATION IN.) On his return to England he entered Parliament on the Liberal side, and there attained a prominent position, on several occasions serving in the ministry. In 1868 he was elected the first member of the University of London. He retired from active politics in 1880. Lowe is an important figure in the history of English education, for it was as Vice-President of the Committee of Council on Education (1859–1864) that he introduced

the famous Revised Code (1861) which established the system of payment by results. Lowe had a strong belief in the superiority of examinations over inspection, denied that a science of education was possible, and aimed at an economical and mechanical system of education rather than a thoroughgoing reform. The system of payment by results continued until 1890, and it is due to Lowe that the evil pedagogical traditions from which English elementary education is just emerging were introduced, although from the administrative standpoint something was gained in establishing standards and laying the foundations of a national system. But how sincere Lowe was in his endeavors to promote public education, and how much faith he had in the Revised Code, may be seen in his address on *Primary and Classical Education*, delivered before the Philosophical Institution of Edinburgh (1867), in which the influence of Spencer is very strongly marked, more particularly in his attack on classical studies. The address carries the more conviction since Lowe was himself regarded as a good classical scholar.

See ENGLAND, EDUCATION IN, EXAMINATIONS, PAYMENT BY RESULTS

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**LOWELL, JAMES RUSSELL** (1819–1891) — Poet, critic, and teacher, graduated from Harvard College in 1838 and the Harvard Law School in 1840. He was professor in Harvard University from 1855 to 1880 and Lord-Rector of the University of St. Andrews, Scotland, 1884–1885. He was editor of the *Atlantic Monthly* (1857–1862) and the *North American Review* (1863–1872). W. S. M.

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**LOWELL, JOHN** (1799–1836) — Founder of the Lowell Institute (*qv*), studied in the schools of Edinburgh, Scotland, and Boston and at Harvard College; engaged in mercantile pursuits and traveled extensively. At his death he left one half of his estate (\$250,000) for the organization of free lecture courses in Boston in philosophy, natural history, arts, and science. W. S. M.

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#### LOWELL INSTITUTE, BOSTON, MASS.

— An organization founded upon the bequest of John Lowell, Jr., for "the maintenance and



support of public lectures, to be delivered in Boston, upon philosophy, natural history, the arts and sciences, or any of them, as the trustees shall, from time to time, deem expedient for the promotion of the moral, and intellectual, and physical instruction and education of the citizens of Boston." The amount of the bequest was \$250,000, and as a provision was made that 10 per cent of the income was to be added annually to the principal, the Institute has always had a great amount of wealth at its disposal. By the terms of the bequest one trustee is to be responsible for the general management, and he is to be a member of the Lowell family, so far as possible. The first trustee was John Amory Lowell who was assisted by Dr. Jeffries Wyman as curator with charge of the details of the work. The opening lecture was delivered by Edward Everett on December 31, 1839. The Institute has always been able to command the services of the most eminent scholars in their field, not only in this but in other countries. Among the lecturers the following may be mentioned: in science, Siliman, Agassiz, Tyndall, Wallace, Geikie, G. H. Darwin, on religious subjects, Lyman Abbott, Mark Hopkins, Henry Drummond, in literature, philosophy, art, history, and education, Edward Everett, J. R. Lowell, Child, Norton, Barnard, Channing, Hale, Holmes, Lanciani, Fiske, Bryce, Eliot, Mahaffy, Ferrero. Agassiz, in fact, remained in this country as a result of his successful course at the Institute which led to the foundation of the Lawrence Scientific School. In addition to the general courses, special classes have been held in drawing from 1850 to 1879; and in science for school teachers in connection with the Boston Society for Natural History. Courses have also been given for workmen under the auspices of the Wells Memorial Workmen's Institute. In 1872 the Lowell School of Practical Design was instituted for the promotion of industrial art. Free tuition is given in drawing and weaving in a course of three years. The courses are at present (1912) arranged in the following series: I. Free Public Lectures in Huntington Hall, II. Free Evening School for Industrial Foremen (applied science), III. Teachers' School of Science (in connection with the Boston Society of Natural History), IV. Collegiate Courses, V. Free Lectures in King's Chapel on Current Topics in Theology, VI. Free Lectures on Local Natural History. Series III and IV are part of the University Extension Courses given by a combination of all the colleges in and about Boston. The present trustee is President A. Lawrence Lowell, and the curator is William T. Sedgwick.

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**LOWELL LECTURE COURSE.** — See LECTURE SYSTEMS

**LOYOLA** — See JESUS, SOCIETY OF, EDUCATIONAL WORK OF.

**LOYOLA COLLEGE, BALTIMORE, MD** — See JESUS, SOCIETY OF, EDUCATIONAL WORK OF.

**LOYOLA UNIVERSITY, CHICAGO, ILL** — See JESUS, SOCIETY OF, EDUCATIONAL WORK OF.

**LÜBECK, FREE TOWN OF, EDUCATION IN.** — See GERMANY, EDUCATION IN.

**LÜBEN, AUGUST** (1804-1874) — German schoolman; was born in Golzow, near Kustrin, Pomerania, and educated at the Seminary of Neuzelle. In 1822 he was called as assistant teacher to the seminary of Weissenfels, where he was greatly influenced in his pedagogic development by Barnisch (*q v*). In 1825 he took charge of a village school in the province of Saxony, in connection with which he managed a very successful training class for teachers, in 1829 he became the principal of a larger school in Aschersleben, and in 1849 he was appointed to a still more important position in Merseburg. In 1858 he was called as director of the newly established Teachers' Seminary in Bremen, where he remained until his death. He published a large number of pedagogic writings, and deserves especial credit for his improvement in the teaching of nature study and of the mother tongue. His reader for *Burgerschulen*, published in 1851 in collaboration with Naecke, was very widely used. From 1857 until the time of his death, he edited the *Pädagogischer Jahresbericht* (*Educational Annual*), as well as from 1861 on, the pedagogic magazine *Der praktische Schulmann* (*The Practical Schoolman*). Among his works may be mentioned also his *Anweisung zu einem methodischen Unterricht in der Pflanzenkunde* (*Methods of Teaching Botany*, Halle, 1832), followed by a similar work for zoology and anthropology (1836), and his *Einführung in die deutsche Literatur* (*Introduction into German Literature*), the tenth volume of which was published in three volumes in Leipzig, 1892-1896.  
F. M.

**LUBINUS, EILHARD, or EILERT LUBEN** (1565-1621) — A German scholar and educationist, son of a pastor in the duchy of Oldenburg, who studied at Leipzig and other universities, and in 1595 became Professor of Poetry in the University of Rostock. In 1605 he transferred to the Chair of Theology in the same university, and died in 1621. (See *Allgemeine Deutsche Biog.*, Band XIX, p. 331.) Lubinus published many works, including editions of the *Epistolæ* of Apollonius, the *De Vanitate Mundi* of Bernard, the Greek Anthology, the *Epistolæ* of Hippocrates the works

of Horace and Juvenal, the *Dionysiaca* of Nonnus, Persius, the *Epistole* of Phalaris. He wrote a *Clavis Græcæ Linguae cum Sententiis Græcis Latine explicatis*, an edition of which was published by the London Stationers' Company in 1620. The *Medulla Linguae Græcæ* was published in London as late as 1745.

As an educationist, however, Lubinus is now chiefly remembered for his remarkable epistolary Discourse, prefixed to his edition of the New Testament (1614). This was printed in English by Samuel Hartlib in his small collection of tracts on *The True and Readie Way to learne the Latine Tongue*, 1654. (See HARTLIB, SAMUEL.) It was in this Discourse, that realistic education of the seventeenth century received its earliest, clearest statement; and, as Mr Quick suggested, Comenius probably took from it the idea of an illustrated *Orbis pictus* (Quick, R. H., *Educational Reformers*, p. 166.) Lubinus says that living creatures ought to be painted and shown to children, and only those known to children should at first be given the Latin names. (See also KINNER, CYPRIAN.) All terms or words, he further says, of things which can be seen and painted can be taken from the *Nomenclator* of Hadrianus Junius (*qv*), provided those are first chosen which are already known by the child. Lubinus is thus the father of systematic pictorial illustration as an educational method. F. W.

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**LUCA DE BORGO SAN SEPOLCRO** — See PACIUOLO

**LUCIAN OF ANTIOCH.**—Presbyter and martyr, holds a place in the history of pedagogy, not as formulating pedagogical principles, but as giving the characteristic tendency of what is known as the School of Antioch. The first known teacher of that school was Malchion, who seems to have combined general education with specifically theological instruction, and who confuted Paul of Samosata, Bishop of Antioch, and brought about his deposition. Whether Lucian shared the opinions of Paul at the time cannot be determined. A creed written by Lucian, or attributed to him, shows little resemblance to the teachings of Paul. It is highly probable that he left the communion of the Church about the time Paul was deposed, and remained out of communion under the next successors of that prelate, or from about 275 A. D. to 303. But in spite of his highly equivocal ecclesiastical position, he became head of the local theological school. His great contribution to the work of that institution was insistence upon what are now recognized as the fundamental principles of scientific exegesis, or the literal and grammatical interpretation as opposed to the allegorical method at that

time generally in vogue in the Church. This spirit of scientific exegesis makes the work of the Antiochian exegetes of permanent worth. In speculative theology Lucian's efforts were by no means so fortunate. Arius, Eusebius of Nicomedia, and several other early leaders of Arianism were trained by Lucian. Of the works of this great teacher only fragments remain. His edition of the *Septuagint* was long widely used in the churches of Constantinople, Asia Minor, and Antioch. It does not exist to-day as a whole, and its reconstruction is a task yet unperformed. Of his exegetical work only fragments remain, but his principles are abundantly illustrated in the still valuable commentaries of Chrysostom and Theodore of Mopsuestia. Lucian died as a martyr in Nicomedia, Jan. 7, 312.

The material for the life of Lucian is singularly scanty. About all that is known has been gathered by A. Harnack in his article in the *Realencyclopædie für protestantische Theologie*. Accounts may be found in the various histories of the Christian Church. His literary remains are to be found in Routh, *Reliquiæ sacræ*, Vol. IV. J. C. A., Jr.

**LUDER, PETER** (c. 1415–c. 1474) — German humanist, chiefly worthy of note as the first humanist lecturer in any German university. He had himself studied at the University of Heidelberg. He had spent much time in Italy as a student at Ferrara under Guarino, had made a voyage to Greece, and had studied medicine at Padua. In 1456 he was appointed Professor of Poetry and Rhetoric at Heidelberg, and delivered an inaugural address in praise of the humanistic studies, defending them against charges of immoral tendencies. He met with opposition both of the students and the clergy. He next appeared at Erfurt in 1460, and in 1462 at Leipzig. After a short time at Basel (1464), he is lost sight of in the retinue of Duke Sigismund of Austria.

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**LUDIMAGISTER** (*Ludi-Magister*, master of a school) — The term used in Rome for the teacher of an elementary school (*ludus*), also called *literator*. Only the rudiments of reading, writing, and calculation were taught here. The term appears again in the English schools of the sixteenth century, when *ludimagister* is synonymous with *archididasculus* and Headmaster. In Germany the term *ludirector* is found at the same period.

See ROMAN EDUCATION

**LUNCHES AND LUNCHROOMS IN SCHOOLS** — (See also FOOD AND FEEDING OF SCHOOL CHILDREN for the dietetic aspect of the subject.) The need of school lunches is now

so generally recognized that few large high schools are without them, and the elementary schools are beginning to take up the problem in earnest. When the distance between home and school makes the noon luncheon at home impossible for the child, there is scarcely a justifiable argument against its provision at school. Too little care is given to lunch carried by the children even from the better homes, its daily preparation being universally conceded to be the most irksome of all household duties, and the carrying of it so disagreeable to the child that no lunch at all is preferable. If money is given to buy lunch with unguided choice, it is spent at alluring push-carts for unwholesome, even poisonous, hot meat sandwiches and for ice-cream cones and pickles. It is wise and often necessary to make outside purchase impossible, as has been done in many schools.

**High Schools** — The problem of providing high school lunches has been met in most schools in the following way: the Board of Education provides the rooms and permanent equipment, — chairs, tables, ranges, hot water, gas, etc., — and either awards the concession to some individual or club, thus receiving a suitable per cent on the investment, as Chicago does in her nineteen high schools, or appoints at a salary a woman who takes charge of it as of any other department of the school, and works out intelligently the problem of providing at minimum cost the best of food in hygiene and appetizing variety. This method is followed in St. Louis and Indianapolis. With the first method the profit goes to an individual or club, and carries with it the temptation to sacrifice quality for gain. With the second, the profit that accrues is used for improved equipment and facilities, or allowed to grow as a school fund for whatever use the Board may specify, or is taken periodically as the basis for reduction in prices charged. A combination of the first and last ways has been used in the Manual Training High School of Indianapolis, until in two years the tableware was greatly improved, with an astonishing effect upon the manners of the children at table, and the price of luncheon was reduced almost half. The medium of exchange in use there is an aluminum check of three-cent value. This buys any of six or eight kinds of sandwiches, generous in size and of excellent quality, salad, sauce, or fresh fruit, a large bowl of soup with fresh toast, any hot vegetable, coffee, cocoa, milk, pie, or ice-cream. Two of these checks buy hot roast, dressing and gravy, finer salads with wafers, or an ample bowl of shredded wheat and cream. In St. Louis a five-cent check buys a combination, such as sandwich and milk, salad and wafers, individual baked beans with bread and butter, etc. Nine or ten cents at these places buys a much better luncheon than most children ever bring from home. In the Englewood (Ill.) high school, which is

excellently conducted by a woman's club, the average cost of luncheon to the child is twelve cents. In these schools every article of food is of superior quality, and the cooking and cleanliness are above reproach. The general plan for getting the work done is to employ competent women at good wages in the kitchen, and let students assist in serving, with pay according to time given. Each person eating gets his own dishes and food, paying for the latter as he takes it, and after eating carries his dishes and any paper or refuse to receptacles for these, and the bare tables are washed for the second sitting. Nowhere is the buying of food compulsory. Children may bring all or part of their luncheon and use tables and dishes without charge; but in order to make it successful it is well to have some restriction upon outside buying by avoiding the open noon hour and making the lunchroom attractive and the quality of food irresistible. The frequent requests for pickles, bakers' pastries, etc., soon die out, and the absence of headaches and afternoon languor is acknowledged.

**Elementary Schools** — The problem of school lunches is only beginning to be solved in elementary schools, where the longer recess and shorter distance tend to make it less serious. During the present year (1911) the Board of Education of Chicago has begun an experiment to provide suitable noonday lunches for children whose mothers are away from home during the day. The plan is being tried in three centers. For one cent the child is provided with (1) a sandwich of bread and jam or bread and syrup, and a glass of milk, or (2) a bowl of bean or pea soup with bread. A woman is employed to prepare and serve this, and whatever cost exceeds the sum brought by the children is borne by the Board of Education. One school in the poorer districts of Indianapolis has successfully furnished a bowl of soup and toast at one cent. A woman living near does the cooking, friends give dishes, and the children do the serving under direction of teachers. It makes a social hour, and improvement is noticeable in the manners, the physical appearance of the children, and in their ability to do the afternoon work. E. K. C.

**LUND, UNIVERSITY OF.** — See SWEDEN, EDUCATION IN

**LUPSET, THOMAS** (c. 1498–1530) — Scholar and protégé of Dean Colet (*qv*), who placed him in St. Paul's School and later maintained him at Pembroke Hall, Cambridge. In 1515 Lupset went to Italy and on his return graduated B.A. at Paris. Settling at Oxford in 1521, he lectured on Cardinal Wolsey's foundation on the humanities and Greek. From 1526 onwards he held several rectories. Lupset belonged to the circle which included Colet, More, Erasmus, and Linacre. He prepared and corrected work for the press of

Erasmus, Linacre (*Galen*), and More (*Utopia*, 2d ed.) In a letter to Colet (1512) Erasmus says of him, "Thomas Lupset, your true pupil, is both useful and agreeable to me by his daily companionship, and the assistance he lends me in these corrections"

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**LUTHER COLLEGE, DECORAH, IA —**

Opened in 1861 near La Crosse, Wis., and moved to its present location in 1862. It is under the control of the Norwegian Lutheran Synod. A four-year preparatory department is maintained in addition to the college. Candidates are admitted on completion of a four-year preparatory course. The degree of A B is conferred. The faculty consists of sixteen members.

**LUTHER, MARTIN (1483-1546) —**

The great German Protestant reformer and advocate of the development of an organization of schools and the reformation of school subjects and school work. He was born at Eisleben, and brought up at Mansfeld in Saxony. In 1497 he went to school at Magdeburg, and then to Eisenach. He went to the University of Erfurt in 1501. In 1505 he entered the Augustinian Monastery at Erfurt. In 1508 Luther was called to become a professor in the newly established University of Wittenberg, where his duties were to lecture on the *Dialectics* and *Physics* of Aristotle. In 1509 he became a Bachelor of Theology, and thus was entitled to lecture on the text of the Holy Scriptures; and in the same year he was invited to Erfurt to lecture to higher students in theology. In 1511 Luther went to Rome on a mission connected with Erfurt, and the experiences derived from this journey were highly educative. In 1512 he became sub-prior of the monastery at Wittenberg, and in the same year he took the degree of Doctor of Theology in the University of Wittenberg, and became professor of theology — then devoting his whole mind to scriptural studies — first to the Psalms, then to the Epistle to the Romans, learning Greek for that purpose. He read much of Augustine, and of the recent writers, especially Tauler. In 1517 he issued his Ninety-Five Theses with regard to Indulgences. These were placed on the door of the Castle Church at Wittenberg, this act being regarded as the starting-point of the Reformation. In 1520 a Bull was issued against Luther, and in 1521, at the Diet of Worms, he was called upon to recant. He refused to do anything against conscience. Called upon, accordingly, to help to build anew the Church, Luther set upon the work of translating the whole of the Scriptures into German. The New Testament was published in 1522, the canonical books of the Old

Testament were finished in 1532, and the Apocrypha in 1534, in which year the translation of the whole Bible into the vernacular first appeared.

Revolutions in Church doctrine and government have usually been accompanied by changes in educational systems. Luther saw the necessity of a reformation of schools, as soon as he became conscious of the need for a reformation of the Church, since the religious instruction of the child in the family and in the school was the very basis for the continuity of the new faith. After his translation of the New Testament, he prepared his *Larger* and *Smaller Catechisms*, which were issued in 1529 (See CATECHISM). He was made miserable by the fact that "the common people know nothing at all of Christian doctrines, and many pastors are well-nigh unskilled and incapable of teaching." In his preface to the *Larger Catechism* he insists that it is the duty of the father of each household at least once a week to question his children and servants in this Catechism. Luther thus is the pioneer of Protestant household instruction in religious subjects. Luther's Hymns, in the collection known as *Geistliches Gesangbuch* (1525), containing thirty-two hymns, of which twenty-four were by Luther, was composed for the use of schoolboys as choristers. His hymn beginning *Ein feste Burg ist unser Gott* is a Christian classic for both children and adults. Luther is of profound significance in his insistence on the educational and religious possibilities of family life, and the idea of the good housewife and good men of the house, and good house government with Protestant religious training has sunk into the German consciousness as one of the great traditions of Lutheran influence.

Luther's principal works bearing directly on schools and education are the *Letter to the Mayors and Aldermen of all the Cities in Behalf of Christian Schools* (1524), and the *Sermon on the Duty of Sending Children to School* (1530). He advocates the necessity of schools for religion and for supplying preachers, jurists, scribes, physicians, schoolmasters, as well as rulers. But he would have all children, boys and girls, go to school for an hour or two a day, and still leave them time to learn to do business work and housework as well. So necessary is schooling that Luther advocated compulsion. "For if magistrates may compel their sturdy subjects to handle musket and pike in war, how much more should they compel subjects to keep their children at school. For there is a worse war to be waged with the devil, who is busied secretly thus to impoverish towns and principality through the absence of education." Therefore magistrates should be warned to keep all suitable boys at school. "To give money for this purpose is, rightly speaking, to give money to churches. This is not releasing souls from purgatory, it is preventing souls from going anywhere but to

heaven " But Luther does not only base his arguments for the need of schools on religious grounds, for he says, "Were there neither soul, nor heaven, nor hell, it would be still necessary to have schools for the sake of affairs here below," and again, "The highest welfare, safety and power of a city consists in able, learned, wise, upright, cultivated citizens, who can secure, preserve and utilize every treasure and advantage " Education, accordingly, was conceived by him as an essential preparation for the ordinary duties of life in the home, vocation, civic life, and the church It is not surprising, then, to find how highly Luther appreciates the services of the teacher In one of his sermons he says: "A diligent devoted school-teacher, who faith fully trains and teaches boys can never receive an adequate reward, and no money is sufficient to pay the debt you owe him " He says elsewhere, "If I were not a preacher, there is no other calling on earth I would have rather than that of schoolmaster We must not consider how the world esteems it and rewards it, but how God looks upon it " Luther recognizes the disciplinary value of teaching on the schoolmaster himself, and says he would wish to see all preachers go through the experience of schoolmastering before taking up that office "When one has taught about ten years, then he can give up teaching with a good conscience "

Luther advocates the learning of the classical languages God has not caused the Scriptures to be written in Hebrew and Greek in vain Where these languages flourish, the power of the prince of darkness will be destroyed, and the glosses of scholastics become useless Languages are best learned by practice We learn the vernacular from oral speech at home, in the market, and in the pulpit better than through books Grammatical knowledge is important, but the knowledge of subject matter is essential, and particularly in the teacher Mathematics should be taught at the university stage. Luther combated astrology, pointing out that Esau and Jacob were born under the same constellation, and yet were so dissimilar in disposition History is an important study, teaching us through examples and illustrations What philosophy, founded on reason, discloses as helpful to noble living, history shows forth in living example Out of stories and histories, nearly all laws, arts, and examples of wisdom, comfort, fear, strength, courage, instruction arise Luther urges the study of dialectic, as showing order and reason, and the grounds of forming judgments Rhetoric should be studied, so that we may be effective in putting points to others Dialectic, he says, is proper to the reason; rhetoric as an influence on the will Music is a beautiful, noble gift of God, near in its educative position to theology "Unless a schoolmaster sings," says Luther, "I think little of him " It has been claimed for Luther that he supported

nature study For he argued that "now we look forward to attain the knowledge again of the created world, which was lost by Adam's Fall Now we regard more rightly the creatures of God than we did in the old religion " As to physical exercises, Luther says "These two exercises and pastimes please me best of all, viz music and the tournament with fencing, wrestling, etc The former drives away anxiety from the heart and gloomy thoughts The latter renders the limbs of the body elegant, fit, and well-proportioned, and keeps it in health and elasticity, etc "

Luther thus touches on many points of educational theory and practice All his education is subordinate to the religious *motif*, yet it includes the greatest questions, religious teaching, family education, the vernacular As the translator of the Scriptures into German, the writer of the German Catechism, the writer of German hymns, and, in pursuance of these aims, the teacher and trainer of his own children, Luther stands out as the Prophet of German popular education, and the inspirer of princes and magistrates in the erection of popular schools His sympathetic attraction to teaching is shown by his words "Let no man think himself so intelligent that he can despise children's play When Christ wished to teach man, He had to become a man If we are to train children, then we must become children with them " F. W.

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**LUTHERAN CHURCH AND EDUCATION IN THE UNITED STATES**—Certain ecclesiastical bodies, because of their attitude toward public education and their belief in parochial systems of schools, deserve special notice.

## LUTHERAN CHURCH

Among the Protestant denominations, the Lutheran is the most conspicuous of these.

**Historical Development** — When the Germans began to settle in America in larger numbers during the eighteenth century, they at once provided for the schooling of their children. Every German sect had its parochial schools. Wherever a community erected a house of worship, it immediately also established a school. The ministers were frequently the school teachers. Some schools had professional teachers, who had come over from Europe, and some of these were men of a superior education, who soon became the leading spirits of their colonies, as John Ulmer in Maine, who led the German soldiers in the siege of Louisburg. The Palatine schoolmaster, John Thomas Schley, who was the mainstay of school, church, and community in Frederick, Md., Holzklo in Virginia, Arndt in North Carolina, and above all Franz Daniel Pastorius, the scholar and leader of Germantown, were other eminent pioneer teachers. The Swedish Lutheran congregation at Christina in 1699 had a school and a teacher. In the instructions given in 1749 to M. Acrelius, as "Propst" of the Swedish Lutheran Church in America, he was enjoined. As soon after his arrival in America as he might familiarize himself with conditions there, he should endeavor to institute a school for children in each congregation.

The activities of the Lutheran and of other German religious bodies is summarized in the historical sections of the article on Pennsylvania (See also GERMAN INFLUENCE ON AMERICAN EDUCATION). The Lutheran was the most important of these German sects. Their activity has been continuous. H. M. Muehlenberg and Schlatter, Kunze, Helmuth, and Schmidt, who had once been students of Francke at Halle, did much to improve the cause of parochial schools. At the first meeting of the Ministerium of Pennsylvania (1748), Brunnholtz made a full report on "The Condition of the Schools." In 1750 flourishing schools are reported in all the congregations except one. In 1796 the steps taken by the Assembly toward the introduction of "free schools" aroused the fears of the Ministerium that its parochial schools might suffer injury thereby, and a committee was appointed to address a petition to the Assembly on the subject. In 1804, 26 congregations report 89 schools, in 1813, 164 schools are reported by 52 pastors, in 1820, 206 parochial schools in 84 congregations. The American public school system in course of time gradually absorbed the parochial schools of the older German churches in the East. Still, up to the third quarter of the century, many excellent parochial schools are found in the Ministerium of Pennsylvania and New York. The mother congregation, St. Michael's and Zion's, in Philadelphia, was particularly active in this field. In 1744 John F. Vigier, an excel-

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lent teacher, is mentioned as its schoolmaster. In 1761 the schoolhouse on Cherry Street was opened. In 1800 the congregation had four schools, with 250 children. In 1870 the congregation had about 1000 children in its parochial schools in different parts of the city. Among the schoolmasters were Schmauk, Haas, Lang, Schnabel. In the New York Ministerium the number of parochial schools is considerably larger in proportion than in Pennsylvania. The serious difficulty with which the parochial school system had to contend in these two oldest synods is the lack of a teachers' seminary. In 1871 a society was organized in New York for the founding of such an institution, but the plan finally failed from lack of proper support.

**Development of Present System** — The Lutheran parochial school system reached its greatest development in America in the North Central states within the congregations affiliated with the Lutheran synods of Missouri, Wisconsin, Ohio, and Iowa. A twofold purpose actuated the members of this church in founding and maintaining parochial schools: first, the desire to bring up their children in the faith of their church, and second, the wish to maintain and transmit their mother tongue and German culture. Schools were therefore organized, if possible, in every congregation or parish, and it was considered a function incumbent on the pastor to lead in the establishment of schools within his parish, and not only to superintend, but also, circumstances not allowing the appointment of a professional teacher, to impart instruction himself.

The individual congregation owns its parochial school and controls it through a school board elected by the congregation, of which the pastor as a rule is an *ex officio* member. The teachers are usually called by the congregations without a time limit and with a fixed salary. They also serve as organists and musical directors of the congregation. The financial expenses of the school are covered by fixed and graded tuition out of the congregation treasury or by voluntary contribution. The school year comprises from thirty-five to forty-eight weeks, with holidays and summer vacations. In schools where several teachers are employed, the curriculum follows as far as possible that of the public schools, the aim being to equal the course of the seventh grade in the public schools. Male teachers are employed almost exclusively. In some schools the primary department is in charge of a lady teacher. Some congregations maintain a parochial school during the summer months or only on Saturdays, instruction being given as a rule only in religion and German, the children attending the public schools during the remainder of the school year. Courses of study for the different grades have been published, comprising instruction in religion, English, German, arithmetic, history, geography, singing, drawing. The teachers of each synodical

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district hold regular monthly or quarterly conferences or institutes, and also a yearly general teachers' meeting

Since 1866 the Missouri synod publishes the *Lutherische Schulblatt*, a monthly, edited by the faculty of the Addison Teachers' Seminary and published at St. Louis, Mo. In 1876 the Wisconsin synod began to publish the *Lutherische Schulzeitung*, edited by Dr. F. W. A. Notz, Watertown, Wis., till 1894, and by the faculty of the Martin Luther College, New Ulm, Minn., till 1905.

In order to supply well educated and trained teachers who should be in close touch with the interests of the Lutheran Church, Lutheran normal schools were established. Pioneer work along this line was done by the Missouri synod. As the number of parochial schools and interest in good schools grew, several Lutheran synods established and maintained normal schools, either independent of or in connection with other educational institutions. These "teachers' seminaries" combine certain features of the German type of *Lehrerseminar* with the educational system obtaining in our American normal schools. The full course in the preparatory and in the seminary departments embraces five or six years.

In 1890 the parochial school question became a leading political issue in Wisconsin and in Illinois. The legislature of Wisconsin at the session in 1889 enacted the so-called "Bennett Law" (so named from the member who introduced the bill), ch. 519 of the Laws of Wisconsin, which had been passed without the knowledge of those most interested against it. The chief provisions were: Compulsory attendance of the child for a period not less than twelve nor more than twenty-four weeks in each year, to be fixed annually, in advance of Sept. 1, by the school board in each district or city, that such attendance should be consecutive during such portion of the compulsory period as the board should determine, while excuse for non-attendance was required to be made out to the satisfaction of that board as the sole and final judge, and concluded these provisions with the following section: "No school shall be regarded as a school under this act, unless there shall be taught therein as part of the elementary education of children, reading, writing, arithmetic, and United States history in the English language." Here the statute confessedly denounced as no school within its purview any private school which did not conform to these requirements. This legislation asserted as fundamental doctrine, first, the right of a public authority to prescribe the course and subjects of instruction in schools maintained as purely private establishments, without public cost, by parents who seek to educate their children after the dictates of conscience, and, secondly, the right of the State to intervene between any parent and child, and, *in loco parentum*, to assume and

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control the education of all children. A bitter political controversy arose. The Lutherans, who had 380 parochial schools with 20,000 pupils in Wisconsin, and the Roman Catholics, with equally large interests involved, vigorously protested against this law as interfering with parental relation, personal liberty, and matters of conscience. In the election of 1892 the party that had passed the law was overwhelmingly defeated and the law was repealed. A compulsory attendance law was then brought forth, which has since given general satisfaction (*Lutherische Schulzeitung*, Vol. XII ff., and *The Forum*, Vol. XII, No. 2; W. F. Vilas, *The Bennett Law in Wisconsin*).

At the World's Fair at St. Louis 460 male and 37 female teachers of the Missouri synod made an exhibit of the work of their parochial school pupils in English language, United States history, geography, arithmetic, religion, German language, physiology, zoology, botany, general history, penmanship in English and German, drawing. The exhibit was awarded a gold medal. The members of the jury for elementary school work stated that the written work in this synodical exhibit was unsurpassed. As worthy of special merit the German language work was mentioned, and the manner in which the two parallel languages, English and German, were successfully taught and the difficulties overcome. The growth and development of the parochial schools within the Missouri synod was as follows:—

YEAR	SCHOOLS	PASTORS	INSTRUCTORS	
			Teachers	Pupils
1848	14	9	5	508
1858	113	62	51	4,974
1868	367	171	196	22,687
1872	475	224	251	25,300

Lutheran pastors who went to Ohio in 1805 and in the following years began at once to organize parochial schools. In 1815 there were twenty-one parish schools in that state, in 1817, forty-eight, in 1819, fifty-seven.

**Present Status** — In the year 1910 the parochial school work of the Evangelical Lutheran Church in America comprised 4862 parish schools, 3492 teachers, 244,198 pupils, which were distributed among the following synods: synodical conference 2655 parish schools, 1386 teachers, 132,927 pupils, general council 594 parish schools, 748 teachers, 26,588 pupils, general synod 36 parish schools, 3 teachers, 1100 pupils, independent synods 1577 parish schools, 1355 teachers, 85,583 pupils.

There are several normal schools maintained by Lutheran synods in the United States. In 1854 the Missouri synod founded a teachers' seminary in Milwaukee, Wis., which was transferred to Addison, Ill., in 1864. During

## LUTHERAN CHURCH

the past twenty years, 719 teachers have been educated there. Following are the Lutheran normal schools in America: Teachers' Seminary, Addison, Ill., 11 instructors, 175 students, 6 classes; Teachers' Seminary, Seward, Neb., 8 instructors, 117 students; Martin Luther College, New Ulm, Minn., 8 professors, 118 students; Lutheran Normal School, Sioux Falls, S. D., 8 instructors, 147 students; Lutheran Normal School, Madison, Minn., 182 students, 6 teachers; Teachers' Seminary, Woodville, Ohio, 71 students, 5 teachers; Wartburg Teachers' Seminary, Waverly, Ia., 84 students, 5 teachers.

**Higher Education** — No other church, in proportion to its membership and resources, has established so many colleges and seminaries in the United States as the Lutheran Church. The Lutheran educational institutions number 126, having property valued at \$9,667,800, endowments amounting to \$3,104,200, with 505,110 volumes in their libraries, employing 1049 professors, having 16,731 students.

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*Theological Seminaries*, 26, with property valued at \$2,196,300, endowments amounting to \$1,100,100, having 163,420 volumes in their libraries, employing 92 professors, and having 1144 students.

*Academies*, 53, value of property, \$1,907,000; amounts of endowment, \$96,500, volumes in libraries, 59,610, professors, 382, students, 6730.

*Ladies' Colleges and Seminaries*, 8, value of property, \$760,000, amount of endowment, \$1000; volumes in libraries, 4850, professors, 104, students, 927.

*Colleges*, 39, with property valued at \$4,804,500, amount of endowments, \$1,906,000; volumes in libraries, 277,230, employing 471 professors and having 4950 students in college departments and 2980 students in other departments. The majority of the colleges are open to both sexes. But there are a few institutions devoted exclusively to the higher education of women. The two oldest Lutheran Colleges in America are Pennsylvania College, Gettysburg, Pa., founded in 1832, and Concordia College, Ft. Wayne, Ind., founded in 1839. W. N.

### LUTHERAN COLLEGES, 1910-1911

(Colleges marked with an asterisk give courses based on twelve to fifteen units of entrance requirements and leading to degrees)

* Augustana	(co)	1860	Rock Island, Ill.	Rev. G. A. Andrews, Ph.D.	25	557
* Gustavus Adolphus	(co)	1862	St. Peter, Minn.	Rev. J. P. Uhler, Ph.D.	20	373
* Muhlenberg		1867	Allentown, Pa.	Rev. J. A. Haas, D.D.	15	132
* Thiel	(co)	1870	Greenville, Pa.	Rev. C. Theodore Benze	11	112
* Bethany	(co)	1881	Lindsborg, Kan.	Rev. E. F. Philblad, D.D.	46	886
Wagner Memorial		1883	Rochester, N. Y.	Rev. H. D. Kraching	5	42
Luther	(co)	1883	Wahoo, Neb.	Rev. O. J. Johnson, B.D.	15	290
* Upsala	(co)	1893	Kenilworth, N. J.	Prof. A. R. Wallin, A.M.	14	163
Weidner Institute	(co)	1900	Mulberry Ind.	Rev. A. H. Arbaugh, A.B.	7	30
Augsburg		1869	Minneapolis, Minn.	Vacant	8	151
Augustana	(co)	1860	Canton, S. D.	Rev. Anthony G. Tuve	11	250
Capital University		1850	Columbus, O.	Rev. J. H. Schuh, Ph.D.	11	118
* Carthage	(co)	1870	Carthage, Ill.	Rev. H. D. Hoover, Ph.D.	15	163
California Concordia		1906	East Oakland, Cal.	Prof. Th. Brohm	2	18
Concordia		1839	Fort Wayne, Ind.	Rev. M. Luecke	11	230
Concordia		1881	Milwaukee, Wis.	Rev. M. J. F. Albrecht	8	194
Concordia	(co)	1881	Conover, N. C.	Rev. Geo. A. Romoser	4	52
Concordia		1881	Bronxville, N. Y.	Rev. H. Feth	7	101
Concordia	(co)	1891	Moorehead, Minn.	Rev. H. O. Shurson	25	470
Concordia		1893	St. Paul, Minn.	Rev. Theo. Buenger	9	156
Concordia	(co)	1904	New Orleans, La.	Rev. Chas. Niermann	4	28
Concordia		1905	Portland, Ore.	Prof. F. W. J. Sylvester	2	15
Dana		1886	Blair, Neb.	Rev. C. X. Hansen	5	158
Immanuel Lutheran		1903	Greensboro, N. C.	Rev. F. Berg	7	200
Lenoir	(co)	1891	Hickory, N. C.	Rev. R. L. Fritz, A.M.	15	225
Luther	(co)	1903	New Orleans, La.	Prof. R. A. Wilde	2	27
Lutheran		1861	Decorah, Ia.	Rev. C. K. Preus	13	200
Luther Proseminary			St. Paul, Minn.	Rev. H. Ernst, D.D.	5	70
Midland	(co)	1887	Atchison, Kan.	Rev. M. F. Troxell, D.D.	12	172
Newberry		1856	Newberry, S. C.	Rev. J. H. Harms	15	242
Northwestern Univ.	(co)	1864	Watertown, Wis.	Prof. A. F. Ernst	12	275
* Park Region Luther	(co)	1892	Fergus Falls, Minn.	Rev. D. G. Ristad	13	200
* Pennsylvania	(co)	1832	Gettysburg, Pa.	Prof. W. A. Granville, Ph.D.	19	304
Red Wing Seminary		1879	Red Wing, Minn.	Rev. Edw. W. Schmidt	9	152
* Roanoke		1852	Salem, Va.	Rev. J. A. Moorehead, D.D.	14	206
St. John's Luth.	(co)	1893	Winfield, Kan.	Rev. A. W. Meyer	9	93
* St. Olaf	(co)	1874	Northfield, Minn.	Rev. John N. Kildahl	30	496
St. Paul's		1884	Concordia, Mo.	Rev. J. H. C. Kappel	8	142
Suomi	(co)	1896	Hancock, Mich.	Rev. J. K. Nikander	10	100
* Susquehanna Univ.	(co)	1858	Selinsgrove, Pa.	Rev. Chas. R. Aikens, D.D.	22	258
Wartburg		1868	Clinton, Iowa	Rev. J. Fritschel	7	84
* Wittenberg	(co)	1845	Springfield, O.	Rev. Chas. G. Heckert, D.D.	16	703



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**LUXEMBURG, EDUCATION IN**—The Grand Duchy of Luxemburg comprises an area of about 1000 square miles on the east side of the Rhine, and a population of 246,500 (1905). The religion of the state is Roman Catholic, but liberty of conscience is respected, and the few dissentients, about 2269 Protestants, 1200 Jews, and 240 members of other sects, are protected in all rights and privileges. In the eleventh century a county or earldom within the German Empire, Luxemburg was constituted a grand duchy in 1354, and during the five centuries following, the sovereignty over the state was determined by the course of empire in central and western Europe. In the latter part of the fifteenth century Luxemburg was a possession of the House of Austria, after the death of Charles V the country was ceded to Spain, it came again under Austrian dominion at the beginning of the eighteenth century, and during the wars of the Revolution was annexed to France. The congress of Vienna assigned the grand duchy to the King of the Netherlands, a relation broken up by the revolt of 1830, but restored in 1839, finally by the treaty of London, 1867, the grand duchy was declared neutral territory, and at the death of the King of the Netherlands in 1890, by reason of the *Salic* law its control passed to Adolph, Duke of Nassau.

The educational history of the country prior to 1839 is identified with that of the states with which it has been successively united.

By the constitution of the grand duchy (bearing date Oct. 17, 1868), public education is placed under the general supervision of the government, and is regulated by legislative acts and by official decrees emanating from the Grand Duke. Primary education forms a department in the Ministry of the Interior under the charge of a Director-General, who is assisted by a Council of Public Instruction and a permanent committee formed from the members of the council.

The system of primary education is based upon the law of July 26, 1843. Subsequent modifying laws are the laws of July 20, 1869, July 6, 1876, Jan. 2, 1879, providing better conditions for teachers, the law of Apr. 23, 1878, pertaining to the establishment of higher primary schools, and laws of Apr. 20, 1881, and of July 6, 1898, applicable to the entire system.

Every commune (city or rural) is required to establish one or more schools according to the population, and provide the suitable sites and buildings. From the first the State has borne part of the current expenses of the schools, and by ducal order of May 23, 1907,

the minimum amount of this aid is placed at 40 per cent of the salary assured to a teacher by the commune. The law of 1881 made primary instruction obligatory for all children from the ages of six to twelve years. Under certain conditions exemption may be claimed for a child at ten years of age, and communes may also extend the compulsory period to thirteen years of age. The primary schools are not free, the local expense for their maintenance being borne by the communal treasury and tuition fees in fixed proportion; the fees are, however, remitted in case of need and the amount met by increase in the communal appropriation.

The course of study for primary schools prescribed by law includes religion and morals, German language and French language, arithmetic, with the system of weights and measures, elements of geography and of natural history, singing, and for girls, needlework. This program may be extended to include elementary sciences, physical and natural, linear drawing, bookkeeping, and gymnastics.

The law of 1843 required that the religious instruction in the schools should be given by the clergy of the respective denominations, but subsequent laws provide that the subject may be taught by the regular teachers with the consent of the local authorities and under the direction of the clergy.

The Director-General of primary education is appointed by the Grand Duke, as are all the chief officials of the service. The advisory council consists of the bishop, three appointed members, the inspectors of primary schools, and the director of the normal school. The government inspectors for this service are a principal inspector and one inspector for each of the six divisions (*arrondissements*) of the duchy. The salary of the principal inspectors ranges from 5360 to 5650 frs. (\$1072 to \$1130), that of the subordinate inspectors from 3526 to 3825 frs. (\$705 to \$765). The local supervision of schools is intrusted to committees consisting in each case of the *bourgmestre* (mayor), the curé, and one or more members of the civil council (elective) according to the population.

Teachers are appointed by the communal authorities, acting in concert with the inspector and with the approval of the Director-General. Candidates for appointment must have a teacher's certificate (*brevet de capacité*) from the Council of Public Instruction, and testimonials of character from the local authorities. The certificate of the lowest order entitles the holder to temporary appointment, permanent appointment can only be obtained after five years' experience and special examination. The teaching force is classified in four grades with salaries for lay teachers ranging by regular increments from 1200 to 2100 frs. (\$240 to \$420) for men, from 1000 to 1500 frs. (\$200 to \$300) for women. Lay teachers may also have the right to a residence or a money equivalent,

## LUXEMBURG

at least 250 frs annually. After five years' service male teachers receive an additional sum of 100 frs from the State, which rises by periodical increases to a maximum of 800 frs after thirty years' service. The salaries of women teachers are supplemented in the same way by increments ranging from 75 frs to 600 frs.

Communes are authorized to establish higher primary schools to which pupils may be admitted at twelve years of age for a course of two or three years' duration. The teachers of the higher primary schools must be graduates of a secondary school, *i e* gymnasium or the higher industrial and commercial school. Communes may also maintain infant schools (school gardens) for children under school age and continuation schools (held in the evening or on Sunday) for adults.

The department of primary education includes the state normal school, which was established in 1817. It is organized in two separate sections, one for young men, the other for young women; the former are day students only. The government offers thirty scholarships for young men and fifteen for young women, which cover the expense in this institution. The number of primary schools is adequate for the needs of the population, and practically all children in the grand duchy receive elementary instruction. The latest statistics pertaining to this department are as follows —

STATISTICS OF PUBLIC PRIMARY SCHOOLS,  
1908

SCHOOLS	NUMBER OF SCHOOLS	PUPILS			TEACHERS			
		Total	Male	Female	Total	Male	Female	
							Lay	Non
Higher primary schools	22	827	498	329	—	11	8	
Ordinary primary schools	862	33,885	17,338	16,547	865	459	222	184
Infant schools	32	1,661	—	—	32	—	11	21
Schools for adults	800 <sup>1</sup>	10,709	4,998	5,711				

According to the latest official statistics (1908), the annual expenditure for primary education amounted to 1,771,824 francs (\$354,364 80). Of this total 1,548,318 francs (\$309,663 60), or 87½ per cent, was for the ordinary primary schools.

In addition to the schools above considered,

<sup>1</sup> Of this total 440 were for men, 380 for women. They are evening and Sabbath day classes, lasting about five months in the year, in the case of the classes for women the courses pertain very generally to the domestic arts, in those for men, drawing is almost always a pronounced feature.

## LUXEMBURG

the State maintains an institute for deaf-mutes, an institute for the blind at Berbourg, and one for the feeble-minded at Betzdorf.

**Higher Education.** — The institutions for higher education in Luxembourg date from a law of July 23, 1848, but have been modified by subsequent laws. The most important of these institutions is the Athenicum of Luxembourg, comprising a gymnasium (classical school) and a school of commerce and industry. The latter, which was originally a section of the gymnasium, was separately organized by a law of Mar 28, 1892. There are also gymnasia at Diekirch and Echternach, which were formerly of inferior grade (progymnasia), but received complete organization by law of 1900, which provided also for the addition of industrial sections.

The gymnasia are classical schools following German models, a law of 1908 provided for dual courses of instruction after the second year, allowing choice between the classical course and a modern course comprising living languages and science. Pupils are admitted to the lowest class of the gymnasium proper or to the industrial sections at twelve years of age. The course of instruction occupies six years.

For technical education there is a school of commerce and industry at Esch-sur-l'Alzette, dating from a law of June 16, 1901, and a school for artisans authorized by a law of Mar 14, 1896, also a school of agriculture with an experiment station at Ettelbruck, created by law of Feb 28, 1883.

The charge for tuition in the gymnasia ranges from forty francs to sixty francs per annum. In the school for artisans fees are limited to forty francs a year, and are often remitted.

The state appropriations for these higher institutions are administered by the director-general of finances, and their internal affairs by special committees, appointed, as are the directors and professors, by the Grand Duke.

The Luxembourg Athenicum in 1908 registered 493 students in the gymnasium and 406 in the industrial school, the gymnasium of Diekirch the same year had 159 students in the classical, and 50 in the modern section.

The course of instruction in the gymnasium prepares for the examination leading to the diploma for professors of secondary education, and also for matriculation in the universities of neighboring countries, Luxembourg having no university. In 1910–1911 there were fifty-nine students from the grand duchy registered in French universities, and sixty-one in those of Germany. The fine arts are fostered by the reigning family, and the Conservatory of Music at Luxembourg is celebrated.

A. T. S.

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Mary Lyon (1797-1849)  
See page 101



Bertha von Marenholtz-Bulow (1810-1893).  
See page 131.



Alice Freeman Palmer (1855-1902)  
See page 596



Hannah More (1745-1833)  
See page 317

*Rapport général sur la Situation de l'Instruction primaire dans le Grand Duché de Luxembourg pendant l'Année scolaire, 1907-1908, 1908-1909*

**LYCEE** — See FRANCE, EDUCATION IN, LYCEUM, GYMNASIUM

**LYCEUM MOVEMENT IN THE UNITED STATES** — Josiah Holbrook (*qv*), who started the lyceum movement at Millbury, Mass., in 1826, stated its purposes as follows: (1) The improvement of the common schools, (2) the formation of lecture courses and the establishment of classes for the education of adults, and (3) the organization of libraries and museums. The first purpose became the chief feature of the American Lyceum Association (*qv*). The chief outcome of the lyceum movement *per se* was the organization of lecture courses in many cities and towns and the establishment of libraries. By 1831 there were 900 towns in the United States with local lyceum organizations. Between 1825 and 1850 most of the public lectures in the country were under such local organizations, and this feature of the lyceum movement continued prominent down to 1880. Wendell Phillips, one of the early lyceum lecturers, is said to have given his lecture on "The Lost Arts" two thousand times before lyceum audiences. Lowell Institute (*qv*) in Boston and the Brooklyn Institute (*qv*), both of which grew out of the lyceum movement, are still in existence.

Many town libraries were also formed by local lyceum associations. The Mercantile Library Association of Boston, composed of merchants and clerks in a local lyceum association, as well as the libraries of the mechanics institutes in many American cities, and the societies for the diffusion of useful knowledge interested in lecture courses and the establishment of libraries and museums, were organized and directed by the men connected with the American Lyceum Association. In recent times this movement has been replaced by the Chautauqua movement and the University Extension (*qqv*). In some respects public lecturing has become more closely allied with public amusement than with education. At present in the United States there are about 12,000 towns and cities organized as lyceum centers. More than 40 lyceum bureaus furnish specialists who devote all or part of their time to this purpose, more than 750 of whom are organized with the International Lyceum Association. W. S. M.

**LYCURGUS** — The Spartan lawgiver to whom is attributed the rigorous Spartan constitution. He is reputed to have lived in the ninth century B.C. It is, however, generally accepted now that the Spartan code was the result of laws and customs which had accumulated during centuries, and that Lycurgus was a mythical personage. It is clear that the constitution was not attributed to him until

the end of the fifth century. Nor does the Spartan poet, Tyrtæus, make mention of him. It seems probable that Lycurgus was a local hero or deity worshiped as the protector against wolves (*Lyko-vorgos*, wolf-repeller), and that the code was attributed to him on the analogy of the lawgivers of later times.

See GREECE, ANCIENT

**Reference:** —

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**LYON, MARY** (1797-1849) — Founder of Mount Holyoke College and a pioneer in the cause of the higher education of women in the United States. Born at Buckland, Mass., she was largely self-educated, as there were few opportunities in her girlhood for the secondary and higher education of women. This lack, together with a keen sense of the need, influenced her life and started her upon a career of educational reform that has given her rank among the greatest women America has produced. She attended the district schools in rural Massachusetts, and by the age of seventeen she was teaching in a common school near Shelburne Falls at a wage of seventy-five cents a week "with board." At the age of twenty she entered the Sanderson Academy at Ashfield, and during the next four years she alternately taught in the common schools and continued her studies at the Sanderson and Amherst academies. In 1821 she entered the higher school for girls conducted by Joseph Emerson (*qv*) at Byfield, and the next year she was an assistant teacher in Sanderson Academy. During 1824 and 1825 she taught part of each year in Adams Academy at Derry, N. H., and pursued courses of study for the remainder of the time at Amherst College and the Rensselaer Institute.

From 1826 to 1828 she continued her teaching during the winter at Sanderson Academy and during the summer at Adams Academy, which at this time was under the direction of Mrs. Zilpah Grant Banister (*qv*), one of Miss Lyon's teachers in Joseph Emerson's school at Byfield. In 1828 Mrs. Banister organized a seminary at Ipswich, Mass., and during the next two years Miss Lyon taught in the Ipswich Seminary during the summer and took charge of a "select school" at Buckland, Mass., during the winter. She became vice-principal of the Ipswich Seminary in 1830, and during the next four years gave all her time to this institution.

The "select" winter school at Buckland was in a sense the germ of Mount Holyoke. Her school was the resort of many girls who had been, or who expected to become, teachers. Expenses were made as low as possible. Tuition was \$3 a quarter, and board was obtained at rates ranging from \$1 to \$1.25 a week. The philanthropic side of the work appealed strongly to Miss Lyon; and when in

1834 the Ipswich Seminary failed in its efforts to secure an endowment, she decided to enlist the interest of public-spirited people in the endowment of a seminary for the higher education of women. She secured the cooperation of a committee of prominent men, and a call was issued asking for one thousand dollars to finance the raising of the funds for the organization and endowment of the seminary. Miss Lyon undertook to secure this fund from women. Within two months the thousand dollars had been secured. Her former students, many of whom were now teachers, contributed a fourth of the sum, and the women in and about Ipswich the rest. Mount Holyoke was chartered in 1836 and opened the next year. (See MOUNT HOLYOKE COLLEGE.)

During the twelve years (1837-1849) that Miss Lyon was president of the seminary, her work was distinctly that of a pioneer. Her institution was ridiculed and caricatured by the secular press of the country as "a rib-factory," "Protestant nunnery," etc. But she had faith in her mission, and her appeal to "the common sense, the intelligence, and the spirit of fair play," ultimately triumphed. As one of her biographers writes, "Mary Lyon viewed Mount Holyoke as a plant for development, not of intellectual gymnasts, but of enlightened, useful women." Cooperative housework was made a feature of the seminary, and the life of the institution was made thoroughly democratic. Sixty dollars a year covered board and tuition, exclusive of charges for fuel and light. She died at South Hadley, Mass., on March 5, 1849, and her remains were buried on the grounds of the institution which she had founded. Beyond a pamphlet on *Female Education* (1839), and the circulars stating the purpose and character of Mount Holyoke Seminary, Miss Lyon left no educational publications. W. S. M.

See also MOUNT HOLYOKE COLLEGE, WOMEN, HIGHER EDUCATION OF, IN THE UNITED STATES

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 STOW, SARAH D. *History of Mount Holyoke Seminary during the First Half Century* (Springfield, 1887)

**LYONS, UNIVERSITY OF** — One of the most recently established universities in France. Although departments and faculties arose during the nineteenth century, they were not consolidated into a university until 1896. The claim that a *studium generale* existed at Lyons in the thirteenth century is denied by Rashdall (*Universities of Europe in the Middle Ages*), although there were undoubtedly very important schools there. Faculties of science and letters were established in 1808, but were again closed in 1816. The different faculties owed their origin in large measure to the public support and

interest of public bodies. In 1834 the faculty of science was established, and in 1838 the faculty of letters. A chair in law was founded by the municipal council and the chamber of commerce; in 1867 the *École libre de Droit* was established, and became a faculty in 1875. Medical courses were given, in connection with the hospitals of the town in 1820, and in 1834 the *École libre de Médecine* was founded, and in 1841 this was followed by the *École préparatoire de Médecine et de Pharmacie*. The faculty was organized in 1877. The University of Lyons has always adapted itself to the needs and demands of a commercial and industrial city, which on its side has always been ready with its financial support. There are now four faculties: law, science, letters, medicine and pharmacy; and two schools: *École de Chimie industrielle* and *École de Tannerie*. The enrollment in 1910 was 2922 (law, 853; medicine, 953, pharmacy, 148, science, 511; letters, 436). For the organization see FRANCE, EDUCATION IN

**MacVICAR, MALCOLM** (1829-1904) — Normal school principal, educated at Knox College and the University of Rochester, he graduated from the latter institution in 1859. He was principal of the Brockport Collegiate Institute, which afterwards became the Brockport Normal School, principal of the New York State Normal School at Potsdam, and principal of the Michigan State Normal School at Ypsilanti. In 1888 he became the first chancellor of MacMaster University. He was the inventor of the MacVicar tellurian globe and the author of a popular series of textbooks on arithmetic. W. S. M.

**McCORMICK THEOLOGICAL SEMINARY, CHICAGO, ILL.** — An institution for the training of candidates for the ministry under the Presbyterian Church in the U.S.A., founded originally in 1830 as a branch of Hanover College, removed to New Albany in 1840, and 1859 to Chicago. The present name was adopted in 1886. Students are admitted on completing a regular college course. The Seminary offers two three-year courses leading to a diploma or the B.D. degree.

**McCOSH, JAMES** (1811-1894) — Philosopher and educator, born in Ayrshire, and educated at Glasgow and Edinburgh universities. In 1834 he became a minister, and assisted in establishing the Free Church of Scotland. In 1850 he published *The Method of Divine Government, physical and moral*, which led to his appointment as professor of logic and metaphysics at Queen's University, Belfast. Here he remained until 1868, playing an important part in the social and philanthropic work of the town. In 1868 he was invited to become president of Princeton College (*qv*), an office which he held until 1888, when he still continued his connection with the college as professor of

philosophy McCosh wrote numerous philosophical works, including *Institutions of the Mind inductively investigated* (1860), *An Examination of Mill's Philosophy* (1866), *Scottish Philosophy, Bibliographical and Critical* (1874), *Psychology of the Cognitive Powers* (1886); *Psychology of the Motive Powers* (1889), *Realistic Philosophy defended* (1887). Dr. McCosh lived at Princeton until his death on Nov. 16, 1894.

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**McELLIGOTT, JAMES NAPOLEON** (1812-1866) — Textbook author. He studied at New York University and was principal of the School of Mechanics and Tradesmen in New York, became president of the New York Teachers' Association in 1849 and was editor of the *Teachers' Advocate*. He published many textbooks on spelling, reading, grammar, elocution, and Latin. W. S. M.

**MCGILL COLLEGE AND UNIVERSITY, MONTREAL, CANADA** — Founded by the will of the Hon. James McGill (d. 1813) and chartered in 1821. Work was begun in 1829 with faculties of arts and medicine and was carried on for some time under great difficulties. In 1852 through the efforts of some citizens of Montreal an amended charter was secured, a faculty of law was added in 1852, a faculty of applied science was organized in 1878, although engineering had been taught since 1856, the faculty of agriculture was established in 1907. The supreme authority of the university is vested in the Crown with the Governor-general of Canada as visitor. The governors of the university are the members of the royal institution for the advancement of learning and the president of the governors is *ex officio* Chancellor of the University. The chief academic and administrative officer is the Principal. With McGill are affiliated a number of other institutions, *e.g.* Macdonald College (*q.v.*), McGill University College of British Columbia, Vancouver, B.C., and Victoria, B.C., Mount Allison and Acadia universities, and several theological colleges. Students in the affiliated institutions may pursue their studies either wholly there or in part in the affiliated colleges and in part at McGill, and receive their degrees on passing the examinations of McGill. In 1899 the Royal Victoria College for Women was established, providing opportunities for residence and college life for women, who are admitted only to the arts courses at McGill. This institution offers courses in arts and pure science, given by professors and lecturers of the university. The students of this college are students of the university. All the usual

university degrees are conferred by McGill on properly matriculated students who have completed the requirements of their courses. The total enrollment of students in 1911-1912 in McGill University and the affiliated colleges in British Columbia was 2484.

**McGUFFEY, WILLIAM HOLMES** (1800-1873) — Textbook author. He was graduated from Washington College, Pa., in 1826, was professor in Miami University (1826-1836), president of Cincinnati College (1836-1839), president of Ohio University (1839-1843), and professor in the University of Virginia (1843-1873). He was the author of the widely used "Eclectic" readers and other schoolbooks.

W. S. M.

**McKEEN, JOSEPH** (1757-1807) — First president of Bowdoin College. He was graduated from Dartmouth College in 1774, taught eight years in the schools of New Hampshire and three years in the academy at Andover, Mass. He was pastor of a church at Beverly, Mass., for seventeen years, and president of Bowdoin College from 1801 to 1807. He advocated the introduction of scientific studies into the college course. W. S. M.

See BOWDOIN COLLEGE.

**McKEEN, JOSEPH** (1791-1856) — School superintendent. For many years he was engaged in public and private school work in New York City. For ten years (1844-1854) he was superintendent of the schools of New York City and for two years was associated with S. S. Randall (*q.v.*) as assistant superintendent. He edited for some years the *Teachers' Advocate* and was one of the organizers of the New York Teachers' Association, and its president in 1846. W. S. M.

**McKENDREE COLLEGE, LEBANON, ILL.** — A coeducational institution founded in 1828, and maintaining academic, collegiate, domestic science, agriculture, expression, and music departments. Students are admitted from accredited high schools or by examination. The degrees of A.B., B.S., and B.Mus. are conferred by the institution. The enrollment in 1910-1911 was 279 in all departments. There is a teaching staff of seventeen members.

**McLEAN, JOHN** (1800-1886) — College president. He was graduated from Princeton in 1816 and two years later from the Princeton Theological Seminary. He was a professor at Princeton (1822-1854) and president of the institution (1854-1868). He wrote *School System of New Jersey* (1829) and *History of the College of New Jersey* (1877). W. S. M.

**McMASTER UNIVERSITY, TORONTO, ONT.** — A coeducational institution organized in 1887 under the auspices of the Baptist

churches of Ontario and Quebec. The following courses leading to their respective degrees are offered: arts, science, and theology. Students are admitted on passing the matriculation examination. The enrollment in 1911-1912 was 300. The faculty consists of twenty-three members.

**McMINNVILLE COLLEGE, McMINN-VILLE, ORE** — A coeducational institution under the auspices of the Baptist denomination, chartered in 1858. Preparatory, collegiate, music, and commercial departments are maintained. Students are admitted to the College from four-year high schools. Classical, philosophical, and scientific courses are offered, leading to the degrees of A B, B Ph, and B S. In 1910-1911 the enrollment in the college proper was forty students. The faculty consists of fifteen members.

**McMURTRIE, HENRY** (1793-1865) — Author of science textbooks. He was graduated from the University of Pennsylvania in 1814, and for many years was a professor in the medical department of that institution. He wrote textbooks in physiology, botany, zoology, hygiene, astronomy, and physics. W S. M.

**McPHERSON COLLEGE, McPHERSON, KANS.** — A coeducational institution maintained by the Church of the Brethren with academic, collegiate, bible, education, and fine arts departments. The entrance requirements are fifteen units. The A.B. and B S degrees are conferred. Pre-medical and pre-engineering courses are also offered. The enrollment in the collegiate department in 1909-1910 was forty-five. There is a teaching staff of twenty-seven members.

**MACALESTER COLLEGE, ST. PAUL, MINN** — A coeducational institution, the outgrowth of Baldwin School, established in 1853, opened as a college under the Synod of the Presbyterian Church of Minnesota in 1885. A preparatory school and college of liberal arts, requiring fifteen units of high school work for entrance, are maintained. The degrees of A B and B S are granted on completion of appropriate courses. In 1911-1912 there were 190 students in the college proper, and the faculty numbered twenty members.

**MACDONALD COLLEGE (McGILL UNIVERSITY), ST ANNE DE BELLEVUE, QUE** — A constituent body of McGill University founded and endowed by Sir William C Macdonald for the advancement of education and research with special reference to rural problems, and for the training of teachers for rural districts. The work is distributed between the school of agriculture, school for teachers, and school of household science. In the school of agriculture the degree of B S A. is conferred

on the completion of a four-year course. The faculty consists of fifty-five members, and the enrollment of students in 1911-1912 was 478.

**MACDONALD MOVEMENT.** — See CANADA, EDUCATION IN.

**MACERATA ROYAL UNIVERSITY, ITALY** — See ITALY, EDUCATION IN.

**MACKAY, JOHN** (1765-1831) — Author of school arithmetics. He was educated as a physician and practiced medicine a few years. From 1817 to the time of his death he was engaged in teaching. He wrote the *American Teacher's Assistant and Self Instructor's Guide* (1826), a textbook in arithmetic that was widely used. W S. M.

**MACLURE, WILLIAM** (1763-1840) — First American disciple of Pestalozzianism. He was born at Ayr, Scotland, and engaged in commercial pursuits. Having acquired a competence, he retired from business in 1803 and took up his residence in Philadelphia. Soon after he was sent to Paris by President Jefferson as a member of the commission to settle the claims of American citizens against the French government for spoliation committed during the French revolution. While in Europe he began the collection of objects for a museum of natural history for the United States, and made an extensive study of educational systems in the old world. Having visited Pestalozzi at Yverdon and Fellenberg (*qv*) at Hofwyl, he induced Joseph Neef (*qv*), one of Pestalozzi's former associates, to come to America and establish schools after the pattern of the Swiss reformer.

The first accounts of Pestalozzi's labors published in the United States were from the pen of Mr. Maclure. After his return to America in 1806, he began at his own expense a geological survey of the United States. Returning to Europe again in 1819 to study the industrial and educational schemes of Robert Owen (*qv*) at New Lanark, Scotland, he organized in the next year an industrial and agricultural school at Alicante, Spain. The overthrow of the constitutional government in 1824 and the confiscation of his property compelled him to give up his scheme for industrial education in Spain. Returning to the United States, he joined Robert Owen (*qv*) and his Utopian colony at New Harmony, Ind. Maclure invested \$150,000 in the New Harmony experiment, and aimed to make it the center of Pestalozzianism in America. Joseph Neef was placed at the head of the schools of the colony, and manual training and elementary science were made important features of the school course. With the failure of the colony in 1826 Mr. Maclure continued to live at New Harmony, engaged in literary and scientific labors. He was the moving spirit in the organization of the Academy



of Natural Sciences at Philadelphia in 1812, and its president from 1817 to the time of his death, and he was the virtual founder and the first president of the American Geological Society (out of which grew the American Association for the Advancement of Science) in 1828. His *Opinions on Various Subjects* (New Harmony, 1831) contains twenty essays on education. W S M.

See PESTALOZZIANISM IN AMERICA

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**MADAGASCAR.** — See FRENCH COLONIES, EDUCATION IN

**MADISON, JAMES** (1749–1812) — College president and bishop, graduated at William and Mary College, 1768, studied law and was admitted to the bar. He held a professorship at William and Mary College from 1773 to 1777, and was president of the college from 1777 to 1812. He advocated elective studies in collegiate institutions, and shared many of the views of Thomas Jefferson (*q v*) on higher education. W S M.

**MADISON, JAMES** (1751–1833) — President of the United States, was educated at Princeton, tutored for a time in his father's family, was long a trustee of William and Mary College, succeeded Thomas Jefferson as rector of the University of Virginia, having previously been a member of the board of trustees. President Madison was active in the movement for the establishment of public school systems, and shared the views of Jefferson (*q v*). W S M.

**MADRAS SYSTEM** — See MONITORIAL SYSTEM, BELL, ANDREW, LANCASTER

**MADRAS, UNIVERSITY OF** — See INDIA, EDUCATION IN

**MADRID, UNIVERSITY OF, SPAIN** — See SPAIN, EDUCATION IN

**MAGER, KARL WILHELM** (1810–1858) — A prominent German educator, was born in Grafrath, near Solingen, in the Rhine province. From 1828 to 1830 he studied philology and philosophy at the university of Bonn and then went to Paris, where he devoted three years to a thorough study of French literature. Returning to Berlin, he made the acquaintance of Alexander von Humboldt and accompanied him on a scientific journey to Russia (1835). In Berlin he also came in contact with Diesterweg (*q v*), with whom he spent much time in discussing problems of education. In 1837

he was called as professor of German to the College at Geneva, but a nervous trouble and the desire for more leisure to do literary work induced him to give up his position (1839). He returned to Germany and started (1840) the *Pädagogische Revue*, to which his own contributions, written in a brilliant style, soon brought a large following. In 1841 he was called as professor of French literature to Aarau in Switzerland, but he left this position in 1844, because he found again that it took too much time away from his literary activity. In 1848 he was offered the principalship of the Realgymnasium at Eisenach, and accepted the call. But this new attempt to enter into the regular school service was also destined to be of short duration.

Mager's claim to a permanent place in the history of German education rests chiefly on his book, *Die deutsche Burgerschule* (Stuttgart, 1840), which forms an epoch in the history of realistic institutions in Germany. It formulates the idea of a school with a modern education, which should meet the demands of the broad educated middle class of the people. With a firm hand Mager traces the outlines of the whole organization of such a school, and one may say that the modern educational institutions of the realistic type, such as the "Oberrealschule," are practically a realization of his plans.

Another important work of Mager is his *Genetische Methode des schulmässigen Unterrichts in fremden Sprachen und Literaturen* (*Genetic method of school instruction in foreign languages and literatures*, Zurich, 1846), which had considerable influence on the teaching of languages, both foreign and the mother tongue. F M.

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**MAGIC** — The art of controlling events by means of secret or supernatural formulas or agencies. The history of magic is of interest to the student of education and of psychology because magic is an early stage of science and religion. When men were ignorant of the laws of nature, any one who could bring about unfamiliar occurrences was looked upon with wonder. Thus the early priests were undoubtedly familiar with some of the simple principles of optics and they were able to produce by means of concave reflecting surfaces illusions now so familiar through the use of projection lanterns of all kinds. This command of optics was so far beyond the knowledge of the ordinary people that it gave the priests extraordinary influence over the ignorant observers, who regarded the phenomena as supernatural. Indeed, it may be doubted whether the priests themselves were altogether free from supersti-

tious fear in the presence of the forces which they only partially understood and controlled. The usual belief of the spectator in these cases was that the phenomena were due to a spirit of some kind. Gradually, as science developed, natural forces came to be recognized as causes of the processes and the possibilities of magic disappeared.

Whatever may have been the attitude of the earlier masters of magic, there grew up in every tribe a band of professional magicians. These were more or less closely related to the priests. At first they were priests, but gradually religion and magic separated. The magician consciously extended his personal control over nature, and hid his operations from his fellows. In many respects, the magician under the various forms in which he appeared was the teacher of primitive peoples. Very frequently he used his special knowledge for baneful purposes. The magician came to be a person to be shunned and hated. He was indeed sought and employed in emergencies, but for the most part, he was an outcast. He cultivated, however, in a crude way, a knowledge of nature, and thus laid the foundations for our modern sciences. Alchemy and the practices of the medicine man are conspicuous examples of magic which have developed into sciences.

On the psychological side, belief in magic is a clear mark of general ignorance. Man when ignorant of the real forces back of phenomena imagines mysterious forces, and thus satisfies his need for explanation. As explanation grows more complete and systematic, belief in magic is reduced. C. H. J.

See PRIMITIVE PEOPLES, EDUCATION AMONG.

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**MAGIC LANTERNS IN SCHOOL.** — See VISUAL AIDS TO TEACHER

**MAGILL, EDWARD HICKS** (1825–1907). — College president and textbook author. He was graduated from Brown University in 1852; was head of the classical department of the Providence High School (1852–1859), sub-master of the Boston Latin School (1859–1867), and headmaster of the preparatory department of Swarthmore College in 1871 and held this post for eighteen years. From 1889 to 1900 he was professor of French at Swarthmore. His published writings include *Coeducation of the Sexes* (1867), *Methods of Teaching Modern Languages* (1871), *History*

*of Education in the Society of Friends* (1884) and a series of French textbooks. W. S. M.  
 See SWARTHMORE COLLEGE.

**MAGISTER SCHOLARUM** — See BISHOP'S SCHOOLS; CATHEDRAL SCHOOLS; CHURCH SCHOOLS, MASTER, SCHOOL

**MAGNETISM, ANIMAL.** — See MESMERISM

**MAHAN, ADRIAN** (1800–1889) — College president. He was graduated from Hamilton College in 1824, and three years later from the Andover Theological Seminary. He was ordained to the ministry of the Congregational church in 1829, and served as a pastor for six years. Becoming the first president of Oberlin College in 1835, he held this position for fifteen years. He was president of Cleveland University from 1850 to 1854, and professor and president of Adrian College from 1857 to 1871. He wrote several works on mental philosophy, ethics, theology, and numerous articles in educational and religious journals. W. S. M.

See OBERLIN COLLEGE

**MAHAN, DENNIS HART** (1802–1871) — Author of mathematical and scientific books. He was graduated from the United States Military Academy in 1824, and later studied at the Military School of Engineers and Artillery at Metz, France. He was professor of engineering and mathematics at the Military Academy at West Point from 1825 to 1871. His published works include treatises on geometry, engineering, and military science. W. S. M.

**MAHĀVĪRĀRCĀYA** — One of the four great mathematical teachers of India. He probably lived in the court of one of the old Rāshtrakūta monarchs who ruled over what is now the kingdom of Mysore, and whose name is given as Amoghavarsha Nripatunga. This king reigned in the first half of the ninth century, so that the date of Mahāvīrārcāya's treatise is about 850 A.D. The work is entitled *Ganita-Sara-Sangraha*, and consists of nine chapters, chiefly on algebra, but containing some arithmetic, a little mensuration, and the rudiments of a crude trigonometry. D. E. S.

**MAIDWELL, LEWIS** — An educational projector of academies and schools from 1700 to 1705. He was educated at Westminster School under Busby, and at St John's College, Cambridge, graduating B.A. in 1671. He was a private tutor for five years. In 1700 Maidwell presented a scheme to the House of Commons for an academy for forty scholars, sons of gentlemen from thirteen to seventeen, to have a free education in languages, arts, and physical exercises. He offered his house in Westminster for the purpose. The subjects were to be Latin, Greek, French, Arithmetic, and

## MAIMONIDES

the use of the globes. He offered £300 a year for four fellowships to be held at the universities besides schemes for scholarships tenable at the University or on board his Majesty's ships of war, to be instructed in navigation. Maimonides did not succeed in obtaining support for this scheme which was remodelled so as to suggest a school instead of an academy, but without success. In 1705 he wrote *An Essay upon the Necessity and Excellency of Education, with an Account of Erecting the Royal Mathematical School*, in which he urges the establishment of a system of naval education and draws up a scheme to promote the art of navigation.

In 1707 Maimonides published his *Nova Grammatices Experimenta, or Some New Essays of a Natural and Artificial Grammar, which first demonstrates the Natural Rudiments of All Languages, and then by an Artificial Method, Facilitates the Perfect Knowledge of the English and Latin Tongues, without the Tedious Perplexity of Common Grammar*. This is introduced with a poem by the poet laureate, Nahum Tate. It is a glorification (on the pretext of writing a Grammar) of Queen Anne and the Lord Godolphin, Lord High Treasurer, for whose grandson the curious book is written.

F. W.

See ACADEMY.

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## MAIMONIDES, MOSES BEN (1135-1204)

— The most eminent Jewish rabbi and philosopher of the Middle Ages, born in Cordova, Spain, and died in Cairo, Egypt. His unusual training in medicine, philosophy, and theology was possible owing to the Arabian revival of learning in south-western Europe. The Mohammedan persecution of Jews finally drove out his family, which took flight to Egypt. Here Maimonides became influential, and eventually physician to the Sultan. He was an active author, writing in both Hebrew and Arabic. His greatest rabbinical book is the *Mishneh Torah* or *Yad ha-Hazakah*, containing a complete presentation of Talmudic Judaism. It has been the center of much controversy, and has lived through many editions, parts of it having been translated into Latin and English. His most important philosophical work is the *Guide to the Perplexed* (*Moreh Nebukim*), written originally in Arabic. In this book he made the effort to expound the principles of Judaism and those of Greek philosophy, chiefly the Aristotelian, so as to justify the former by the latter.

E. F. B.

See JEWISH EDUCATION.

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**MAINE DE BIRAN (1766-1824)** — Regarded by Victor Cousin as the greatest French metaphysician since Malebranche. Early in life he abandoned politics and the army for philosophy and won a prize from the Institute by his *Essai sur l'habitude*. He was a determined opponent of eighteenth century philosophy. He passed through three stages of belief, first belonging to the sensational school of Condillac, he later developed a system of his own, based upon internal reflection as the only legitimate method in philosophy. Finally he abandoned the standpoint of psychological experience for that of mystical intuition, in which the life of sensation and volition is absorbed in a life of love and communion with God. His literary style is heavy and his writings have been slow in securing the attention which they merit.

W. R.

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**MAINE, STATE OF** — A part of Massachusetts up to 1820, when it was admitted to the Union as the twenty-third state. It is in the North Atlantic Division, and the most northeasterly of the states. It has a land area of 29,895 square miles, being almost as large as the other five New England states combined. For administrative purposes, the state is divided into sixteen counties, and these in turn into towns. The county is of practically no educational importance, the state dealing directly with the towns in educational matters. In 1910 Maine had a population of 742,371, and a density of population of 24.8 per square mile.

**Educational History** — The first record of a school in what is now the state of Maine was in the town of York in 1701, when Nathaniel Freeman was employed as a teacher. The town of Wells opened the second school in 1716. In 1725 the first public schoolhouse in the territory was built at York. Other early schools were opened at Portland in 1728, Buxton in 1761, New Gloucester in 1764, Machias in 1774; Canaan in 1778, Norridgewock in 1779, Union in 1785, and Castine in 1796. The first grammar school was opened in Portland in 1738. The Massachusetts laws of 1642 and 1647 (see MASSACHUSETTS) had applied to the territory of Maine as well, but had been difficult of enforcement there. Situated on the frontier, with constant trouble with the Indians, schools and education made but slow progress, and many

towns were "presented" for failure to comply with the law. By 1800 there were 161 organized towns, with grammar schools in seven.

On the admission of Maine into the Union as a separate state in 1820, the constitution then adopted required the towns to make suitable provision for the support of schools, and safeguarded the interests of Bowdoin College. This constitution is still in force. The district system, established by the Massachusetts law of 1789, was fixed, and remained for a little more than a century before it was abolished.

The new state school law of 1821 organized the system. It provided that every town and plantation must raise forty cents per inhabitant for schools, directed that competent masters should be employed, but permitted one third of the funds to be spent for a schoolmistress, directed every town to choose a superintending school committee of from three to seven to examine teachers, visit schools, dismiss incompetent teachers, determine the studies, and select the textbooks, provided for an agent in each school district to hire teachers and to provide fuel, declared each school district a body corporate, with power to locate school buildings and levy taxes, and for the division of the town school money among the districts on the basis of the number of children in the district, four to twenty-one years of age. In 1822 the town of Portland was permitted to organize under a special law, which permitted it to abolish the district organization and established a graded school. Bath in 1828 and Bangor in 1832 received similar permission. In this same legislature that granted town organization to Portland, the districts made an unsuccessful attempt to secure the power to appoint their own district agents, and thus make them practically independent of the towns.

A new law in 1825 made the selection of a superintending school committee mandatory, under fine for failure; gave the committee power to expel unruly scholars, required them to visit schools twice each year, ordered a school census to be taken each year, and school statistics to be reported once in three years, and allowed an expenditure of 10 per cent of the school money for fuel and repairs. In 1827 union town schools were authorized, and the beginnings of a system of grading made by allowing committees to determine what scholars should attend the master's and what the mistress' school. In 1834 the laws were revised and reenacted as one school code. The maximum number constituting a school committee was cut from seven to five, the committees were required to report to an annual school meeting, and permission was given to any town to abolish districts and organize itself under the town system.

Up to this time the development had been town and district development only. In 1843 and again in 1845 unsuccessful efforts were

made to unify the system, but it was not until 1893 that this was accomplished by the abolition of the district system. In 1846 a State Board of Education was created, consisting of one representative from each county, elected by the town school committees. This Board was to elect a secretary, whose duties were much the same as those of the Secretary of the Massachusetts State Board. The next year the first reasonably accurate statistics were collected. The year following, teachers' institutes were established in every county; school committees reduced from five to three, one to be elected each year, union district graded schools permitted, by-laws against truancy authorized, requirements for teachers' certificates increased, and the powers and duties of town and school committees enlarged. In 1852 this State Board and the office of Secretary were abolished, chiefly because the Board was not politically useful. County school commissioners, to be appointed by the Governor for one-year terms, were created instead, each to give fifty days of service annually, and to make an annual report to the legislature. This proving unsatisfactory, the legislature of 1854 abolished the county commissions and created the office of State Superintendent of Public Instruction, the Governor and Council to appoint, for three-year terms. This method of state supervision has continued to the present time. County supervision was again established in 1869 by the creation of county supervisors of schools, but they were abolished in 1872 and have not since been re-created. To the new Superintendent was assigned about the same duties as given formerly to the Secretary of the State Board. The new Superintendent was required to hold a county teachers' convention in each county each year, and \$2000 was appropriated as aid to this end. In 1858 a teachers' institute in each county and a state teachers' convention were ordered. In 1859 the first State Teachers' Association to form a permanent organization met at Waterville.

In 1828 the beginnings of a school fund were made. Twenty townships were set aside to constitute a school fund, in 1834 these were sold for \$110,000, and in 1848 the interest on this sum, at 6 per cent, was distributed to the towns. In 1856 twenty-four and one half townships were set aside for the same purpose; in 1864 the timber on ten additional townships of land; and in 1903 the money arising from the sale of timber and grass, or from trespasses on reserved lands, were added to the school fund. A bank tax of 1 per cent for educational purposes was levied in 1833, to be apportioned to the towns on census. In 1865, because of the decrease in the revenue from the bank tax, due to the establishment of national banks, the town tax was raised from forty cents to seventy-five cents, and, in 1868, to a dollar per inhabitant. At the same time, a state tax of one mill

was ordered for the benefit of schools, the income to be distributed to the towns on census. This was increased to one and one half mills, and in 1909 an additional state tax of one and one half mills, one third to be divided on census and two thirds on valuation, was ordered and an equalization fund of \$20,000 was set aside. In 1872 the town tax was reduced from a dollar to eighty cents, and in 1909 to fifty-five cents.

In 1860 state aid was given to eighteen academies for the training of teachers, but was withdrawn in 1862 as unsatisfactory. Teachers' institutes were also abolished at the same time, and were not revived until 1869. In 1868 the University of Maine was opened at Orono. In 1863 the first two state normal schools were established, the one at Farmington being opened in 1864, and at Castine in 1867. A third was opened at Gorham in 1879, a fourth at Presque Isle in 1905, and a fifth was authorized in 1909, and opened in 1911 at Machias. The Madawaska Training School at Fort Kent, in the extreme northern part of the state, was established in 1887. State summer schools for teachers were established in 1895, and in 1901 \$2500 aid was given for the maintenance of four such schools. In 1873 a new high school law was enacted, whereby state aid up to a maximum of \$500 was granted to free high schools. Seventy-one academies and higher institutions had been chartered up to this time, but the new law caused many of these institutions to transfer themselves to public control. In 1879 the law was suspended for one year, in 1880 the state aid was reduced to \$250 and the teaching of ancient languages at state expense forbidden, and in 1909 a graded system of state aid for high schools, varying from \$450 to \$850, with state inspection, was substituted for the 1880 law. State aid to academies, up to \$250, was also granted for instruction in manual training, domestic science, and agriculture.

In 1875 a compulsory education law, which required three months' attendance of all children, 9-15 years of age, was enacted. The requirements have been increased since then to include all children from 6-17. In 1909 a combined compulsory education and child labor law was enacted, similar to such laws in the other New England States. In 1892 the constitution of the state was amended so as to grant the right of suffrage only to those who are able to read the constitution of the state in the English language and to write their names. In 1895 a system of state examinations for teachers' certificates was established. In 1897 a state school for the deaf and a state school for the feeble-minded were established. In 1909 school physicians were provided for, the State Superintendent was instructed to furnish plans and specifications for all school buildings of not over four rooms, and other measures of importance, mentioned above, were enacted. In 1911 the State Superintendent was instructed to investi-

gate the needs for industrial education, special courses were provided for in the state normal schools, and state aid was provided for high schools and industrial schools offering such instruction — \$500 to high schools and \$2000 to industrial schools.

**Present School System** — At the head of the present school system is a State Superintendent of Public Instruction, appointed by the Governor with the concurrence of the Council, for three-year terms. He receives a salary of \$2500 and traveling expenses. There is no State Board of Education or analogous body. The Superintendent has general supervision over the schools of the state, conducts county and summer training schools, prescribes the studies to be taught in the common schools, furnishes blanks, forms, and record books to the town school authorities, holds examinations for state teachers' certificates, prescribes the tests, issues the certificates, and keeps a record of those passing for the information of school authorities, grants certificates of qualification to town superintendents, assumes control of schools founded as the result of public bequests, approves unions of towns to employ a superintendent of schools, appoints school agents for unorganized territory, prepares directions for testing the sight and hearing of the school children of the state, issues such circulars of information as he deems desirable, examines all high schools, in person or by deputy, for grants of state aid, is an *ex officio* member of the State Board of Normal School Trustees, which controls the five normal schools of the state and the Madawaska Training School, determines the conditions for admission to these schools, receives the census and school reports from all the towns, and makes an annual report to the Governor and Council.

There are no county school authorities in Maine, the next unit below the state being the town. The schools of each town are under the control of a town school committee of three, one chosen by ballot each year at the annual meeting for a three-year term. Cities operating under special charters select boards of education, as provided for by the charter. It is the duty of the school committee to approve the course and subjects of instruction, with liberty to add to the studies prescribed by the State Superintendent, to select textbooks for five-year periods, furnish them to the schools, and contract with publishers as to the sale price for those sold to parents who wish to provide their own books, to dismiss teachers and to expel pupils for cause, to exclude unvaccinated children; to classify scholars, to determine the rates of tuition for those living outside the town; and to make rules and regulations for the government of the schools. All towns must provide free textbooks, must raise money for buildings and repairs; must provide a term of twenty-six weeks in all schools, may levy a tax for evening elementary schools; may

provide for instruction in manual training and industrial and mechanical drawing. Two or more towns may unite to maintain a union elementary school, the towns paying in proportion to census. On recommendation of the school committee, towns, in annual meeting, may abolish or change schools. Schools of less than eight in average attendance may be suspended, and transportation and board may be paid for the pupils to attend elsewhere. Plantations have the same liability as towns for schools. The State Superintendent must appoint an agent for all unorganized territory, and, if there are two or more children in any unorganized territory, he shall arrange for their schooling there, or elsewhere.

Each school committee must annually elect a superintendent of schools, who acts for the committee in many matters which used to be attended to by the committees. He acts as secretary to the committee, employs all teachers, subject to the approval of the committee, oversees the annual school census, examines the schools and pupils at least twice each term, and makes a written report to the annual town meeting. Two or more towns, employing a total of twenty to fifty teachers, may unite to employ a superintendent, apportioning the expense in proportion to the service rendered the town. For such unions, the state will grant aid for the salary of the superintendent of twice the amount raised by the towns, with a maximum of \$800. To towns and cities employing more than fifty teachers, the state will grant as aid two thirds of the amount raised, up to \$800. All superintendents receiving such state aid must hold a state certificate for supervision.

**School Support** — The Maine school fund, derived from the sources enumerated above, under *Educational History*, now amounts to about half a million dollars, and produces about 1 per cent of the total revenue for schools. A state tax of one mill on all property was levied in 1868, and in 1907 this was raised to one and one half mills. In 1909 an additional state tax of one and one half mills, and an equalization fund of \$20,000 each year, were added, while at the same time the required local town tax was reduced from eighty cents to fifty-five cents per inhabitant. This will shift somewhat the burden of support from the towns to the state, and will tend to provide a greater equalization of educational burdens and opportunities. In 1911 the equalization fund was increased to \$27,500. Of the state tax two thirds is distributed on the basis of the school census, five to twenty-one, and the remaining third on the basis of the valuation of the towns. To all towns that raise a tax of over four mills for schools, one tenth additional shall be added from the equalization fund. The remainder of all school money comes from local (town) taxation. State aid is also given to schools and towns providing industrial training.

The total amount expended for schools during the last year for which reports are available was \$1,875,605, or a per capita of the total population expenditure of \$2.52.

**Educational Conditions.** — Of the total population in 1910, 48.6 per cent lived in rural districts and 26.3 per cent in cities of over 8000 inhabitants. The illiteracy in 1900 was 5.1 per cent, while 99.7 per cent of the total population were of the white race, and 86.6 per cent were native born. In northern Maine, there are large areas which are very sparsely inhabited, and 59 unorganized townships, containing an average of less than fourteen children of school age in each, were reported in 1910. For such children, the law requires that the State Superintendent shall provide a teacher, transport them daily to another school, or bring them to a school and board them while attending. \$1708 was expended for the board and transportation of such pupils in 1909-1910. Much has also been done in recent years in the consolidation of schools and the transportation of pupils, nearly 800 schools having been closed since 1900, and, in 1909-1910, 6051 pupils were transported and \$114,795 was expended for transportation.

More than one half of the schools are ungraded, and one fifth of the schools were reported as not using a course of study. A little more than one school in six has a school library.

The state has good compulsory education and child labor laws, and the towns employed 862 truant officers to enforce the law. All children, seven to fourteen, must attend some school during the time the public schools are in session. The truant officer is to visit business establishments, look after truancy, and bring to trial those who violate the law. The state also provides medical inspection for the schools, and examines all pupils for common defects.

**Teachers and Training** — The state employed 6905 teachers in 1909-1910. Of this number 17 per cent were beginners; 24 per cent were graduates of normal schools; and 22 per cent held state certificates. The remaining 78 per cent were certificated by the local town authorities. The average annual salaries for men teachers are about \$300 and for women teachers about \$230. These figures, and the conditions of state aid to teachers' institutes and high schools, indicate a low standard of pay for educational service.

For the training of teachers in service, the state provides that thirty or more teachers in any county may form an association and hold an annual convention, under the supervision of the State Superintendent. Teachers may receive pay for two days' attendance. The state agrees to pay all expenses, but the sum of \$1000 only is appropriated to pay for all the institutes in the state each year. Four summer normals for teachers are also provided by the state, for which the sum of \$2500 is appro-

priated. Five hundred and sixty-eight teachers attended these summer schools in 1910 Attendance at all institutes and associations is optional

For the training of new teachers, the state maintains five regular normal schools, located at Farmington, Castine, Gorham, Presque Isle, and Machias. The state also maintains the Madawaska Training School at Fort Kent, in the extreme northern part of the state, for eight months each year, for the training of teachers to teach in the Madawaska District of northern Maine These schools are under the control of a board of nine trustees, consisting of the Governor, State Superintendent of Public Instruction, and seven others appointed by the Governor

**Secondary Education** — By the new law of 1909 all free high schools are to be classified into three divisions as follows A At least one 4 year course, a 36 week term, proper laboratory equipment, at least two teachers employed, and a total taxation cost for maintenance of at least \$850 B At least one 2 year course, a 36 week term, proper laboratory equipment, and a total taxation cost for maintenance of at least \$500 Tuition to be paid for pupils elsewhere for remaining two years C At least one 4 year course, for 30 weeks, and a total taxation cost for maintenance of at least \$450 All schools are to be inspected for approval by the State Superintendent, with state aid of two thirds of the amount paid for instruction, up to a maximum state grant of \$500

Academies giving instruction equivalent to high schools, of which there were forty-eight on the accepted list, may receive aid, as follows —

For an approved English course, \$500

For an approved College Preparatory course, in addition, \$750

For an approved Teachers' Training course, in addition, \$1,000

If academy's income is over \$1,000, the maximum grant is \$500

If academy's income is over \$1,600, no aid can be granted.

There were 552 teachers in the free high schools of the state in 1910, and 219 in the accredited academies

**Higher and Other Education** — The University of Maine, at Orono (*qv*), opened in 1868, offering instruction to both sexes in agriculture, English, education, and general scientific and literary studies, stands at the head of the school system of the state This institution, however, has in the past received little support from the state The instruction given is supplemented by that given in three other institutions, as follows. —

Bowdoin College, Brunswick, 1802, non-sectarian Men

Bates College, Lewiston, 1863, non-sectarian. Both sexes.

Colby College, Waterville, 1818, Baptist. Both sexes.

The state also maintains the Maine Industrial (Reformatory) School for Girls, at Hallowell, the Maine State (Reformatory) School for Boys, at Portland, the Maine State School for the Deaf, at Portland, the Maine State School for the Feeble-Minded (established in 1907); and the Bath Military and Naval Orphan Asylum The state also pays for the education of its blind at the Perkins Institute for the Blind, in Boston E P C

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#### MAINE, UNIVERSITY OF, ORONO, ME

— A coeducational institution, founded as a result of the land grants of 1862 as a State College of Agriculture and the Mechanic Arts The name was changed in 1897 to the University of Maine, as an integral part of the public educational system of the state The university is maintained from the income of the several grants from Congress, the annual state appropriations, and student fees The university is divided into the following colleges, arts and sciences, agriculture, technology, law, and an agricultural experiment station is maintained The entrance requirements are fourteen units, except in the college of law The university grants in the various departments of the college the degrees of B A, B S, LL B, Ph C (Pharmaceutical Chemist), and master's degrees Short courses are offered for farmers, teachers, and pharmacists The enrollment in 1911–1912 was 896, distributed as follows arts and science, 196, agriculture, 294, technology, 298, law, 108 The faculty numbers 106 members

#### MAINTENON (MME DE), FRANÇOISE D'AUBIGNÉ, MARQUISE DE MAINTENON

(1635–1719) — The second wife of Louis XIV (1685) In the interval between the death of her first husband, Scarron, the poet, and her marriage to the king, she was installed as governess over the children of Mme de Montespan and Louis XIV This made it possible for her to buy the estate of Maintenon, later raised to a marquisate She exercised a quiet, wholesome influence at a time when the French court life was anything but blameless Inspired by an intense interest in children, she started a small establishment for poor girls, which subsequently grew into the school of Saint-Cyr (1686), destined for the education of daughters of impecunious noblemen, and one of the earliest attempts in France at the serious public education of girls Racine's *Athalie* and *Esther* were written expressly for dramatic presentation by the girls of this institution. F E F.

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 MAINTENON, MME DE. *Conseils et Instructions aux Demoiselles pour leur Conduite dans le Monde* (Paris, 1857.)  
 SÉE, CAMILLE. *L'Université et Mme de Maintenon* (Paris, 1894)

## MAINZ, UNIVERSITY OF, GERMANY

— A university was founded at Mainz by a Bull of Pope Sixtus IV granted in 1476. A charter was given in 1477 by the Archbishop of Mainz, who had petitioned for the establishment of the university. A century later the university came under the control of the Jesuits, who remained there until the suppression of the Order in 1773. A reorganization took place in the same year, the university was endowed anew, and the teaching staff was increased and strengthened. The French aggression, however, put an end to these efforts, and the university was closed in 1798.

MAITTAIRE, MICHEL (1667–1747) — Educationist and author, was born in 1667 in France, of Huguenot parents. The father was naturalized in England in 1682, and the son was sent to Westminster School, under Dr Busby. With Dr South as patron, Maittaire was preferred to a studentship of Christ Church, Oxford. From 1695 to 1699, Maittaire was second master in his old school of Westminster. In 1699 he resigned his mastership and devoted himself entirely to literature, particularly undertaking bibliographical and philological researches and the editing of the classics with notes and indexes (among others the Greek text of Anacreon, with translations into Latin verse and prose). His native country was proud of his fame, and gave him a passport to prosecute his researches in Paris. He corresponded with all the savants of Europe, by whom he was respected for his erudition, character, and excellent temper and love of truth. In 1706 he published a book on the Greek dialects in *usum Scholæ Westmonasteriensis*, dedicated to the school. In 1709 appeared his *Stephanorum Historia*, an account of the lives and books issued by the old French Huguenot printers, the Estiennes. In 1712 was issued Maittaire's well-known *English Grammar*, written to afford a good training in English before beginning Latin studies. In 1717 he wrote *Historia typographorum aliquot Parisiensium*, and in 1719 began his valuable *Annales Typographici ab Artis inventæ origine*, the final volume of which was completed in 1741. In 1719 Maittaire published by subscription *Miscellaneæ Græcorum aliquot Scriptorum carmina*. In 1732 he had edited and annotated a new edition of Selden's *Marmora Arundelliana*. In 1742 he published a collection of his own Latin

poems under the title *Senilia*. He published an enormous number of editions of the classics, so that it is said his name began to be used in titles of books which he had not edited.

F. W.

## Reference —

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MAKIN, MRS BATHSUA — The author of the earliest treatise on women's education in England, written by a woman teacher. She was appointed, about 1641, teacher of Charles I's daughter, Elizabeth, then a child of six years of age. It is said that by eight years of age the child read and wrote in French, Italian, Latin, Greek, and Hebrew. Mrs Makin appears to have conducted a school at Putney, and afterwards, in 1673, she established a girls' school at Tottenham High Cross, within four miles of London.

In the prospectus of this school, which is appended as a postscript to the *Essay* — probably the earliest extant prospectus of a girls' high school in England, she proposes to teach "all things ordinarily taught in other schools," viz work of all sorts, needlework, dancing, music, singing, writing, keeping accounts, to take up half the school time, the other half time is for teaching the Latin and French tongues. Those that please may also learn Greek and Hebrew, Italian and Spanish. "In all which," adds the authoress, "this Gentlewoman (the announcement is throughout in the third person) hath a competent knowledge." Girls ("gentlewomen") may be instructed at eight or nine at this school in a year or two (according to their abilities) in Latin and French. The Rules for the foreign languages will be accommodated to the grammar of the English language. "Repositories for Visibles," i.e. collections of specimens, shall be prepared. She had learned (from Comenius probably) that from "beholding the things" it will be more easy for gentlewomen to learn the names, natures, value and use of herbs, shrubs, trees, mineral juices, metals, and stones. Those that please may learn limning (drawing), preserving, pastry, and cookery. Those that will allow longer time may obtain some general knowledge in astronomy, geography, but especially in arithmetic and history. Girls are to take experimental philosophy, "and as to the other things named, more or fewer as they incline."

The prospectus is added to Mrs Makin's single publication: *An Essay to Revive the Ancient Education of Gentlewomen*, 1673. This is a noteworthy tractate, showing that in former ages women have been educated in the arts and the sciences, and citing historical instances. Her tractate, especially in the logical treatment, is founded on a logical dissertation of Anna Maria Schurmann, of Utrecht, translated into English in 1659 by C. B.,



entitled "The learned Maid, or whether a Maid may be a Scholar," a decidedly clever brochure (See Una Birch, *Anna Van Schurmann* London, 1909) F. W.

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*Dictionary of National Biography*

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**MALAY ARCHIPELAGO, EDUCATION IN** — See NETHERLANDS, COLONIES OF, EDUCATION IN THE

**MALCOLM, HOWARD** (1799-1879) — College president. He studied at Dickinson College and the Princeton Theological Seminary. He was president of Georgetown College, Kentucky (1849-1851), and Bucknell University, at Lewisburg, Pa (1851-1857), and for some years was secretary of the American Sunday School Union. He was the author of a dictionary of the Bible and numerous religious works W S M.

**MALE TEACHERS** — See TEACHERS, SEX OF

**MALEBRANCHE, NICOLAS** (1638-1715) — One of the greatest French philosophers, who expected to enter the Church as his life work. Suffering from a weak constitution, and having a retiring disposition, he declined, after completing his studies at the Sorbonne, to become upon invitation a canon at Notre Dame in Paris. Instead he became a member of the Congregation of the Oratory of Jesus, an order that was opposed by the Society of Jesus. His talents lay dormant several years, while he was making ineffectual efforts with church history and Biblical criticism. Upon reading one of the works of Des Cartes (the *Traité de l'Homme*), which came to his hands by accident, he found his true calling. It is said that the Cartesian ideas so completely seized him that the reading had to be interrupted by reason of violent palpitation of the heart. In the course of a decade he wrote his chief work, the famous *De la Recherche de la Vérité* (1674). This and his other important works, *Christian and Metaphysical Meditation* (1683) and *Discussions on Metaphysics and Religion* (1688), were devoted to the completion of the development of Cartesianism which Malebranche's thinking accomplished. The interaction between mind and bodies was an unsolved problem left by Des Cartes. Malebranche solved it by applying the principle that "we see all things in God." God is known directly and immediately, as he is also the place of spirits. Things are in Him in archetypal form, which we perceive as ideas. Malebranche struggled against pantheism, and held to the freedom of man. The acute psychological analyses, which led to the support of his doctrine, especially in his first book, were also contributions to

educational theory, quite as much as the rules (sixth book) which should be observed in the search of truth may be applied to the work of teaching. As a philosopher and an Oratorian, Malebranche aided greatly in extending the general educational benefits of the work of Des Cartes (*q v*) E. F B.

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COMPARYE, G *Histoire critique des Doctrines de l'Éducation en France*, Vol I (Paris, 1885)

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**MALIM, WILLIAM** (1533-1594) — Headmaster of Eton College and of St Paul's School, London, probably was a native of Canterbury. He went to Eton College and King's College, Cambridge, where he graduated B A 1553, and M A in 1556. On entering on his duties at Eton (1561), he drew up in Latin a *Consuetudinarium*, which stated the rules and observances kept in the college at the beginning of the reign of Queen Elizabeth, the document is still extant at Corpus Christi College, Cambridge. The *Consuetudinarium* contains in the first part the special and exceptional customs observed at different parts of the year, and in the second a record of the daily routine of school life (See ETON). The incident of the flogging of the scholars at Eton, on hearing of which Ascham (*q v*) was prompted to write the *Scholemaster*, took place in the rule of Malim, who continued the flogging tradition of the former head, Nicholas Udall (*q v*). Malim remained at Eton until 1571. In 1573 he became headmaster of St Paul's school, where he remained till 1581, and he is stated to have lived, after retirement, till 1594. Besides the *Consuetudinarium*, he edited the *De Republica Anglorum Instauranda* (1579) of Sir Thomas Chaloner and wrote a number of commendatory Latin verses or letters to the literary work of friends F. W.

See ETON COLLEGE

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**MALTA, EDUCATION IN** — Malta, with the adjacent island of Gozo, comprises an area of 117 square miles and a population of 215,879, chiefly Italian. The island was taken by the British in 1800 and formally ceded to Great Britain in 1804. The modern system of education may be said to date from 1835, when a royal commission was appointed to inquire into the existing provision for the education of the native population. Three elementary schools were in operation at the time, supported by the government, one at Valletta, the chief town, one at Senglea, and one at Gozo. About 720 children were in attendance, and the annual expenditure for the schools was £400 (\$2000).

Ten new schools, comprising two departments each, one for boys, the other for girls, were opened, and an appropriation of £850 per annum was made for their support. At the time the rector of the university was charged with the control of primary schools. In 1844 this relation ceased by the creation of the office of Director of Primary Education. Subsequently the office was extended to include all departments of education, and a special service of inspection was created for elementary schools. This service has been well maintained, and as regards number the provision of schools is quite adequate. According to the official report for 1910, there were thirty-eight elementary schools for boys, thirty-two for girls, and nine for infants (boys and girls). The enrollment was 19,360, or very nearly 9 per cent of the population, the teaching staff numbered 739, and the expenditure for the schools amounted to £27,532 (\$133,805), borne by the government.

The schools are regularly inspected and an annual examination made of all pupils. Parents and guardians are allowed to make choice of either English or Italian as the language of colloquial instruction for their children in the infant and the elementary schools up to Grade Three. The choice for 1910 gave preference to English in respect to 96.3 per cent of all pupils. Drawing, modeling, and woodcarving are included in the program of studies, and needlework in schools for girls. The catechism of the Roman Catholic Church is also taught in deference to the religious convictions of 90 per cent of the families represented in the schools. In addition to the regular day schools, one public Sunday school for secular instruction and thirty-three night schools were reported for 1910-1911. In the principal towns night drawing classes are supported, and many pupils from these classes enter as candidates for the South Kensington examinations.

There are two public secondary schools, one for girls at Valletta, having about 250 pupils, and the second for boys at Gozo, with an enrollment of sixty students. The former offers modern languages and the usual literary branches, the latter, a Latin scientific course. The Lyceum is a secondary school of the highest order, having a full classical course. Students are admitted by examination and prepare for the university faculties. The Lyceum enrolls generally between four and five hundred students (470 in 1909). There are also five private secondary schools with courses of instruction leading to the university, a school of marine engineering, with twenty-four students, and a school of electrical engineering with thirty-eight students.

The University of Malta was established in 1769 by Grand Master Pinto in the buildings previously occupied by a college founded by the Jesuits in 1602. The present organization of the university dates from a statute of 1898

which placed it under the direction of a rector assisted by a council in which the government and the university faculties are represented. There are four faculties, among which the students were distributed as follows in 1909: theology, 17, law, 38, medicine, 15, literature and science, 88, total, 158. The university is an important center for meteorological observations, the returns of which are daily interchanged with those of the other Mediterranean stations and constant interchange maintained, also, with the chief stations of Europe. The Argotti Botanical Gardens also form an important scientific adjunct of the university.

The government expenditure for secondary and university education in 1909-1910 was £10,236, which, with the appropriation for elementary schools and £1442 for the office expenses, gave a total of £39,210 (\$190,560).

A. T. S.

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**MALVERN COLLEGE** — See GRAMMAR SCHOOL, COLLEGE, ENGLISH, PUBLIC SCHOOLS.

#### MAN, ISLE OF, EDUCATION IN —

From early times there existed in the Isle of Man, as elsewhere, parochial church schools; but the island is chiefly remarkable for the earliest educational experiment in compulsory education. At the very time that education in England was falling into its worst period, the Manx clergy and the King of Man (Lord Derby) gave the island a statutory system of education. This act was first passed in the shape of articles at a convocation of the clergy at Bishop's Court on Feb. 3, 1703-1704, it was approved at a Tynwald Court the next day, and confirmed by Lord Derby, and on June 6, 1704, was publicly proclaimed upon the Tynwald Hill according to ancient form and custom. It was a compulsory act. "all persons shall be obliged to send their children as soon as they are capable of receiving instruction to some petty school, and to continue them there until the said children can read English distinctly." The parents who neglected the duty were subject to fine, if duly "presented" for neglect by the minister, churchwardens, or Chapter Quest, moreover, the fine was to be inflicted if the children were not sent regularly. The fees were sixpence quarterly, if only reading were taught, and ninepence, if writing were included. The fees could be recovered by regular process. But the education was to be free, if the parents or relations were duly certified as poor persons. Exception as to regular attendance was made,

if the children were needed at home in harvest time. It is interesting to note this provision was followed in the English Elementary Education Act of 1876 (Section 9). Children so allowed leave of absence had to receive special Sunday instruction every third Sunday at the parish church from the schoolmaster at least an hour before evening service. The act provided for efficient schoolmasters and for the quarterly inspection of the schools. It proved efficient, but it was found necessary by an act of 1813 to increase the fees to 2s 11d a quarter for every child that learned English only, while 3s 6d was charged for each scholar taught to read and write. The lower scale was "altogether madequate in the present day." Soon after this the National Society (*qv*) began to make grants to the schools, and nine school building grants were made by the English Treasury between 1835 and 1840. The Manx legislature in 1881 passed a further act to make better provision for schoolmasters and school management. By an act of 1872 an education board and school committees were formed, and the principles of the English act of 1870 were adopted. An act of 1878 made education compulsory under the new system, and further acts were passed in 1881 and 1884. The law was amended and consolidated by an act of 1893, which defined the term "elementary education." This act was amended in 1898, and by an act of 1899 the present Council of Education assumed control. The Manx authorities in many ways have offered an historical object lesson in education to modern educational areas.

J E G de M

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**MANAGEMENT, CLASS** — See SCHOOL and CLASS MANAGEMENT

**MANAGEMENT, SCHOOL** — See SCHOOL and CLASS MANAGEMENT

**MANCHESTER COLLEGE, NORTH MANCHESTER, IND** — A coeducational institution founded in 1889 under the control of the Church of the Brethren. Academic, Bible, collegiate, normal, music, and business departments are maintained. Students are admitted on completion of a high school course. The A B degree is conferred. The teaching staff consists of twenty members.

**MANCHESTER, UNIVERSITY OF, MANCHESTER, ENGLAND** — One of the recently founded English universities. It was established in 1851 by will of John Owens as the Owens College for the purpose of "providing or aiding the means of instructing and improving young persons of the male sex (and being of an age not less than fourteen years) in such branches of learning and science as are now, and

may be hereafter, usually taught in the English universities." Another object of the foundation was to furnish an institution of learning free from denominational tests and subscriptions, to which Owens was opposed. At the time there was no place except the University College, London, which satisfied these requirements. Thus the college marked the beginning of a new era in higher education in England, and paved the way for some twelve other similar institutions established in populous commercial and industrial centers. Work was begun in Quay Street, in a house which was formerly the residence of Richard Cobden, in 1851 with A J Scott as the first principal, assisted by four professors and two teachers. The first scholarships (Victoria and Wellington) were established in 1852. In 1853 a chair of history was founded and filled by R Copley Christie, who also taught political economy and jurisprudence. For several years it seemed that the college could not succeed. But in the sixties marked progress was made, and has been maintained ever since. In 1870 the age of entrance was raised to sixteen. In 1872 the Manchester Royal School of Medicine, founded in 1824, in which John Dalton taught chemistry, was incorporated with the college. The requirements had already outgrown the existing accommodations, so a new site was acquired, and new buildings were opened in 1873, and additions have been made continually (Whitworth Engineering Laboratory, 1887 and 1909, Manchester Museum, 1887; Christie Library, 1898, Whitworth Hall, 1902, chemistry laboratories, 1895 and 1905, physical laboratories, 1908, Students' Union and gymnasium, 1909, botanical laboratories, 1911). The chair of organic chemistry, the first of its kind in the country, was founded in 1874, and in the same year the chair in geology, filled by Professor W Boyd Dawkins, was established. In 1874 a course of lectures was given to women, but they were not admitted to the regular classes. The governors were opposed to mixed classes, and in 1877 refused to sanction their admission. In that year the College of Women was opened in close proximity to the college and was taken over in 1883. Women are now admitted to all classes except engineering. In 1880 the Owens College became the first constituent part of the Victoria University, and was soon joined by University College, Liverpool, and Yorkshire College, Leeds. In 1889 Professor A W Ward was appointed principal in succession to Principal J. G. Greenwood (1857-1889), and in the same year the first parliamentary grant was received and scholarships were founded by local authorities. A Day Training Department for Men was opened in 1890, and was followed two years later by a similar department for women. Principal Ward was succeeded in 1897 by Mr., now Sir, Alfred Hopkinson, the present vice-chancellor.

In 1903 Owens College became by charter the Victoria University of Manchester, with power to grant degrees, diplomas, and other distinctions. Local interest was stimulated by this step, and many local authorities make annual grants to the university, while numerous private bequests have recently been made. The aim of the university is so far as possible to meet the requirements and needs of the community. The university was one of the first to grant a degree in commercial subjects. In addition to its reputation in the scientific branches (chemistry, physics, engineering, geology), the university has strong departments in history, English literature, and education, while the medical department, which has always enjoyed a high rank, has been considerably strengthened by the propinquity of the new Royal Infirmary. The university works in conjunction with other institutions in maintaining several departments: music with the Royal Manchester College of Music, technology with the Manchester Municipal School of Technology, and theology with several local theological colleges. Some of the courses at these institutions are recognized for degrees in the university. In the same way the medical department has obtained clinical facilities in many of the local hospitals. The university by its power of inspecting and examining schools plays an important part in promoting and supervising secondary education, and it also has representatives on numerous local education committees. Degrees are granted in the following faculties: arts, science, law, music, commerce, medicine, theology, and technology. The governing body consists of the chancellor (in 1912 Lord Morley), the vice-chancellor, the court, the council, the senate, and the boards of faculties. The university is maintained by income from endowments and invested funds, fees, and grants from the local and central authorities. There is a strong student activity, which centers round the Students' Union, housed in an excellent building opened in 1909, the Students' Representative Council, numerous clubs and societies, and the Athletic Union, for which a large athletic field was acquired in 1901. The enrollment in 1911-12 was 1557 day students. The teaching staff numbers 242 members.

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**MANCINUS, DOMINIC** — Writer of the *Liber de quattuor virtutibus et omnibus officiis ad bene beateque vivendum pertinentibus* (Leipzig, 1505 (35 leaves), also 1512, 1516). He wrote approved little works in which his fame was far

spread. Tritheim in his *Catalogus Scriptorum Ecclesiasticorum* (1493) states that Mancinus, of whom he speaks very highly, was a contemporary. A translation of the work was made into English prose, entitled *The englysche of Mancyne upon the foure cardinal vertues*, published by Pynson (c. 1520). This anonymous rendering contains a preface in which the translator shows how the book may be used for double translation. About 1523 Mancinus's book was translated into English verse by Alexander Barclay under the title of *The Mirrour of good Maners* (also published by R. Pynson). In 1568 George Turbeville translated the same book into English verse, with the title *a plaine Path to perfect Virtue*. The object of the Latin verses of Mancinus is to inculcate in the most pleasant form the four cardinal virtues, which he names as Prudence, Justice, Magnanimity, and Temperance. The book was very popular and in use in English schools at any rate till the first half of the seventeenth century, when it was on the list of books of which the Stationers' Company retained the privilege of publishing. Barclay in his Prologue states that the book is to be used to teach "maidens of tender age" as well as boys. Mancinus also wrote in Latin verse another well-known book *De Passione domini nostri Jesu Christi*, c. 1490. F. W.

**MANDEVILLE, BERNARD** (1670?-1733). — Author of the *Fable of the Bees, or Private Vices Public Benefits*, which first appeared in 1705 under the title of *The Grumbling Hive or Knaves turned Honest*, a doggerel poem giving an allegorical account of the prosperity of a hive in a reign of vice and its decline under the rule of virtue. The work as well as the later additions made to it (notes, an *Inquiry into the Origin of Moral Virtue*, *Essays on Charity and Charity Schools*, and a *Search into the Nature of Society*), because of the satirical and cynical tone caused considerable criticism. Here it is only necessary to refer to Mandeville's interesting arguments against charity schools, arguments which have been levied frequently against the spread of elementary schools. The precept and the example of good parents has much more influence than education. Clothing and educating children relieves the parents from responsibility and pauperizes them. Education does not diminish crime, which is fostered by circumstances rather than vice in nature. Those who establish charity schools are diminutive patriots and interfering meddlers. In any case education is bad for the poor, for it trains them to ease and idleness, and makes them discontented with their lot; "the knowledge of the working poor should be confined within the verge of their occupations." Education "incapacitates them (children of the poor) ever after for downright labor, which is their proper province, and in every civil society a portion they ought not to repine or grumble at, if exacted from them with discretion

and humanity" Sir James Fitzstephen Stephen remarks of this essay that it is "perhaps the first specimen of a way of writing about popular education which prevailed down to our own times"

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**MANHATTAN COLLEGE, NEW YORK CITY** — See CHRISTIAN BROTHERS, SCHOOLS OF

**MANIA** — A symptom in a number of diseases, — paresis (*qv*), dementia precox (*qv*), epilepsy (*qv*), hysteria (*qv*), and senile conditions, — including motor excitation, evidenced usually by speech, and mental excitement, or a disease condition, the excited form of manic-depressive insanity (see CIRCULAR INSANITY). The disease is manifested by motor unrest or excitement, by emotional exhalation, by loquaciousness and by apparent ease in thinking. In a mild form the maniacal state is evidenced by a distractibility, viz a constant flitting of the attention from one thing to another. The flighty character is one supposed to result by exaggeration in maniacal excitements. In the acute form of the disease the excitement is manifested by great activity, motor and mental, by false ideas of power and by exorbitant exhalation. On account of the prominence of the exaggerated ideas of power the patient is led to perform certain acts which he would not do under normal conditions. The exaggerated feeling of well-being and power leads to ideas of wealth and superiority, and these at times attain an absurd character like those in paresis. The mental exhalation often leads to the enunciation of words corresponding with the course of ideas, with little or no apparent connection, and in extreme cases there may result an apparent verbal confusion or incoherence similar to that in dementia precox.

Since mania is only one form of manic-depressive insanity, it sometimes alternates with melancholia (*qv*), and at times the symptoms are complex, including the principal ones of mania and others usually associated with melancholic states. Thus we find forms of mixed mania, which are called maniacal stupor and unproductive mania. The disease is believed to arise from an hereditary taint, but is curable or recoverable. On the other hand, it is recurrent, attacks appearing throughout the life of the individual at more or less regular intervals. It may alternate with the depressed form of manic-depressive insanity, and result in the circular types (see CIRCULAR INSANITY).

From the psychological and pedagogical

side, this diseased condition is of interest for two reasons. First, it commonly begins in childhood or in the adolescent period, the first attack being of short duration. As a rule, in the later successive attacks the duration is increased. Secondly, the symptoms are considered to be typical exaggerations of the normal reactions of the individual. The early beginning is at times correlated with the stresses of school life, the attacks (although the statistics are meager in this point) beginning more frequently during the second half of the school year. The excitement is considered by some authors, with good reason, to be simply exaggerations of the normal excitability of the individual. It is believed that the child who is normally excitable will, under stress, develop maniacal symptoms, while the usually morose and depressed child will develop the depressive symptoms when he or she becomes abnormal. The curative methods employed are those of rest, etc., and these must be kept in mind by the teacher. S. I. F.

See INSANITY

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**MANILA, UNIVERSITY OF SANTO TOMÁS** — See PHILIPPINES, EDUCATION IN

**MANITOBA, EDUCATION IN.** — See CANADA, EDUCATION IN

**MANITOBA SCHOOL CASE** — A legal and constitutional case of great importance in the history of the struggle between denominational and public schools. Under § 22, 1, of the Manitoba Act educational affairs were left to the Manitoba Provincial Legislature, provisos being added for the safeguarding of denominational interests, for an appeal in case of dispute to the Governor-General in Council, and finally for control by the Dominion Parliament through remedial laws. From 1871 to 1889 a system of denominational education existed by which Catholics and Protestants maintained their own schools. But as in course of time the character and distribution of the population changed so that there were many denominations entirely unprovided with schools, and as it was felt that a homogeneous educational system was desirable, a law was passed in 1890 establishing a government Department of Education, and Advisory Board with full control over state and rate-aided public schools; books and religious exercises were to be ordained by the Advisory Board, and religious exercises were to be nonsectarian and

optional. This law was at once attacked by the Catholics as a violation of their rights and privileges under § 22, 1, of the Manitoba Act. A test case, the Barrett case, was brought to court and carried through to the Judicial Committee of the Privy Council in England in 1893, but the decision was against the Catholics on the ground that no denominational or other schools had existed before the Act. In the meantime a petition was drawn up by the Catholics appealing to the Governor-General to protect their rights and privileges acquired since 1870, and complaining of the injustice of taxing Catholics to maintain what to all intents and purposes were Protestant schools. This appeal became the subject of litigation, and in 1895 the Judicial Committee of the Privy Council in England decided that an appeal lay to the Governor-General in whose jurisdiction it was to make some remedial order. A Remedial Order was issued in 1895 by which Catholics were permitted to maintain their own schools, were to share in any public grant to education, and were to be exempted from supporting any other schools. The province refused to obey the order, and the Dominion government took up the matter, but without taking any decisive action. At the general elections in 1896 the Liberals were returned in a large majority, the separate schools question forming an important part in the struggle. A compromise was put forward by Sir Wilfrid, then Mr. Laurier, Dominion Premier, and Mr. Greenway, Premier of Manitoba, by which a clergyman or authorized religious teacher was to be given access to Catholic schools to give religious instruction, and where the numbers permitted a Catholic teacher might be employed. The Catholics refused to accept any arrangement which did not give them their own school. The Pope was invited to send an Apostolic Delegate to consider the situation, but the Manitoba Government legalized the Laurier-Greenway compromise before he arrived. This law (the Public Schools Act, 1897) is the basis of the present system.

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**MANITOBA, UNIVERSITY OF, WINNIPEG, MAN.** — A provincial university established by the Manitoba legislature in 1877.

Six colleges are affiliated with the university. Courses are offered in arts, medicine, engineering, law, pharmacy, and commerce, all but the last leading to their respective degrees. The enrollment in 1910-1911 was 744. The faculty consists of twenty-three members.

**MANN, HORACE** (1796-1859) — American educator and statesman. He was born at Franklin, Mass., the 4th of May, 1796, and received the rudiments of his education in the district schools, being prepared for college by an itinerant schoolmaster. He entered Brown University in 1816, and was graduated three years later. He was two years tutor at Brown, when he took up the study of law at Litchfield, Conn. In 1823 he was admitted to the bar of Norfolk County, Mass., and during the next fourteen years he was engaged in the practice of law and in legislative labors. He was for six years a member of the house of representatives of Massachusetts and three years a member of the state senate. In the latter body he was directly responsible for the enactment of four important acts: (1) a law against the use of alcoholic beverages, (2) against the traffic in lottery tickets, (3) the establishment of state hospitals for the insane, and (4) an act creating the State Board of Education.

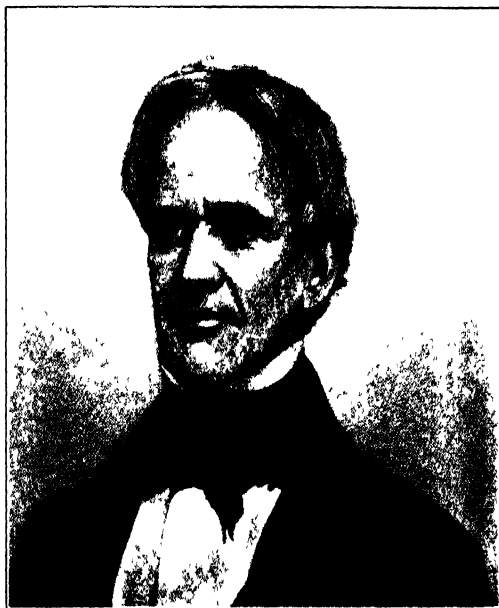
The new board was given power to select a secretary who should have the general oversight of the schools of the commonwealth. It was through the persuasions of his friends Edwin Dwight and Governor Edward Everett (*qv*) that Mr. Mann was induced to give up the profession of law and undertake the reorganization of the Massachusetts school system. His task was by no means an easy one. The growth of the district school system and the extension of private schools had greatly weakened the efficiency and influence of the public schools. He entered upon his new duties in June, 1837. He wrote to a friend: "My law books are for sale. My office is to let. The bar is no longer my forum. I have abandoned jurisprudence, and betaken myself to the larger sphere of mind and morals."

As secretary of the State Board of Education, Mr. Mann's first effort was to educate public opinion with reference to the needs and purposes of public education. The lyceum movement (*qv*) had made public lectures popular, and he laid under tribute brilliant clergymen, distinguished lawyers, prominent men of letters, and well-known college professors as speakers at the hundreds of public meetings held throughout the commonwealth. Through these public meetings he literally stirred the thoughts and feelings of the entire state, and made possible subsequent legislation which led to the reestablishment of a common school system in Massachusetts.

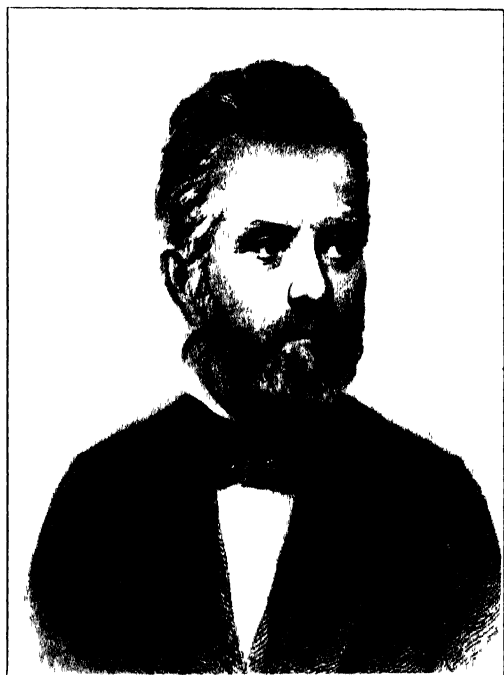
His next important reform was the improvement of the teaching force of the state, and this he accomplished by the organization of



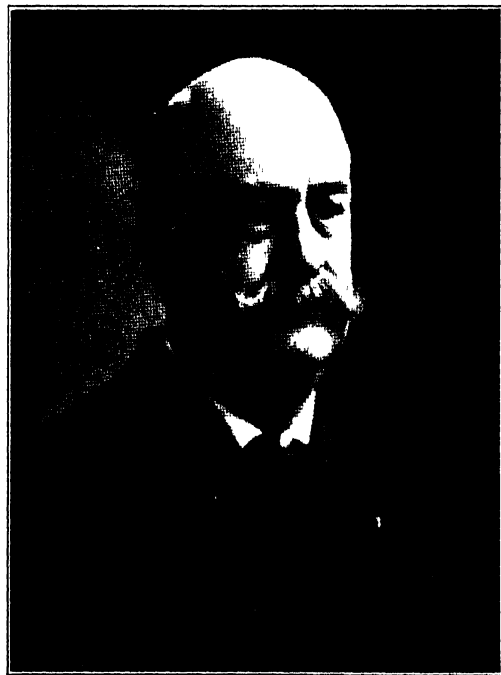
William Maclure (1763-1830)  
See page 104



Horace Mann (1796-1859)  
See page 118



Lowell Mason (1792-1872)  
See page 146



Francis W. Parker (1831-1902).  
See page 606.

A GROUP OF AMERICAN EDUCATORS.





teachers' institutes (*qv*) and the establishment of state normal schools. For his institutes he secured the best available instructors of subjects taught in the common schools, as well as lecturers on the art of teaching and the professional aspects of education. But he early recognized the need of more extended training for teachers, and through the generosity of his friend Edmund Dwight he was enabled to make the experiment of special schools for this purpose. Two normal schools were accordingly organized -- at Lexington (now Framingham) and Barre (now Westfield) -- before the end of his second year, and during his third year another school was opened at Bridgewater. Through these normal schools, and similar institutions subsequently organized, Mr Mann demonstrated to the people of Massachusetts the value of better trained teachers, and the state assumed the entire responsibility of the normal schools.

Another important feature of Mr Mann's labors was the collection and diffusion of information concerning the actual condition of public education. A law of 1826 had required of the school committees in the different towns of the commonwealth annual statements concerning school attendance, expenditures, etc., but little use had been made of such returns. In Mr Mann's hands they became "powerful instruments in educating the public," and they formed the framework of the twelve reports that he issued during the period of his secretaryship of the Massachusetts State Board of Education. These reports were issued as public documents and widely distributed, and more recently Mr Mann's son has issued an abridged and edited edition of the same in four volumes (Boston, 1891).

The twelve reports on the condition of education in Massachusetts and elsewhere, together with his discussions of the aims, purposes, and means of education, occupy a commanding place in the history of American education. The first report deals with the construction and hygiene of schools -- ventilation, heating, seating, and playgrounds -- and the physical factors in school life, the duties and responsibilities of school committees, the enforcement of school attendance laws, and the needs of higher standards in the teaching force. The second report is devoted largely to the course of study and to a discussion and criticism of the current methods of teaching reading, spelling, and composition. Mr Mann was strongly opposed to the alphabetic method (*qv*) of teaching reading, and he warmly endorsed the word method. The question of child labor (*qv*) and the dangers of employing young children in factories formed an important part of the third report. In the same report he discussed the importance of school libraries and the formation of reading tastes during the school course. The district system (*qv*), "entrenched behind statutory rights and im-

memorial usage," was the burden of the fourth report. Mr Mann was convinced that "no substantial and general progress could be made so long as the district system existed," and during his remaining eight years in office he "kept up a continuous fire of argument, entreaty, fact, philosophy, statistics, and testimony." But it required thirty years more to complete the work of reform in this direction.

The fifth report is essentially a pedagogic document. Mr Mann discusses the teacher, normal schools, pedagogical books, educational journals, school management, corporal punishment, and the relation of the State to education. One of his biographers holds that in his fifth report Mr Mann reached the climax of his power and success and that it was received at home and abroad in the spirit of highest appreciation (Hubbell). He established in 1838 the *Common School Journal*, ten volumes of which were issued during his secretaryship, and after his retirement William B. Fowle (*qv*) became its editor and publisher. The sixth report reverts to the course of study and more particularly to its enrichment, and it contains one of the earliest exhaustive American discussions of the educational value of the study of physiology and hygiene.

In May, 1843, Mr Mann went to Europe, where he spent five months in the study of educational conditions in Great Britain, Belgium, Holland, France, Germany, and Switzerland. His seventh report embodied the results of his educational tour abroad, and it was the pretext for an attack upon Mr Mann by the schoolmasters of Boston. His praise of European schools, and particularly his commendation of oral instruction, the word method in teaching reading, and the abolition of corporal punishment in Germany, wounded the sensibilities of the Boston schoolmasters, and a bitter controversy ensued, during which time twenty-five pamphlets were printed attacking and defending Mr Mann. As Mr. Hinsdale remarks, "The controversy attracted much attention, and made a deep impression on the public mind. It had much to do with fixing Horace Mann's place in educational history. The champion of the new régime had met the champions of the old and overthrown them in the arena of public debate."

In his eighth report Mr Mann discusses the value of local and county educational associations, the value of vocal music in the elementary schools, and the use of the Bible in schools. It will be recalled that it was through the aid given Lowell Mason (*qv*) by Mr Mann that singing was made a feature of public school work. The ninth report urges the employment of women teachers in the primary schools, the value of teachers' institutes, and the place of moral instruction in public education. The tenth report is a history of the Massachusetts school system. The eleventh report discusses the relation of education and crime, and the

twelfth report — prepared after Mann had resigned his secretaryship — reviews the changes in education in Massachusetts during the past twelve years, and discusses the problem of education for defective and dependent children.

In 1848 Mr Mann was chosen a member of Congress from Massachusetts to succeed John Quincy Adams. He served in this capacity for five years, full of eventful history. In 1853 he became the first president of Antioch College (*qv*), which position he filled until his death on Aug. 2, 1859. His educational writings include the twelve reports as secretary of the Board of Education of Massachusetts (Boston, 1838-1849), editorials and articles in the *Common School Journal* (1838-1848), *Lectures on Education* (1848), and numerous papers in *Barnard's American Journal of Education* and the *Proceedings of the American Institute of Instruction*. Extracts from his reports and addresses have been published by his son, George Combe Mann (Boston, 1891, 4 vols.). No American educator has been more widely discussed than Horace Mann. Five different works dealing with his life have been published in the United States, three in France, two in Spanish countries, and one in Italy. W. S. M.

See MASSACHUSETTS, STATE OF

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There is a large and valuable periodical literature of the life and work of Horace Mann. See *Barnard's American Journal of Education*, December, 1858 (Vol. V), *North American Review*, January, 1841, and January, 1845 (Vols. CII and CX), *Littell's Living Age*, May, 1846, and July, 1850 (Vols. X and XXIV), *Edinburgh Review*, July, 1841 (Vol. XXIII), *Princeton Review*, 1886 (Vol. XXXVIII), *Chambers' Journal*, May, 1846 (Vol. V), *Educational Review*, May, 1893, and June and September, 1896 (Vols. V and XII), *Southern Quarterly Review*, January, 1845 (Vol. VII), and *Revue Pédagogique*, December, 1885, and March, 1887 (Vols. X and XII).

**MANN, MARY PEABODY** (1806-1887) — Wife of Horace Mann, was privately educated. She was associated with her husband in his public school reforms, and with her sister, Elizabeth Palmer Peabody (*qv*), in the organization of kindergartens in Boston. She wrote *Life of Horace Mann* (Boston, 1865, republished 1891), and was joint author with Miss Peabody of *Culture of Infancy* (Boston, 1863).

W. S. M.

#### MANNERS AND MORALS, EDUCATION

IN — A term of peculiar significance in

Renaissance and post-Renaissance education, when there was formed a combination of chivalric and formal literary education. Then a direct training in manners and formal morality became an essential part of the dominant education. The importance of conduct had been stressed in educational thought and practice from earliest times. Oriental education, in its various types, is largely training in formal conduct, often having little or no relation to moral principles of fundamental importance. With both the Greeks and Romans conduct was the essential product of education, and within the scope of conduct striven for by formal education was much which could be included under manners. During the middle ages a sharp division existed between the literary education of monks and ecclesiastics, and the education in conduct and manners of the nobles and gentry. With the Renaissance these two types were fused, with the result that the gentry aspired to a literary education, which indeed in time came to be the test of gentility, and on the other hand the Church insisted on broadening the scope of morals to include formal manners. Still, while many of the treatises on manners were written by churchmen, most of them found their inspiration in the traditions of chivalry, and the earlier works were direct contributions to chivalric education. (See CHIVALRIC EDUCATION, GENTRY AND NOBLES, EDUCATION OF, RENAISSANCE, EDUCATION DURING THE, SOCIAL REALISM.)

The baronial system developed the plan of education in noblemen's houses (see CHIVALRIC EDUCATION), especially in the houses of the Chancellors of the Kings, in whose hands the court patronage lay. In this training the cultivation of manners and morals took a prominent place. The late Dr. Furnivall brought together in the *Babes Book* (Early English Text Society) the following manuals. *The Babes Book or a "Lytyl Reporte" of How Young People should behave*, c. 1475 A.D., *The A B C of Aristotle*, c. 1430 A.D., *Urbanitas*, c. 1460 A.D., the *Lytylle Childrens Lytyl Boke*, c. 1480 A.D., the *Young Children's Book*, c. 1500 A.D., the *Stans Puer ad Mensam*, attributed to John Ladgate, c. 1460 A.D., *How the Good Wife taughte her Doughter*, c. 1430, *How the Wise Man taught his Son*, c. 1430. More comprehensive treatises are the following: (1) *The Boke of Nurture, or School of good manners, for men, servants, and children necessary for all youth and children* by Hugh Rhodes of the Kinges Chappell, 1577. (2) *The Boke of Nurture followyng Englondis guse*. By one, John Russell once usher of the chamber and marshal in hall to Humphry Duke of Gloucester. (3) *The Boke of Keruynge*, printed by Wynkyn de Worde, 1513. (4) *The Booke of Demeanor and the Allowance and Disallowance of certain Misdemeanours in Companie* (taken from Richard Weste's *Schoole of Virtue*,

1619). (5) *The Boke of Curtasye*, c. 1430 A.D. Sloane Ms., 1986, Brit. Mus. (6) Bishop Grossetest's *Household Statutes*, c. 1450 (7) *The Schoole of Virtue and booke of good Nourture for children and youth to learne theyr dutie by. Newly Augmented by the author F. S[cager]*, 1557 (8) A Series of *Latin Graces*

Further, Dr Furnivall enriched his book with a collection of French and Latin poems on Manners and Meals. An Italian series of *Books of Courtesy* was edited by W. M. Rossetti in 1869. The most finished of all these Courtesy books was Baldassare Castiglione's (*qv*) *Cortegiano* in 1528. Miss A. T. Drane (*Christian Schools and Scholars*, 1881) gives an account of English Education in the fourteenth century, and quotes the rules for the household drawn up by Elzéar de Sabran, in Puy-Michel in Provence, anticipating the training in morals and manners of a household like that of Sir Thomas More at Chelsea. With regard to schools, we have the classical maxim of William of Wykeham in founding Winchester College (1393) that "Manners maketh Man." In the directions issued to the Master of the Henxmen, who had the training of the young gentlemen of the Court of Edward IV, he was required "to shew the schools of urbanitie and nourture of England to have all courtesy in words, deeds and degrees," and diligently to keep them in all rules of precedence, and it was his special business to sit with them in hall, and "have respect to their demeanings." Esquires were appointed to keep the young henxmen (*i.e.* the children sent to the King's court for training) "honest company" in talking of Kings and other policies." This talking and telling of tales, though the medieval romance was condemned by writers like Erasmus and Vives, in whose time it had become a source of corruption, was a recognized method of moral culture, in accordance with the idea of the times, *e.g.* one of Caxton's productions was, in 1484, "the translation of Geoffrey de la Tour Landry's *Book of Fayre Ensamles and then-syngeimentys and techyng of his daughters* originally written in 1371. The stories are composed with the idea of inciting to good conduct, and are taken, some from the Scriptures, some from the lives of Saints, others from popular tales. They show the idea of the moral training of the women in the age.

It is interesting to note here and refer for further details to the article on JEWISH EDUCATION that a large number of Hebrew books of morals appeared in the eleventh, twelfth, and later centuries dealing as much with the manners in general intercourse and table manners as with the conduct of the religious man.

Turning to the Renaissance textbooks of manners and morals, the subject claimed the attention of Juan Luis Vives (*qv*) in his *Introductio ad Sapientiam*, his *Satellitium*, and his two epistles *De Ratione Studii puerilis*, all published at Louvain in 1524. *Pietas literata*,

a title which has been appropriated as the aim of Sturm, certainly was as marked in Vives. As Sir Richard Moryson, the English translator (1540) of the *Introductio ad Sapientiam* says, the collection of precepts therein contained are calculated to root the love and desire of virtue in the pupil's heart, "extirping from it all manner of vice." It is, in fact, a treatise of Christian morals, for the young pupil, consisting of maxims or aphorisms. The *Satellitium*, which Vives dedicated to Princess Mary, daughter of King Henry VIII and Catherine of Aragon, was to be a "body guard," not like that of the old emperors, against attacks on the body, but his symbolical maxims (some 200 in number) would preserve the princess child, by admonitions, from all vices and faults. In the *De Ratione Studii puerilis*, Vives requires the pupil to learn the *Distichs* of Cato, the *Maxims* of Publilius Syrus, the *Sentences of the Seven Wise Men*, as edited by Erasmus (1513). The child is bidden to take pleasure in stories which teach "the art" of life — such as those of the boy in Aulus Gellius, Joseph in the Holy Books, of Lucretia in Livy, Griselda, and so on. The authors to be read are chiefly medieval Christian poets such as Prudentius. The use of medieval Christian moralist poets was enjoined by Colet's Statutes (1518) for St. Paul's School, and by the Statutes (1583) for St. Bees School. Right on from Chaucer to Vives it should be possible to be said of the pastor and teacher — as Chaucer said of the Clerk of Oxenford, "Souninge in moral vertu was his speche."

Of the many foreign books of moral maxims, a typical one may be named, printed at Lyons in 1576 in French and Italian, entitled *Trésor de Vertu O Tesoro di Vertu*, in which are contained all the noble and excellent sentences and instructions of all the first authors, Hebrew, Greek, and Latin, to lead each one to a good and honorable life.

Wider in circulation than Vives' *Introductio ad Sapientiam* was the *De Civilitate Morum puerilium* (1526) of Erasmus. He states in the Preface that the first element in the instruction of children is the awakening of the child to piety, the second, to learning, the third, to the duties of life, and fourth, to be cultivated from the earliest age, in the rules of civility. It is becoming for a man to control his deportment, his gestures, his clothing, as well as his intelligence. Those who represent the cause of learning must be noble, and ought therefore to show the fruits of courtesy and good breeding. Erasmus proceeds in detail to describe the essential characteristics of good manners and morals in chapters on graceful bearing, clothing, behavior in church, at meals, in meeting others, at games, and on going to bed. Erasmus points out that we cannot choose our fatherland, or our parents, but every one can acquire good qualities and manners. Led by Vives and Erasmus, the Renaissance writers endeavored to win manners and morals, for

the young scholar, not away from, but as common ground with, the nobles and gentry. Thus Lawrence Humphrey (*qv*) in the *Nobles*, 1560, requires the reading of Erasmus's *De Civilitate* by the young nobles, while in 1568 Dean Nowell's *Statutes at Bangor* prescribed the same book of Erasmus for the Third Form. There is an instance in 1588 of the Headmaster of the King's School, Canterbury, Anthony Short, being admonished by the Dean and Chapter "to have a greater care and to be more diligent than he hath been, that his scholars may better profit in learning as well as good manners and civility than late they have done."

Erasmus's book was widely circulated abroad, and was translated into English and published in 1532, by Robert Whittington, poet laureate, as *A lytull Booke of good maners for children*. In England, however, William Lily's lines on *Manners and Morals* (*De Moribus*) were read, and ordinarily learned by pupils in the authorized grammar. Manners and morals formed an important element in the Colloquies and in other textbooks, as, *e.g.* in Cootes's *English Schoolmaster*, 1596. In 1633 John Clarke of Lincoln Grammar School wrote his *Dux Grammaticus*, in which is curiously included a treatise on manners, which he regards as an indispensable part of grammar school training, so that the boy shall perform his religious duties, his duty to his fellows and to himself, in the house, at table, to visitors, and to superiors of all kinds. One of the well-known books of the Jesuits was on this subject, *viz.* *Youths Behaviour, or Decency in Conversation amongst Men. Composed in French . . . now turned into English by Francis Hawkins, Nephew to Sir Thomas Hawkins, translator of Caussin's Holy Court* 4th ed., 1646. This book is said to have been translated by the child at eight years of age. The original was by La Flèche: *Bien-séance de la Conversation entre les hommes*, 1595, and had been translated into Latin, 1617, by Leonard Péru. (See GENTRY AND NOBLES, EDUCATION OF) Charles Hoole (*qv*) recommends the book as well as Erasmus' *De Civilitate*, for he explains that in a school the "sweet and orderly behaviour of children" brings more credit than even sound teaching, "because this speaketh to every one that the child is well taught, even if he learn" but little else.

In addition to the requirement of the teaching of Manners and Morals by the private tutor in the nobleman's family, and in the private as well as in the public grammar schools, the still more important teaching in the ordinary home and household must be borne in mind. In 1537 Richard Whitford wrote *A Worke for Householdiers* in which the full details are given especially in connection with morals, to be inculcated into the household adult, child, family, and servants, and a treatment is given of lying, oaths, conduct at church, on the Sunday, and of due reverence and respect to parents

Whitford was a Roman Catholic, but the same type of textbook was sanctioned by the Protestant Puritans, *e.g.* by Robert Cleaver and John Dod in 1612, giving full details as to the duties of husbands and wives, parents and children, masters and servants. William Gouge, in his *Of Domesticall Duties*, 3d ed., 1634, takes the highest ground for the inculcation of good manners in the child, *viz.* that "not only heathen men, but also the Holy Ghost Himself hath prescribed many rules of good manners." Still more interesting is the treatise of Hezekiah Woodward *A Child's Patrimony laid out upon the Good Culture or Talking over his Whole Man* (1640), one of the most interesting educational works of the seventeenth century especially from the moral side. The *Gentleman's Calling*, c. 1660, and the *Ladies' Calling* (c. 1673), and Clement Ellis's *Gentle Sinner* (1660) abound in the treatment of the training of Manners and Morals, and substantially all the writers on educational theory and practice in the seventeenth and eighteenth centuries deal with the subject. It will be recalled that Daniel Defoe (*qv*) wrote a book which had enormous circulation in the eighteenth century, called the *Family Instructor*, continuing the series of manuals for practical treatment of the relations of fathers and children, masters and servants, husbands and wives. Throughout this class of book the Bible is the basis, for a great mass of practical household treatises are founded on the Ten Commandments.

Otherwise the sources from which the manuals for manners and morals were drawn were mainly detached sayings of Solon, Pythagoras, Theognis, Phocylides, Cicero, Cato, Seneca, and of course, Plutarch, Plato, and Aristotle. (Golding made his translation of Seneca's *Beneficia* in 1577.) The permeating influence of Aristotle's *Ethics* joined with the Christian view can be best seen in the noble plan of the *Faerie Queene* of Edmund Spenser (*qv.*), 1590-1596, which "is disposed into twelve books, fashioning XII morall virtues," of which he only wrote on six, *viz.* holiness, temperance, chastity, fidelity, justice, and courtesy. Substantially, the *Faerie Queene* is an educational moral treatise. Nor were suggestions for practical training in manners and morals wanting. In another less known Utopian romance, the *Nova Solyma*, 1648, first translated into English by Walter Begley in 1902, the father in placing his son with the best of tutors says he will not only be made proficient in the liberal arts, but also in the "true moral virtues," and to become a "good man" is the "greatest blessing you can have." The methods of training are described. Pupils are required to practice letter-writing to men of various ranks, to study the best word and gesture in ordinary intercourse, and the most appropriate language for disputing, joking, rebuking, etc. "They have to go through all this in character as on the stage." George Snell in the *Right Teaching of*

## MANNHEIM SYSTEM

*Useful Knowledge* (1649) suggests that the child should be trained to act the taking of messages courteously, the making of an obeisance, and the *going through* of what is required in their childish duties in preparation for the right performance of the actual duty itself. The religious sanctions for manners and morals in the Sabbath observances, long sermons, catechisings, learning by heart of Scriptures, exercise of parental and pastoral authority, made Puritanic training in morals *practical*, the eighteenth and early nineteenth century moral stories and goody-goody tales were the literary survival of an older, stern, and unceasing discipline in school and home. This aspect of the subject is treated further under LITERATURE, CHILDREN'S, while the modern status of the entire subject is considered under MORAL EDUCATION

F. W.

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**MANNHEIM SYSTEM** — See GERMANY, EDUCATION IN

**MANNING, JAMES** (1738–1791) — First president of Brown University. He studied at Hopkins Academy, and was graduated from the College of New Jersey (now Princeton) in 1762. After spending a brief period as a traveling evangelist, he opened a Latin school at Warren, R. I., which in 1765 became Brown University. Five years later it was removed to Providence. Manning served as president of the institution until his death in 1791. At the same time he was pastor of the Baptist church in Providence that had been founded by Roger Williams. He was a delegate to the Continental Congress in 1785–1786, and he led the movement which secured the adoption of the constitution by Rhode Island. He was also active in the movement looking toward the establishment of a public school system, and his most important educational publication is *Report in Favor of the Establishment of Free Public Schools in the Town of Providence*. W. S. M.

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## MANUAL LABOR INSTITUTIONS

**MANSFIELD, JARED** (1759–1830) — Textbook author. He was graduated from Yale College in 1777, and taught for many years in New Haven and in the Friends' Academy at Philadelphia. He was also instructor in the military academy at West Point (1802–1828). He wrote a series of mathematical textbooks  
 W. S. M.

**MANTUA.** — See VITTORINO DA FELTRE.

**MANTUANUS, BAPTISTA SPAGNUOLI** (1448–1516) — Humanist author of Latin poems which for a time seem to have had a greater vogue than the classical works. His chief work was *Bucolica seu Adolescentia* (1502), of which numerous editions soon appeared abroad and in England. Though styled eclogues, only two of the poems deal with rural life. The work early became a popular school textbook, and editions were issued giving parallel passages from the classics. The eclogues were imitated in English as early as 1514 by Alexander Barclay; they were translated by Turberville in 1567, and imitated again by Spenser in *Shepherd's Calendar* (1587). It was recommended for school use by Colet, and was prescribed by statute in several schools. Spagnuoli is the "good old Mantuan" quoted by Holofernes in Shakespeare's *Love's Labour's Lost*, IV, ii, 95.

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**MANUAL ARTS** — See MANUAL TRAINING, also INDUSTRIAL EDUCATION, TECHNICAL EDUCATION

**MANUAL LABOR INSTITUTIONS AND THE MANUAL LABOR SOCIETY** — The movement for the organization of manual labor schools in the United States began about 1825, and drew its inspiration chiefly from the work of Fellenberg (*q v*). Such schools were organized in Connecticut in 1819, in Maine in 1821, in Massachusetts in 1824, in New York in 1827, and in New Jersey in 1830. The purpose was to unite training in agricultural and mechanical pursuits with the ordinary school studies (See AGRICULTURAL EDUCATION). The Oneida Manual Labor Institute, at Whitesboro, N. Y., was in existence from 1827 to 1834. A part of the day was devoted to work in shops and fields, and the remainder of the day to classroom work in the English branches. George W. Gale (*q v*), the director of the institute, aimed to make his institution largely self-supporting through the results of the boys' labors.

The Manual Labor Society for Promoting Manual Labor in Literary Institutions was

organized in New York in 1831 for the purpose of "collecting and diffusing information calculated to promote the establishment and prosperity of manual labor schools and seminaries in the United States, and for introducing the system of manual labor into institutions now established without diminishing the standard of literary and scientific attainments." Zachariah Lewis was the first president, and Theodore Frelinghuysen and Jeremiah Day were the vice-presidents. Theodore F. Weld, who had been connected with the Oneida Manual Labor Institute, was engaged as field agent.

The arguments in favor of manual labor schools, as opposed to purely literary institutions, were thus stated by the society: (1) they provide a system of education that is natural; (2) they interest the mind, (3) they have good moral effects; (4) they train in habits of industry, independence of character, and originality; (5) they render prominent all the manlier features of character, (6) they give power for acquiring a knowledge of human nature; (7) they greatly diminish the cost of education; (8) they increase the wealth of the country, and (9) they tend to do away with absurd distinctions in society. The first annual report of the society was published in 1831 (120 pp.). This, however, was the last, for the society soon disbanded on account of lack of interest in the movement and the opposition of existing literary institutions. Thus the manual training movement in the United States was deferred for a half century. (See **MANUAL TRAINING**.) The society was also active in the matter of gymnastics in schools, and in no small measure the credit for the early recognition of this form of physical training in American schools is due to the Manual Labor Society. (See **GYMNASTICS**.) W S M

See **AGRICULTURAL EDUCATION**, **FELLENBERG**, **MANUAL TRAINING**.

**MANUAL TRAINING.** — In spite of many objections, the term "manual training" has come to be generally applied to all forms of constructive handwork when used as an agent in general education. When used in the broadest sense, instruction in domestic art and science, and constructive work in various materials in the lower grades are included. In a narrower conception, the term is restricted to work with mechanical tools given to boys. The tendency in American usage is to distinguish sharply between manual training as a feature of general education and specialized tool instruction given to selected groups for purely vocational ends.

**Place of Manual Training in the various National Systems.** — Manual training was first recognized as a valuable feature of school work in European countries. As early as 1858 Otto Cygnæus, who later organized the public schools of Finland (*q.v.*) on a modern basis, outlined a plan of handwork for the primary

schools of that country, and in 1866 some form of manual work was made compulsory in all primary schools for boys in country districts as well as in the training colleges for male teachers.

It was Sweden, however, that took the most active part in the early development of manual training. In 1872 the government reached the conclusion that schools for instruction in sloyd were necessary to restore the waning physical and moral health of the nation due to the tendency towards concentration in cities, and the decline of the old home industries. The schools first established dealt with various lines of the old *Hus Sloyd* occupations, such as carpentry, turning, wood carving, brush making, bookbinding, coopers' and wheelwright work, and exhibited more of an industrial than a cultural plan. This was gradually changed, however, as the movement gained headway, until a well-organized scheme of educational tool work for boys between twelve and fifteen years of age, aimed mainly at the production of domestic utensils, was developed into a recognized school sloyd system. In 1877 the work was introduced into the Folk Schools as a voluntary subject, and government aid was granted in support of the instruction. A sloyd school was established at Naas in 1872 for teaching boys and young men. Three years later a second school, known as the Sloyd Seminarium, was organized under the direction of Herr Otto Salomon for the training of teachers. This institution has been a very active and stimulating force in the development of manual training in Sweden, and particularly through its summer courses for teachers it has exercised a strong influence upon the thought and practice of other countries. At the present time, sloyd instruction is given in all regular normal schools of the country.

Interest in the principle of manual training developed early in France. In 1873 the *École Salicis* was established at Paris, in which constructive work in various forms was made an important feature of the curriculum. Manual training was made compulsory in the elementary primary schools of the country by a law in 1882, but the provisions of this law are, even at the present time, only partially realized because of the failure of the communes to provide workshops. Almost from the first, French educators developed a system of instruction for every grade of the elementary schools. Such schemes have been characterized by variety of materials and processes, by their close dependence upon drawing, and by a precise mathematical and rather formal quality. A distinctive feature in the French shopwork of the upper grades is that the theoretical instruction is given by the classroom teacher while the practical instruction is given by artisan teachers. The largest development of manual training in the elementary school is

to be found in the city of Paris, where nearly 200 schools are equipped either with wood-working shops or with metal-working shops.

In Germany an active propaganda in manual training has been maintained for many years, but as yet comparatively little has been accomplished towards incorporating manual training into the work of the common schools. A large number of workshops have been established in various parts of the Empire, which are in many cases supported by individuals or societies. Instruction in these shops is in most cases given outside of school hours on an optional basis. In a few cases, as in Munich, the work is given during the regular school day and is obligatory. The ministries of several of the German states make annual contributions in aid of manual instruction, but the work still depends to a considerable extent upon private or corporate support. Manual work for girls in the form of needlework, on the other hand, has for a long time been compulsory in the common schools of Germany. Work in cookery for the older girls is now appearing in a number of places. Courses in paper, cardboard, and pasteboard, as well as in wood and metal, are features of the German scheme of manual work, and the making of simple apparatus for scientific instruction is common. The Manual Training Seminary at Leipzig, founded in 1887 by the Association for Manual Training for Boys, under the leadership of Dr. Waldemar Goetze, is the active center of the movement in Germany. This seminary is the main institution for the training of teachers, and a large proportion of those teaching shopwork in Germany have attended its summer courses.

In England the development of manual training dates from about 1887, when centers of shopwork were established in the London schools. The Board of Education for England and Wales awards special grants for manual training instruction given to boys and girls at least eleven years old. Teachers are required to possess certificates either of the City and Guilds of London Institute or of the Educational Handwork Association. Teachers' certificates issued by the former body are accepted as a qualification for teaching shopwork by the Board of Education of England and Wales, by the Scottish Education Department, and by the Department of Agricultural and Technical Instruction for Ireland. In the years 1892-1911 the institute granted certificates to 5240 teachers of woodwork and to 501 teachers of metal work. English manual training in the elementary schools is generally a reflection either of the Swedish sloyd or an exercise and project system developed by teachers who have received practical training in the trades. At the present time, manual training is represented as a compulsory feature in the schools of almost all the large cities of England. In London

in 1910 there were 240 centers at which instruction was afforded to some 60,000 boys.

In the United States, manual training came into being partly as the expression of a new educational philosophy and partly from dissatisfaction on the part of the public with the results of the purely bookish curriculum of the schools. The first appearance of constructive work for clearly definite cultural purposes appears to have been in connection with the classes of the Workingmen's School founded in 1878 by the Ethical Culture Society of New York. This institution comprised a kindergarten and elementary school in which manual work from the first formed a vital and important part of the educational program. It was, however, in the secondary school that manual training first gained serious attention in American education. In 1880, through the efforts of Dr. Calvin A. Woodward, the St. Louis Manual Training School was opened in connection with Washington University. This school was a completely equipped high school, giving instruction in various lines of shopwork and in mechanical drafting, as well as in the regular secondary school subjects, with exception of the classics. The work of this school attracted wide attention, and the success with which mechanic arts instruction had been incorporated in the curriculum led to the rapid organization of similar schools in other large cities. In Chicago, Toledo, Cleveland, and Cincinnati privately supported schools were organized from 1884 to 1886, and public manual training schools were established in Baltimore in 1884, Philadelphia 1885, and Omaha 1886. The first provision for girls' work in these schools was made in the case of the Toledo Manual Training School, and included sewing, dressmaking, millinery, and cooking. The shopwork instruction given in these institutions comprised joinery, turning, pattern-making, forging, and machine work, and sometimes foundry practice and tinsmithing. The character of this work has been very similar in different schools, and until late years has been almost uniformly based upon the principles of the "Russian System," so called because the ideas involved first gained recognition in the United States through the exhibit of the Imperial Technical School of St. Petersburg at the Centennial Exhibition in 1876. The central idea of this system of shopwork instruction which was developed in a technical school for the instruction of engineers, is the analysis of a craft into its fundamental processes and typical constructions, and the presentation of these elements in an orderly and sequential scheme as separate exercises.

The rapid development of this type of secondary school, which has continued steadily since its inception, has resulted in an

institution peculiarly American. In other countries the introduction and spread of manual training has been confined to the elementary school, and no institution exists in Europe of a purely educational character that represents any parallel to the comprehensive and costly equipment of these schools, nor, it should be said, to their rather vague and indefinite educational status. Established with the double purpose of affording a more liberal and realistic training for boys of secondary school age, and of developing capacities for industrial careers, the records show that apart from the large number that go forward into engineering schools, only a trivial percentage of graduates from manual training high schools enter directly into industrial work, and that this small number go almost wholly into the "white shirt" occupations of draftsman or administrative assistant. Of late years a tendency has become apparent to intensify the industrial side of the curriculum in such schools, and to transform them into technical schools with a definite vocational basis. (See INDUSTRIAL EDUCATION.)

It was not until between the years 1887 and 1890 that manual training reached the public elementary school. Experimental classes in carpentry, the expense of which was borne by Mrs. Quincy A. Shaw, were conducted at the Dwight School in Boston in 1882. These were taken under the care of the city and transferred to temporary quarters in the English High School building in 1884, but the work was not given a place in the course of study until 1888. In Springfield, Mass., sewing was introduced in the schools in 1884, and in 1886 a manual training school was established, at which pupils coming voluntarily from the elementary schools were given instruction in knifework. In 1885 the Legislature of New Jersey passed a law providing that the state would duplicate any amount between \$500, and \$5000 raised by a city or town for instruction in manual training. This led to the early introduction of the work in a number of places in various parts of the state, first of all in Montclair. In New York City the Industrial Education Association was established in 1886 for the purpose of providing instruction in manual training for boys and girls in voluntary classes, and two years later was organized as a college for the training of instructors to undertake the task of supplying teachers for the new field. In 1888 the city of New York began the introduction in the public schools of a manual training course of study, including drawing, sewing, cooking, and woodwork.

**Content of Course** — The early work in manual training in the elementary school was almost uniformly limited to the two or three upper grades, and consisted of shopwork for boys and sewing and cooking for

girls. From these grades handwork slowly made its way downward, and at the present time such work, dealing with a variety of materials, is given in all grades in many of the larger cities. The report of the Commissioner of Education for 1910 states that in more than seven hundred cities of the United States, public schools have manual training in several years of the course, generally in the elementary grades, but frequently in all the years from kindergarten through the high school.

**Educational Value. Underlying Theory** — In the early agitation for the introduction of manual training in the eighties, the claims put forward for the new subject as evidenced in the discussions of the National Education Association, and particularly in the meeting of the Department of Superintendence in 1888, were in the main based on the conception of formal discipline. Manual training was entitled to a place in the school because it exercised the observation, trained the reasoning powers, and strengthened the will. Although it is doubtless true that public support of the new movement was due to a vague but sincere conviction that the introduction of handwork stood for industrial training, educators as a rule most carefully refrained from advancing a claim for utilitarian value in the work, and all utterances were for the most part expressed strictly in terms of the prevailing faculty psychology.

The early practice of manual training in the elementary school was experimental and formal. The type exercise was the universal form in which handwork appeared, and it was not until the influence emanating from the Sloyd School of Boston (established in 1888) began to be felt that toolwork for boys assumed a more invigorating form. The fundamental principle of sloyd, which places emphasis on the value of working for a useful end, and so enlisting the interest of the worker, soon found acceptance in the general practice in the elementary school, and to a certain extent modified the methods of the manual training high school.

About this same period, the doctrine of formal discipline began to lose its place as the cornerstone of manual training philosophy. By the beginning of the present century the conviction had developed that constructive work comes into natural relations with the worker only when he contributes something of his own thought to attain the end placed before him. Out of this attitude, aided by a deeper study of the thought of such educational leaders as Froebel, Pestalozzi, and Herbart, and clarified by the emphasis of the psychologists on the unity of the mental processes, has developed the conception of manual training as a means of expression, a means of expression in terms of form, color, materials, muscular activity, and concrete



ends, a means of expression peculiarly adapted to child life

During the last seven or eight years, the growing emphasis placed upon the social meaning of education has caused attention to be turned more and more to the subject matter or content side of manual training, and the conception of manual training, at least in the elementary school, has come more and more to be that of an educational instrument interpreting the fields of art and industry in terms adapted to child life and the limitations of the school

All of this development in the philosophy of manual training has tended away from the employment of self-contained, formal courses towards the use of handwork as a medium of social experiences leading to the acquisition of knowledge. One of the most complete expressions of this idea is the employment of constructive activities in the lower grades in the form of social occupations, which serve as centers for instruction in other branches. This type of work was developed to a notable extent in the University Elementary School conducted by Professor John Dewey from 1896 to 1905 in connection with the University of Chicago

**Vocational Education and Manual Training** -- With the attention given to industrial education in the United States of late years, manual training has undoubtedly lost something of its importance in the public mind. It is probable, however, that this attitude is only temporary, for all thoughtful consideration agrees that manual training in elementary schools constitutes an invaluable basis, and, under the peculiarly unsettling influences of American life, a most necessary foundation for an effective system of industrial education. On the other hand, it seems probable, from many experiments now being conducted, that a semi-vocational or a pre-vocational type of manual training is likely to assume importance in large cities, which will afford to boys and girls compelled to leave school at the compulsory age limit, an elective opportunity for one or two years before that time to acquire some measure of industrial intelligence and to learn from a number of industrial experiences the general field for which they may be best fitted. C. R.

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## MANUAL TRAINING, HYGIENE OF --

Manual training when given under proper conditions is an occupation distinctly favorable to health. It is important, however, that certain hygienic rules should be observed. First of all are certain obvious matters. The room should be large, well lighted, and well ventilated, or, better still, when conditions permit, the work should be out of doors. There should be suitable benches, ample in size, and adjusted in height to the pupil's work. Cleanliness in the room, the work, and the pupils should be rigorously demanded. The pupils should not work for long periods without change and recreation. Fine and delicate work, like certain forms of woodcarving, where there is a confusion of lines, should be omitted, at least in the earlier grades. As a rule exercises should be chosen which can be done standing, and the pupils should be taught to take a correct posture. Frequent change of position is desirable. Exercises which permit many movements of the body are preferable to those that require only a few, and exercises which especially hinder the circulation and retard breathing should be avoided. The muscles on both sides of the body should be exercised. Pupils should be taught not to press the tools against the body. Dust, poisonous colors, and the like, should be avoided.

Woodwork at the carpenter's bench is one of the most healthful kinds of manual exercise. It permits many movements, different postures of the body, and fosters all-round development. The lighter forms of woodwork are especially good for younger children. Woodcarving has its disadvantages on account of the fine work often required and the tendency to a bad posture. Scroll work is unhygienic, because the position of the body is likely to be bad, fine sawdust is often inhaled, and the strain on the eye is considerable. Tooled leather work, cut leather work, and the like, are also in many respects bad.

In all forms of manual training the hygiene of the eye should be considered. There should

always be sufficient light, at least ten-meter candles at each desk on the darkest days, and the work so arranged that no pupils will face the source of light. The hours for work may well be in the early afternoon. In the case of the finer work, especially for girls, the instruction should be omitted in dull weather when the light is insufficient.

Manual work for girls deserves special consideration from the hygienic point of view. The work must not be too fine and difficult, it should be kept at a proper distance from the eyes, and a proper posture should be maintained. The rules given by Cohn and Weber may be taken as norms. "I have classified hand-occupations," says Cohn, "in four divisions, according as the degree of fineness of the meshes and stitches lets the work be seen with greater or less difficulty, or not at all, at a distance of one foot. All those coarse kinds of work in which the meshes and stitches can be clearly distinguished at arm's length by a healthy eye are not injurious. Such are knitting, crocheting with wool, netting, coarse darning, and ordinary making of garments. The second kind of work has to do with meshes and stitches which a healthy eye can only see with a great effort at a distance of one foot and at an angle of one minute. To this class belong fine darning, appliqué of muslin on net for curtains, embroidery in colors, the old German Holbein embroidery (so called), magnardise crochet, and the favorite filet-gimpure. The third class includes fine white needlework, English and French embroidery, button-holing, satin-stitch, and marking. This kind of work, by its greater minuteness, leads very frequently to myopia or asthenopia. The fourth class, that of superlatively fine needlework — point lace, petit-points, fine pearl embroidery, and genuine lace work — is absolutely injurious. There is, moreover, a special reason for avoiding satin-stitch in schools, namely, that this work is stretched on a frame, which cannot be brought near the eye like the other kinds of work, but the eye has to be brought near to it."

In some of the occupations for girls care should be taken to avoid strain of vision on account of the colors used. Black on black or white on white cause strain because of lack of contrast. On fine work the pupils should work for but a short period, ten minutes or so continuously, and then the eye should be relieved by a short pause and exercises in looking at objects at a distance. According to Cohn manual work should never be done by artificial light unless it be the electric light. Children with serious eye defects should be excluded from the work.

In regard to the question when manual training should begin, the answer is that it may be begun at an early age provided it is of the right kind. Kindergarten children, for example, can use a hammer in driving a nail, and it forms a healthful exercise, but they should not attempt

the finer and more complex occupations like fine weaving and sewing.

Certain general principles apply to manual training and to all forms of motor training. The exercises at first should involve the large muscles, and those requiring finer and more complex coordinations should come later. The work should be given in right sequence, that in the earlier years being propædæutic to what comes at a later period. And it is important from the point of view of hygiene as well as pedagogy that there should be individualization, adaptation to the physiological and psychological age, or the stage of development, and an appeal to the interests of children. Manual training is often especially valuable for those children who are in some way defective. Not only are the defects likely to be discovered in the manual work, but this often furnishes a wholesome form of activity that is prophylactic against disease. Psychiatrists often use various forms of manual work, especially agriculture, as a means of cure in nervous breakdown, such exercises are perhaps equally important for the prevention of nervous disease.

The deeper meaning of manual training, as of all forms of motor training, is not without importance for hygiene. It is only by exercise of the peripheral organs that proper stimulation is furnished for the development of the brain. Even consciousness itself is apparently conditioned by stimulation from the peripheral sense organs. It is noteworthy that the nervous system is developed in the embryo from the epiblast, the outside germ layer, not from the meso-blast, and then it is folded in. Thus, genetically, the nervous system is developed by contact with the external world, and its later and higher developments are dependent upon peripheral stimulation. The importance of this is shown in large letters in the training of defectives, as in the classic case of Seguin's boy, where an idiotic hand, incapable of coordinated movements and control, by systematic exercises beginning with the larger muscles of the shoulder and arm, was educated in a year or two so that it could execute such highly coordinated acts as catching a ball, buttoning a coat, and the like.

Thus the brain and the nervous system are conditioned in their development by motor exercise, and manual training represents in an important way a group of habits that are among the alphabets of health. Again, the habits of attention, accuracy, self-reliance, and self-control that are fostered by manual training are of vital significance in mental hygiene. And, finally, manual training furnishes opportunity for the development of normal reactions toward others, emphasizing important social relations, and this work is allied with the positive, creative, productive, and cooperative activities that are of vital significance in social hygiene.

W. H. B.

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**MANUALS, TEACHERS' —** The term "manual" originally meant an abridgment of a subject. It was so used by the Greeks (*Enchiridion*), and this use of the term is rather general to-day. In France, since the period of the Revolution, and in our own country, since about 1830, the term has had special educational significance, in that it has been made to cover only such helps as were of special value to teachers in the development of subjects of study. Such manuals, however, were prepared as early as the time of Comenius (*qv*). During the six years (1642-1648) that he was in the service of the Swedish government, the great Moravian educator prepared a large number of manuals on ancient and modern languages, morals, science, and the arts for the use of Swedish schoolmasters. Soon after the French Revolution, manuals as helps to teachers in moral and physical sciences were published in France. The great educational movement of the first quarter of the nineteenth century in the United States gave birth to numerous teachers' manuals. The earliest American manuals, dating from the year 1830, pertain to subjects not previously taught in the schools, such as physiology, music, and calisthenics. Somewhat later the introduction of drawing in the schools led to the publication of numerous manuals on art instruction. With the spread of the Oswego movement (*qv*), a demand was created for manuals on common objects. The Grube method, the phonetic method, and scores of other specific methods of giving instruction in definite branches of study have likewise contributed to the literature of teachers' manuals in the United States. *The Instructor's Manual*, published by Samuel R Hall, in 1852, covers the entire field of education. Many of the

recent teachers' manuals have aimed to give definite suggestions for carrying out the course of study. Such is the aim of the three volumes published by James MacAllister in Philadelphia in 1887 (*Manuals of the Graded Course of Instruction in the Philadelphia Public Schools*). More recently the term has been used to cover the helps prepared by authors of textbooks in the use of their particular books, as Zuchtman's *Teachers' Manual of the American Music System* (1893) and Frye's *Teachers' Manual of Geography* W S M

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**MANY-SIDED INTEREST —** In the article on Interest (*qv*) it is noted that the term "interest" is used in an objective sense to denote the typically important concerns of life — science, politics, religion, art, etc. Herbart defined the aim of education as the development of many-sided interest — that is, of regard for all of these significant human values. The term "interest" obviously designates the active and alert identification of the self with these concerns, the term "many-sided" denotes the need of non-one-sided susceptibility. The notion was the counterpart, from the realistic side, of the current idealistic conception of complete and harmonious development of all the individual's powers or faculties as the aim of education. J D.

**MAP or MAPES, WALTER** (fl 1200) — English ecclesiastic, author, and satirist. He was born on the border of Wales, probably in Herefordshire, of a noble family. He studied at Paris between 1150 and 1160 for he mentions Girard la Pucelle as one of his teachers. By 1162 he was back at the English court, where he acted as secretary and itinerant justice. He traveled frequently with and on behalf of the King, Henry II, and attended the Lateran Council. In 1176 he became canon of St Paul's and precentor of Lincoln. After 1196, when he was archdeacon of Oxford, nothing more is heard of him. Map was for long definitely known as the author of *De Augis Curialium*, a gossiping and witty account of the life of the times as seen by a member of the court.

A number of poems attributed to Bishop Goliath indicating the excesses and licentiousness of monks and ecclesiastics are now thought to have been written by Map. In addition to many shorter poems, the most famous in this series are the *Apocalypse of Goliath* and the *Confession of Goliath*. From the latter of these are drawn, not from the same context, the lines of the famous drinking song —

Meum est propositum in taberna mori  
Vinum sit appositum morientis ori,  
Ut dicant cum venerint angelorum chori  
"Deus sit propitius huic potatori"

While there are certain difficulties in the way of accepting Map as the author of all Goliardic poems and of the large number of Arthurian legends (*Lancelot of the Lake*, the *Quest of the Holy Grail*, and the *Death of Arthur*) attributed to him, all that can be said is that his name has been attached to them by long tradition. The poems and the *De Nugis* afford valuable first-hand evidence of the life and thought of the time from one who by his position and experience was able to draw an entertaining picture.

See GOLIARDS, and references there given.

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#### MAPS, CHARTS, GLOBES, AND ATLASES

— Of the several means which have been devised to represent the surface of the earth and indicate the form, size, and distribution of geographic features, as well as the geographic distribution of a wide range of facts and phenomena, the map and chart are best known and most generally used. The distinction between map and chart based on common English usage is that the representation on a reduced scale and a flat surface of the whole or a part of the earth's surface is a *map*, while the representation under similar conditions of the facts and phenomena relating to the sea is a *chart*. As the surface of the earth is nearly spherical, a sphere or a section of a sphere furnishes a much more accurate ground for the construction of maps than a flat surface, but the difficulty of handling and housing large globes greatly limits their use. A globe three feet in diameter is very unusual, the majority being eighteen inches or less. When maps of different parts of the earth's surface are gathered together in a single volume, it is called an *atlas*. As the maps must be printed on pages of the same size, and as the areas represented differ greatly in size, they are necessarily drawn to different scales. The common type of atlas is one in which the maps are for the greater part political in character. Other types of atlases will be mentioned later.

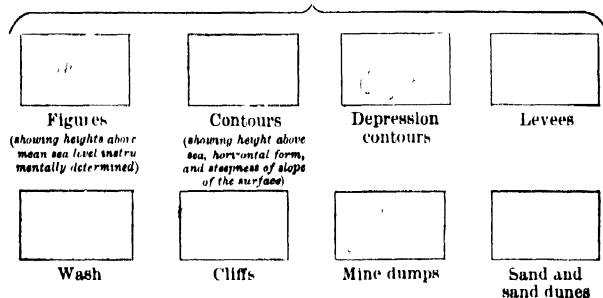
**Maps.** — The use of maps among civilized people is almost universal. Every schoolboy who has studied his geography knows something about them, and travelers, students, and the general public turn to them instinctively when in need of certain kinds of information. They are of such value in engineering and com-

merce and in such general use for scientific, military, political, and educational purposes that it is rather remarkable that they are so little understood or appreciated. They make use of a symbolism which in late years has developed to the proportions of a language. To the trained explorer, engineer, and navigator this language is as easily read as a printed page and conveys even more exact ideas. For the majority of users, however, maps are consulted because they show approximately the form of natural and political divisions, furnish a means of tracing routes of exploration, travel, and trade, and show the location of places in reference to each other. The layman usually lacks the ability to read maps and knows nothing of the great variety of facts shown or of the scientific accuracy of their presentation.

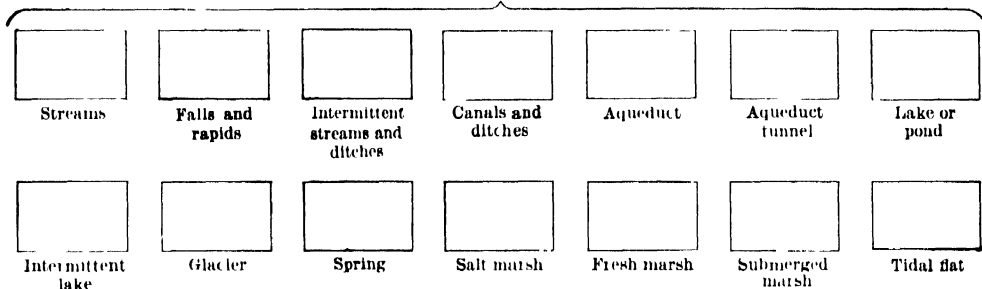
**Classification of Maps.** — A classification of maps may be made according to (1) the area represented, (2) the facts shown, (3) the scale employed, and (4) the purpose for which they are to be used. In area represented, distinction is generally made between (a) the earth as a whole, shown on a "world map," which pictures the entire surface of the earth in a single map, or on a "hemisphere map," which shows the surface in two hemispheres, and (b) parts of the earth, as shown on a "general map" for a continent or large political division, or a "map sheet" of a topographic or similar survey.

**Facts Shown.** — Classified according to the facts shown, there are. (1) *Political maps*, which show primarily the location of settlements and the division of continents into countries, and countries into smaller political and administrative divisions. The map based upon which such facts are represented generally shows certain physical facts as well, especially the natural boundaries and the chief drainage lines. (2) *Physical maps*, which may show the physical features and conditions of a given region in detail, or the distribution over the whole or a part of the earth of certain physical facts or phenomena such as the average rainfall or the location of the ocean currents. (3) *Industrial and Commercial maps*, which show such facts as the distribution of population according to density, the distribution of industries in which the people are engaged, the location of important commercial and trade routes, the position of commercial and industrial cities, and trunk lines of communication. (4) *Geological maps*, constructed to show the rock formation underlying the surface covering of the earth, the geologic age to which they belong, or their economic importance. (5) *Ethnological maps*, to show the distribution of people according to race, religion, color, speech, or custom. (6) *Historical Maps*, in great variety, used to show the conditions as they were in some part of the world at some previous time in the world's history, or used in a series to show how conditions have changed.

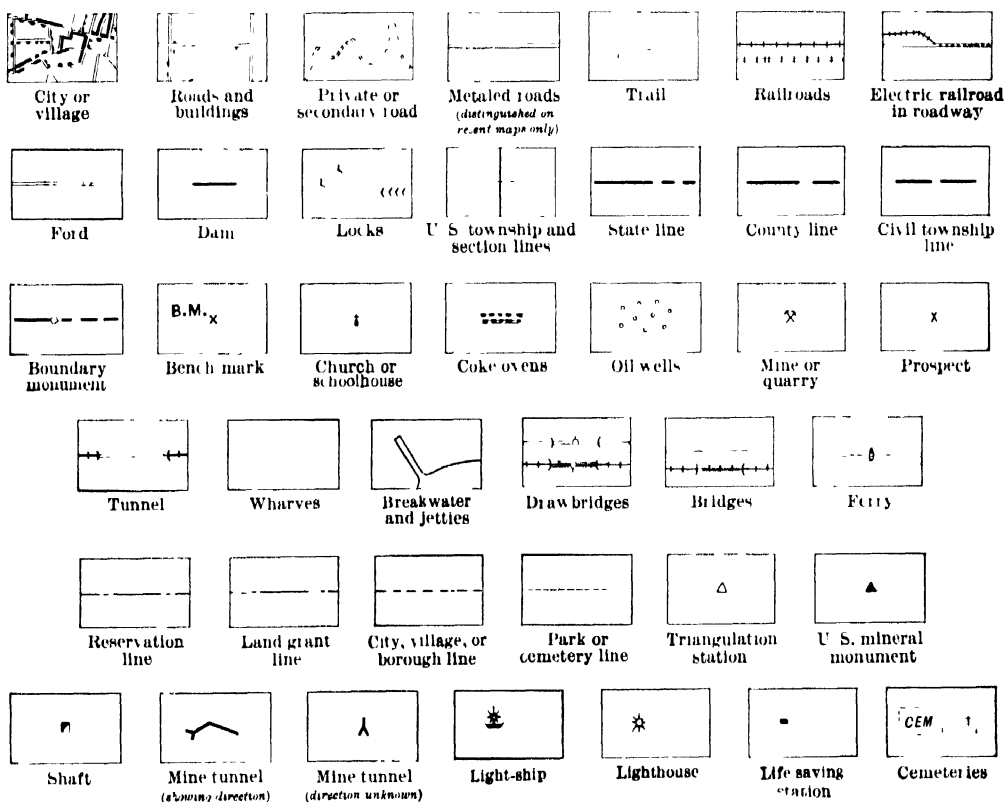
## RELIEF



## WATER



## CULTURE



Symbols used on the Topographic Map of the United States now being issued by the United States Geological Survey. Relief features are shown in brown, drainage features in blue, and culture in black.



or developed from time to time during the lapse of years

*Scale* — In considering the classification of maps according to scale, it must be borne in mind that, based upon the system of linear measurement in use, a decimal system may be adopted, as among the French and German map makers, or a more arbitrary scale such as is frequently used by British and American map makers. Under this classification, there are —

(1) Maps on a scale from 1 500 to 1 10,000, usually referred to as plain or detail maps. Included in this group are the maps prepared by engineers having in charge the construction of canals, railways, systems of irrigation, and the plans of cities and villages. Most objects may be shown in their correct form and true to scale

(2) Maps on a scale from 1 10,000 to 1 150,000. The most important maps in this group are the topographic maps which are now being made, or which have already been made by practically all of the great governments of the world. These maps are necessarily drawn and printed in sheets of convenient size for handling, the number of sheets running into hundreds for small countries and thousands for large countries. In the European countries especially they are regarded as of the utmost importance for the war departments, and for that reason in many countries their execution has been intrusted to such a department. In other countries, special bureaus or departments are maintained for the work. These maps have also been found of importance to agriculture and commerce, in works of internal improvement, for recording geological researches or the classification of soils, and in many other ways. On them it is usually possible to show many objects true to scale, although others, such as rivers, and roads, are necessarily very much exaggerated

The sheets of the topographic map of the United States are published in three scales:

(1) 1 62,500, which is approximately one mile to one inch, used for densely settled and industrially important parts of the country. (2) An intermediate scale of 1 125,000 used for the greater part of the country. (3) 1 250,000, or about four miles to one inch used for the desert regions of the west. The sheets on the largest scale show an area of fifteen minutes of longitude by fifteen minutes of latitude, the intermediate scale thirty minutes by thirty minutes, and the smallest scale one degree by one degree. The execution of the work is by the Geological Survey of the Department of the Interior. The topographic map of the United Kingdom on a scale of one inch to a mile was completed in 1890, and consists of 697 sheets (488 of the new series). It is published (a) in outline with contours in black, (b) with vertical hachures

in brown or black, and (c) in five colors. The topographic map of the German Empire is on a scale of 1:100,000. It was completed in 1909 in 674 sheets. The sheets issued since 1901 have been printed in color.

There are several excellent topographic maps of France in existence, one on a scale of 1 80,000, another on a scale of 1 1,000,000, and a third on a scale of 1 200,000; the last two are based on the first. Still another is in preparation on a scale of 1 50,000. Each sheet is bounded by parallels and meridians, and their relief is shown in contours of ten-meter intervals printed in brown.

(3) Maps on a scale from 1 15,000 to 1 1,000,000 and smaller. These include the general maps of continents and countries and their larger divisions. In maps drawn on these smaller scales it is impossible to show all geographic features or to show even the selected ones in their correct form. The first difficulty is avoided through the careful selection of facts to be shown, and the second by the use of symbols.

*Use* — In any classification according to use, the school map must be distinguished from all others. Whether in the form of a wall, text, or atlas map, it includes but few details and is usually designed to furnish clear and definite information concerning features and places discussed in the school textbooks.

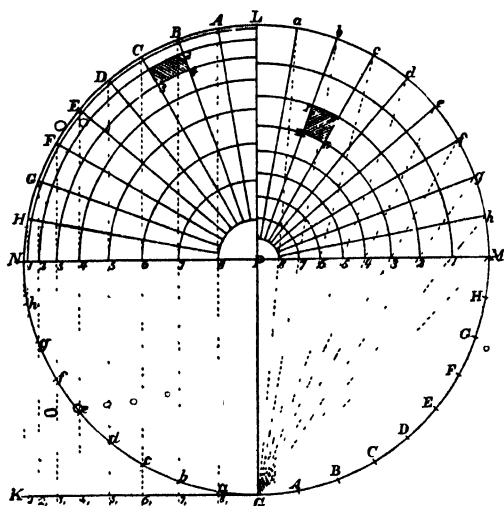
*Collecting the Data* — Before the preparation of a map can be undertaken, it is necessary to assemble the facts which are to be shown when it is completed. First of all, it is necessary to know the position, form, and dimensions of all the objects which are to be represented. The position of a point on the earth's surface is usually stated in terms of its latitude and longitude. Its latitude is its distance north or south of the equator, — the equator being the zero of latitude, — and its longitude is its distance east or west of a selected prime or zero meridian. There is, therefore, a north or south latitude and an east and west longitude. Each circle is divided into 360 degrees, each degree into sixty minutes, and each minute into sixty seconds. The poles of the earth are in latitude ninety degrees, while the meridian, halfway around the earth, from the prime meridian, is both 180 degrees east and 180 degrees west longitude. The division of the circle into 360 degrees was introduced among the Greeks chiefly by Hipparchus (about 180-125 B.C.), and to him also has been given the credit of originating the idea of fixing the position of places on the earth by means of their latitude and longitude. As the position of certain points on the earth's surface has been determined by astronomical means with great exactness, the position of other points and objects are usually determined with reference to these. It is quite as important, although less customary, to indicate the third element of position, viz the height of a place

above, or its depth below, an ideal plane of reference, called sea level. This is usually mean tidal height as determined at some selected station from a series of observations extending over a long period of time

*Projections* — When the necessary data has been collected, the map is drawn. As already

that they may be rolled, folded, or bound together, and carried about easily

The network of parallels and meridians is, however, as necessary for the flat map as it is for the globe. It is of course possible to make use of a perfectly arbitrary net, such as is made by equally spaced lines crossing each other at right angles. Maps constructed on this projection are known as *plain* maps (or charts) and were originated by Marinus of Tyre, who lived about 100 A D. He is regarded as the founder of mathematical geography. Many forms of projection have been devised, as mathematicians and astronomers have, since ancient times, sought to make the unavoidable errors as small as possible, and to devise forms of projection adapted for special uses. Five forms of projection, or modifications of them, are in very common use. These are the *orthographic*, the *stereographic*, the *globular*, the *conical*, and *Mercator's*. Briefly, the characteristics of these projections are (1) *Orthographic*. In this projection the circles of the sphere are supposed

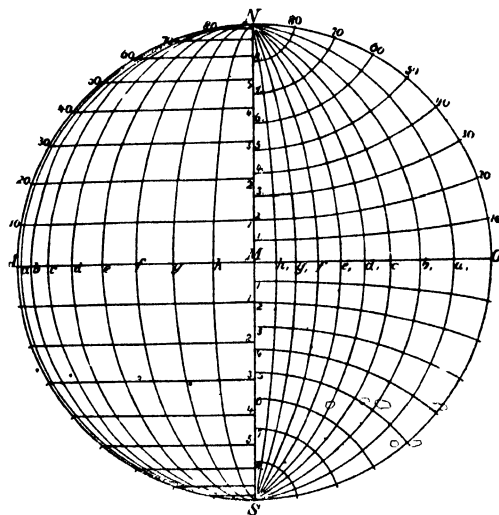


Orthographic Polar

Stereographic Polar

FIG A — The left-hand half of the above figure shows the orthographic polar projection. The half circle is divided into ten-degree arcs,  $LA-AB-BC'$  and  $Ga-ab-bc$  etc. As the eye in the projection is assumed to be at an infinite distance, these points are projected upon the line  $PN$  at the points numbered 8, 7, 6, 5, etc., by parallel lines drawn at right angles to  $PN$ . The parallels are drawn as concentric circles passing through the points thus determined, and the meridians are drawn as straight lines from the circumference to the pole at ten-degree intervals. The right-hand half of the figure shows the stereographic polar projection. The half circle is again divided into ten-degree arcs. The eye is assumed to be at  $G$ . Points  $a, b, c, d$ , etc., are projected upon line  $PM$  at 8, 7, 6, 5, etc. The parallels are drawn as concentric circles passing through these points and the meridians as straight lines from the circumference to the pole and at ten-degree intervals. The two shaded spots 1 2 3 4 and  $I III III IV$  represent the projection of exactly the same part of a sphere and show how and where this part would appear in the two projections

pointed out, this can be done with the greatest accuracy on the surface of a sphere. The equator, poles and prime meridian are first located, and the surface of the sphere is then covered with a network of parallels and meridians. By means of this net, the outlines of continents and islands, the boundaries of states and nations, and the form and position of geographic features may be correctly shown. A representation of any part of the earth's surface must therefore, if kept true to scale, be developed upon a sphere or a part of a sphere. In practice, however, this is utterly impossible. The uses to which maps are put make it necessary that they should be on some flat surface, such as paper or cloth, in order



Orthographic Equatorial

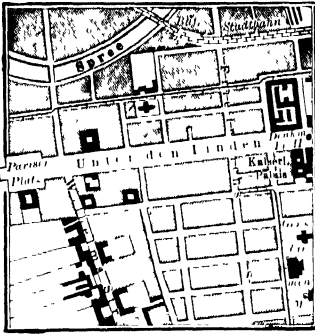
Stereographic Equatorial

FIG B — The left-hand half of this figure shows the orthographic equatorial projection. The crowding of parallels and meridians toward the outer edge is characteristic of this projection. After the distance between the parallels has been determined (as shown in Fig. A) they are drawn as straight lines, as the eye is at an infinite distance and on a level with all planes. The spaces between the meridians on the equator are determined in the same way, and the meridians are frequently drawn as the arcs of circles, although other methods of drawing them are also in use.

The right-hand half of the figure shows the stereographic equatorial projection. In this the meridians and parallels are crowded near the center

to be seen by an eye placed at an infinite distance and projected upon a plane which passes through the center of the sphere and perpendicular to the line of sight. The meridians and parallels are crowded toward the outer edge of the map. (2) *Stereographic*. By this

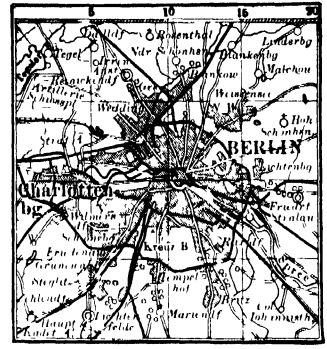




Area 1 square kilometer  
Scale 1 : 25,000



Area 16 square kilometers  
Scale 1 : 100,000



Area 400 square kilometers  
Scale 1 : 500,000.



Area 1600 square kilometers  
Scale 1 : 1,000,000



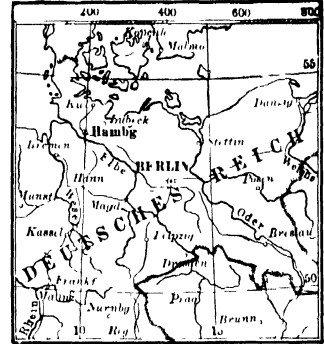
Area 10 000 square kilometers  
Scale 1 : 2,500,000.



Area 40,000 square kilometers  
Scale 1 : 5,000,000



Area 160,000 square kilometers  
Scale 1 : 10,000,000



Area 640,000 square kilometers  
Scale 1 : 20,000,000

Small maps of Berlin and vicinity on various scales as indicated. The areas represented vary from 1 square kilometer to 640,000 square kilometers. These maps show the generalization necessary when the scale of a map is reduced.



## MAPS

method the center of projection is in the surface of the sphere, while the projection is made upon a plane at a right angle to the diameter which passes through the center of the projec-

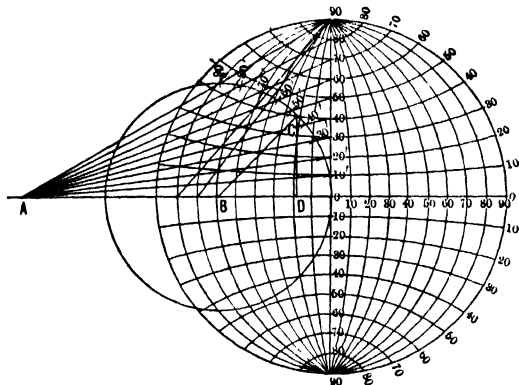


FIG C — The globular equatorial projection shown above is developed from the smaller circle whose center is at B on the line 90-90 drawn tangent to the smaller circle at 0. This tangent line becomes the polar diameter of the larger circle, and to determine the 10-degree intervals on this diameter the following method is used. The equatorial diameter of the smaller circle is prolonged beyond its circumference to A, a distance equal to the line C'D, which is one half the chord of a 90° arc. From A through 90°-80°-70°-etc., marking off 10-degree intervals on the circumference of the smaller circle, lines are drawn which intersect the polar diameter of the larger circle at 90°-80°-70°-etc. These measurements are then transferred to the equatorial diameter, and in this way three points are located for each parallel and meridian. As both parallels and meridians are arcs of circles, it only remains to find the centers of these circles by the usual methods and to complete the projection. The 10-degree intervals found by this method are approximately equal, and the projection is often constructed arbitrarily and called the arbitrary projection.

tion. In this projection the meridians and parallels are crowded toward the center of the map. (3) *Globular*. A form of projection in which the surface of a hemisphere is projected

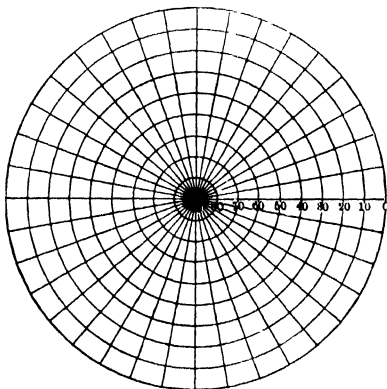


FIG. D — This shows the globular polar projection. The 10-degree intervals are determined as for Fig C above. The parallels are concentric circles, and the meridians are drawn as straight lines from the circumference to the pole.

upon a plane which is parallel to the base of the hemisphere. The center of projection is in

## MAPS

the axis produced beyond the surface of the other hemisphere, a distance equal to one half the chord of a ninety-degree arc. This projection was designed to overcome the crowding of the parallels and meridians shown in the orthographic near the edge, and in the stereographic near the center. As a result, the parallels and meridians are about equally spaced, and the map

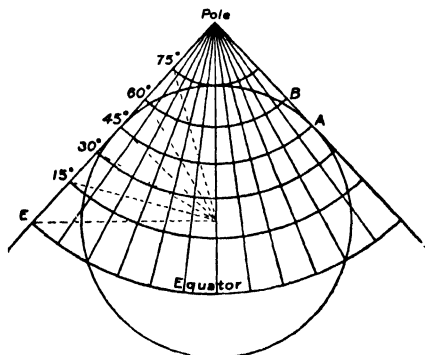


FIG E — In this diagram the forty-fifth parallel has been selected as the center of the area to be mapped, and the cone is tangent to the surface of the sphere at that parallel. The position of the other parallels being determined, they are drawn as concentric circles with the pole as a center. The meridians are straight lines radiating from the pole and at equal distances on any parallel.

is often arbitrarily drawn in that way. (4) *Conical*. In this projection the surface of the sphere is projected upon the surface of a cone tangent to the sphere. The point of sight is at the center of the sphere. (5) *Mercator's*. This form of projection shows the meridians as parallel to each other, and the parallels as straight lines crossing the meridians at right angles. It has many variations but in the best the meridians and parallels are so spaced that, at all

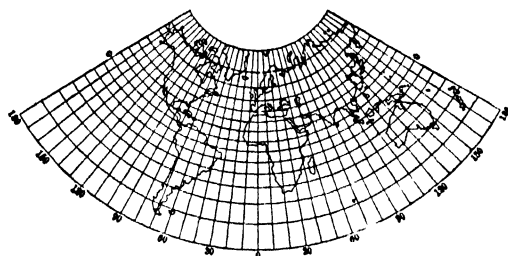


FIG F — Conic Projection of the World

places, the degrees of latitude and longitude have the same ratio to each other as on the sphere.

*Filling In* — After the net of parallels and meridians has been drawn, it is a comparatively easy matter to fill in the outlines of countries, including the coast line, rivers, roads, and railroads, and to indicate the positions of cities and villages. In the nature of things maps will often fail to show all the facts of nature. No map can show all of the irregularities of a coast line or all the windings of a river, and the smaller the scale of the map,

the more these and other facts must be generalized. On some coasts tidal changes affect the position of the actual coast line, from hour to hour, and the best that can be done is to show on large-scale maps the extent of land alternately covered and exposed. On the smaller

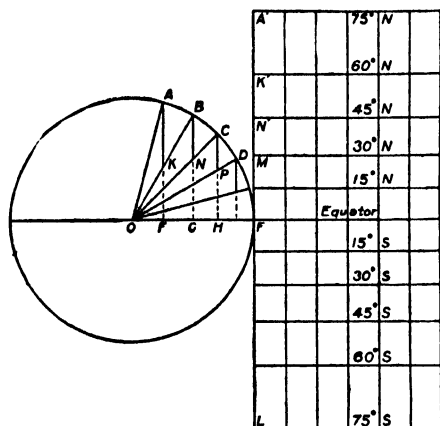


FIG G — In this modified form of Mercator's projection the distances between the parallels which are here drawn at fifteen-degree intervals are determined by dropping a line perpendicular to  $OF$  and parallel to  $A'L$  from the end of each radius to the next radius.  $AK = A'K'$ ,  $BN = K'N'$ ,  $CP = N'M'$ , etc. The meridians are parallel and equidistant, their distance apart being the same as that between the equator and the first parallel

scale maps even the dots and other symbols used to indicate the position of cities cover much too great an area, as do also the lines for the rivers and the roads.

*Methods of showing Relief* — It was not until toward the close of the eighteenth cen-



FIG H — Mercator's Projection

tury that scientific methods were developed for showing accurately the surface features of the earth. Up to that time, map makers had been content to indicate the position and general direction of the large or important elevations by means of molehills and serrated ridges, which gave little idea as to their extent and none as to their form and the steepness of their slopes. Two methods are now in general use which may be said to satisfy

scientific requirements. One of these is by the use of contours, and the other is by the use of hachures. In the contour maps each contour passes through points at the same distance above sea level. If the area to be mapped includes a bit of seacoast, the coast line itself may be taken as the first contour and the zero of elevation. The remaining contours will then be drawn at such intervals as to show clearly the character of the relief. A contour which is ten feet above sea level is drawn where the coast line would be if the land was depressed by that amount. Whatever the interval chosen, the contours are farther apart on gentle than on steep slopes, although crowded contours drawn at an interval of ten feet may indicate a much gentler slope than more widely spaced contours drawn at much greater intervals. Contours are used on the topographic sheets now being issued

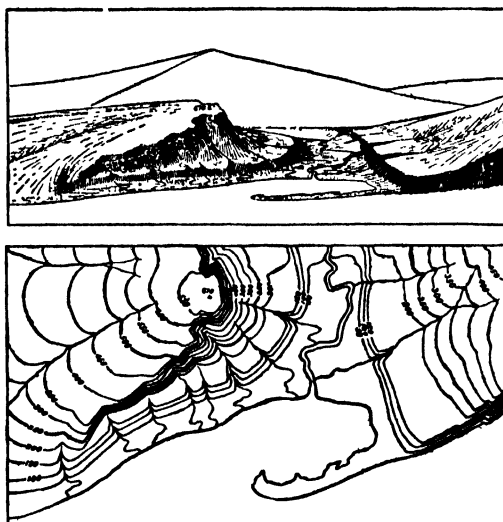


FIG I — The sketch shows a river valley with terraces and a high hill and steep cliffs. The map shows how these features are expressed by the use of contours

by the Geological Survey of the United States government. The way in which contours show relief is well brought out in the ideal sketch and corresponding contour map (Fig I) which is used by the Survey to explain their meaning. Contours were first used in 1728 by M. S. Cruquius in his chart of the Merwede.

While contoured maps show the height of the land and furnish sufficient data to determine in a general way the steepness of mountain slopes, they fail to show the modeling of the earth's surface as clearly as do hachures. This method makes use of lines which vary in thickness and in distance apart according to the steepness of the slope represented. They are drawn in the direction which would be taken by flowing water, and

when contour lines are used on the same map, they cross the contours at right angles. The method was first given scientific form by Major J. G. Lehmann, although proposed at a somewhat earlier date by Ludwig Muller. The scheme as outlined by Lehmann assumed vertical illumination and a consequent variation in the amount of shade from nothing for a horizontal surface, to absolute darkness for a vertical surface. He suggested, however, that its use be limited to regions in which the slopes did not exceed forty-five degrees, assuming that steeper slopes would be, in a military sense, practically impassable. This

clearness, as in the Muffling system, which uses dotted and wavy lines and alternating thick and thin lines for this purpose, or to provide for steeper slopes, as in the Austrian system, which reserves solid black for slopes of eighty degrees. In large general maps upon which contours are drawn at considerable and frequently irregular intervals, the strata are usually shown by several colors or by tints and shades of one color. In the map of the world on a scale of 1:1,000,000 proposed by Professor Penck and now under construction by several governments the colors to be used are blue for the sea, green for lowlands to 300 meters, yellow between 300 and 500 meters, and reddish tints for greater elevations. The use of the mezzotint shading instead of the line shading is sometimes resorted to, and in contour maps the results are often excellent. Maps shaded upon the assumption of an obliquely lighted surface are often very artistic in appearance, but they lose in scientific accuracy.

All maps employ some symbols, and the details shown in the topographic surveys have led to the use of a very considerable number. The facts shown on the topographic sheets of the United States may be divided into three classes: (1) relief, printed in brown, (2) drainage, printed in blue, and (3) culture, printed in black. The full-page illustration shows the symbols used on these maps.

In the placing of names on a map there is no uniformity of practice, but in the matter of orthography uniformity is being rapidly introduced through governmental and other boards on the spelling of geographical names.

**Relief Maps** — Many attempts have been made to make relief maps, chiefly for school use. It has been urged with reason that by their use the children may be given more accurate notions concerning the surface of the earth and the effect of relief upon climate, the distribution of life, the location of settlements, and the development of routes of trade and communication. The best relief maps are those which are constructed on a large enough scale to permit the showing of elevation true to scale. This cannot be done, however, on small-scale maps. In these the heights are greatly exaggerated, the slopes absurdly steep, and the generalization of the surface features very considerable, but even these when properly constructed are undoubtedly valuable, although it may be questioned whether children gain much of value when they attempt to make crude maps of this sort out of sand, clay, putty, papier-mâché, etc.

**Printing** — After the map has been drawn, it still remains to be printed. In the early days this was done from wood blocks or from copper plates on which the map had been engraved. Wood engraving for maps was abandoned many years ago, but copper engraving, especially when combined with etch-

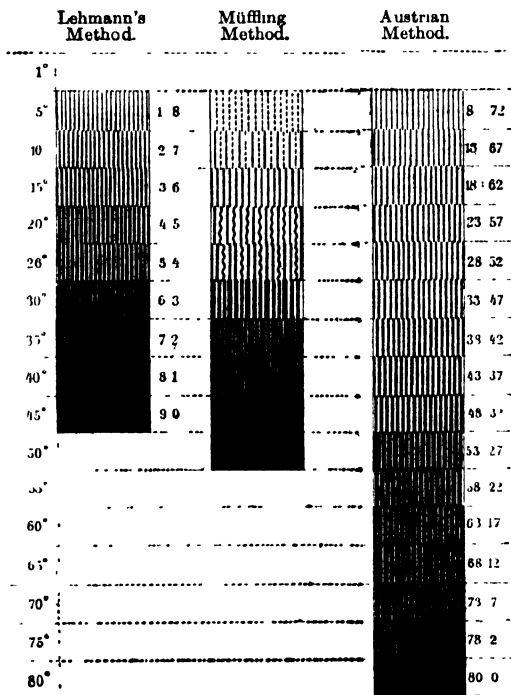


FIG. J. — This figure shows the three hachure systems described in the text. The Austrian method represents the highest development of this method of showing relief.

resulted in white for horizontal surfaces, black for slopes of forty-five degrees, and for intermediate slopes at five-degree intervals, a proportion of white and black determined by the formula  $W : B = (45 - n) : n$  in which  $n$  represents the slope for which the proportion is sought. If the slope is twenty degrees, the proportion will work out

$$W : B = (45 - 20) : 20 = 25 : 20 = 5 : 4$$

The full scale is shown in Fig. J, with the proportion of black and white indicated for each interval. The system has had very wide application, and changes have been made from time to time in various countries, either for the purposes of securing greater

ing, is still in use. Other quicker and cheaper processes have been discovered such as lithography, zincography, algraphy, and heliography, and these give very satisfactory results.

**Charts.** — The surface of the earth measures approximately 196,940,000 square miles, of which 145,054,000, or nearly three fourths, is sea. Over much of this vast surface ships carry goods and passengers. Some of them are tramps, trading from port to port as contracts offer, but for the most part they follow well-defined routes and enter and leave their regular ports at stated intervals. It is of the greatest importance that they should be able to do this without undue danger or delay, and, to make this possible, every maritime nation has made or is making extensive and accurate surveys of its coasts and harbors. In some instances, notably in the case of Great Britain, colonial interests have led nations to extend their surveys to the coasts and harbors of other countries whose governments are less able to undertake them or less interested in so doing. In spite of all that has been done, there are long stretches of coast and large ocean areas which have never been accurately surveyed and charted.

Charts are essentially maps for the use of navigators. As such they must include depth curves and characteristic soundings, show the nature of the bottom, and indicate the position of buoys, lighthouses, and other aids to navigation, as well as the position of the coast line at high and low water. Currents are shown by arrows and described in notes, as is also the range of tides. On the large-scale charts channel lines and ranges are given, and life-saving stations, ports showing storm warnings and time balls, are indicated. Forbidden anchorages are also shown. Most charts show enough of the coast to indicate its character and mark clearly every prominent feature or fact of interest to the navigator, especially if it may serve him as a landmark.

**Collecting the Data** — As in the construction of a map, so with the chart, the first step is the collection of the data to be shown on the completed chart. The position of the area to be charted is obtained by astronomical observations and by reference to points whose positions have already been determined and a net of parallels and meridians is then drawn. Such topographical features as are deemed important are next located. These always include high and low water lines, offshore rocks, lighthouses, and streams of all sizes, and usually include many other features of importance. The survey of the sea bottom is especially important, as it is only by this means that sunken rocks, reefs, shoals, sand bars, and other dangers may be located. This work is done by sounding. The soundings are made in a series of lines, from a boat whose position is accurately determined at short intervals, over the entire area to be charted. In shallow

water the soundings may be taken by hand by casting the lead overboard and noting the depth indicated when the lead reaches the bottom and the line is vertical. For greater depths machines are used. At best this method of determining the configuration of the sea bottom is unsatisfactory, as there exists no means of ascertaining depths between soundings. Near the shore and in harbors and about their entrances soundings are therefore close together. After all of the soundings have been compiled, the characteristic ones are selected and plotted on the original sheet, the depth curves are drawn, and shoals, bars, anchorages, and channel depths located. In harbors in which sediment is being constantly deposited and wherever the sand bars are being shifted by the action of waves and ocean currents, new soundings must be frequently taken and the charts corrected. The constant increase in the size of vessels making use of harbors make frequent surveys necessary. Usually, however, surveys are made only at considerable intervals, but changes and corrections are being made constantly as new dangers are discovered and as changes are made in buoys and lights.

**Scale** — Harbor and channel charts are published on scales varying from 1:5000 to 1:60,000, coast charts on a scale of 1:80,000, general coast charts on a scale of 1:400,000, and general sailing charts on a scale of 1:1,200,000.

**Projections** — The Mercator projection is used for nearly all general sailing charts. Its characteristics have already been briefly stated. The three other projections chiefly used in the construction of charts are the polyconic, gnomonic, and globular. The polyconic is similar to the conic already described, except that instead of a single tangent cone several are used, each parallel being the base of a right cone which is tangent to the sphere along that parallel. The radii increase in length as the distance from the pole increases, and the parallels are therefore not the arcs of concentric circles and are not strictly parallel. The division of each parallel into degrees of longitude is correct, and the meridians are therefore more and more curved as the distance from the central meridian increases. The latitude scale is correct on the central meridian only. In the gnomonic projection the eye is at the center of the earth, and the projection is upon a plane tangent to the earth's surface. The globular projection has already been described.

**Globes** — The advantages and disadvantages of maps and charts drawn on the surface of a sphere have already been pointed out. They are of the utmost importance in geographical instruction, as it is only by their use that children gain correct ideas as to the form, size, and position of the great land and water bodies and their chief divisions.

*The Manufacture of Globes* — In the manufacture of globes a core or matrix is first covered with many layers of paper pasted together; this covering is then cut apart, the core removed, and the two hemispheres at once joined together along the line of the equator. The sphere is then mounted on an axis and coated with whiting, which is smoothed and allowed to harden. The paper gores upon which the map has already been printed are then mounted with the greatest care so as to adapt them to the surface of the sphere. The number of gores used varies from twelve to twenty-four. Nearly all globes are mounted upon standards in such a way that the axis is inclined approximately  $23\frac{1}{2}$  degrees out of the perpendicular.

**Atlases** — The practice of showing the geographical distribution of all sorts of facts and phenomena has become very common in recent years and has resulted in the publication of many special atlases of which the following are characteristic: (1) atlas of geology, (2) atlas of hydrography, (3) atlas of meteorology; (4) atlas of commerce and statistics, (5) atlas of plant distribution, (6) colonial atlas; (7) school atlases of various sorts, (8) and historical atlases. In each type special methods and symbols have been developed in order to show the facts as clearly, accurately, and completely as possible.

For the place of the subject in the study of geography and the general question of teaching method, see GEOGRAPHY, TEACHING OF, and the references there given. C. T. Mc F.

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**MARBLE, ALBERT PRESCOTT** (1836-1906) — School superintendent. He was educated at Bowdoin College and Colby University, graduating at the latter institution in 1861. He taught in the public schools of Maine and Wisconsin; was principal of the Worcester Academy (1866-1868), superintendent of schools at Worcester (1868-1894) and at Omaha (1894-1896), and from 1896 until his death

he was assistant superintendent of schools in New York City. He was active in the councils of the National Education Association and the Massachusetts Teachers' Association. His publications include *Sanitary Condition of School Houses* and numerous articles in educational journals. W. S. M.

**MARBURG, ROYAL PRUSSIAN UNIVERSITY OF, GERMANY** — The first Protestant University in Germany, established in 1527 by Philip of Hesse as a center for the propagation and support of Lutheranism. A Pädagogium or preparatory school was established at the same time. Imperial recognition was not obtained until 1541, but degrees were granted before that date, the privilege being granted by a local ruler for the first time. Among the early humanistic teachers were Buschius, Eobanus Hessus, and Schuppius. The university was well attended, and in 1600 there were about 1000 students. The introduction of Calvinism in 1608 by the Landgrave Maurice drove many teachers and students away, and for them the Landgrave of Hesse-Darmstadt founded the University of Giessen (*q. v.*). The two universities were combined in 1625 at Marburg, but only for a few years. The Thirty Years' War almost led to the extinction of the university, which was recreated in 1753 as the University of Hesse-Cassel. It was for a long time strongly denominational under the Reformed Church, an exception being made only for Christian Wolf (1723-1740). This attitude tended to disappear during the period of Enlightenment, and even the theological faculty admitted Lutherans by 1821. The university, however, at no time during this period attained great standing, the medical-scientific faculty was weakened by the development of the Collegium Carolinum at Cassel, transferred to Marburg in 1786. A few chairs were added at the end of the eighteenth century, but the endowment was still small until under the Kingdom of Westphalia (1806-1813) the funds of the institutions at Rinteln and Helmstedt were transferred to Marburg. In the middle of the last century the university suffered largely through political complications, and progress was so slow that for a time a proposal was in the air to amalgamate again with Giessen. The union of Hesse with Prussia in 1866 marked the beginning of a new era in the history of the university. The government treated the institution generously. The development of new chairs, seminars, institutes, and equipment has been very rapid. Special emphasis has been laid on the provision of facilities for the study of modern languages and philology. A strong summer school is maintained and is well attended by foreign students. The following faculties are maintained: theology, law, medicine, philosophy (philosophy, history, and natural science sections). The enrollment in the summer semester of 1912 was 2014 students.

## MARCEL, CLAUDE

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**MARCEL, CLAUDE** (1793-1876) — Educationist and French consul at Cork. From 1825 to 1865 he lived away from France, and thus came to take an interest in other languages and the teaching of them. His chief book was entitled *Language as a Means of Mental Culture and International Communication, or Manual of the Teacher and Learner of Languages*, two volumes, London, 1853. Of this work Marcel published an abstract in French, *Premiers Principes d'Éducation avec leur Application Spéciale à l'Étude des Langues* (Paris, 1855). Marcel investigates thoroughly and comprehensively the whole field of education, and attempts thus to place language teaching in its true perspective. He treats of physical, moral, and intellectual education in his first book, of the signs of our ideas and importance of their acquisition in various languages in the second book, the three great agents of education (parents, teachers, methods) in the third book, the native tongue in the fourth book, order and relative importance of the different branches of a language, in the fifth book; of grammar, in the sixth book; then in successive books, of words, of reading, hearing, speaking, writing; and the time for learning a foreign language. He reduces his principles to twenty "logical" axioms. His methods were adapted to Italian by M. Jean Damiani, and to German and Latin by M. G. Théodore. The gist of Marcel's most valuable treatment of the teaching of modern languages is a recommendation of the direct or natural method. Marcel, in 1867, wrote a translation of part of his large book into French, under the title of *Étude des Langues ramenée à ses véritables Principes, ou l'Art de penser dans une Langue étrangère* (translated and published in New York, 1869) and a small pamphlet *Méthode rationnelle suivant pas à pas la Marche de la Nature pour apprendre les Langues étrangères, avec ou sans Maître* (translated and published in New York, 1875).

F. W.

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**MARCH, ANDREW FRANCIS** (1825-1911) — Philologist and leader in the American movement for spelling reform (*qv*); graduated at Amherst College in 1845. He taught in the public schools for four years, and then took up the study of law. In 1856 he accepted the post of professor of English language and comparative philology at Lafayette College, which he occupied for forty years. He was one of the earliest advocates of simplified spelling in the United States, and was president of the Ameri-

## MARCUS AURELIUS

can Spelling Reform Association from 1876 to 1905. He wrote numerous pamphlets on the subject. His other educational writings include *Method of Philological Study*, *Parser and Analyzer for Beginners*, *Comparative Grammar of the Anglo-Saxon Language*, *Anglo-Saxon Reader*, *The A B C Book*, and many articles on philological subjects. He was editor-in-chief of the *Standard Dictionary* and the American editor of the *Oxford Dictionary*. W. S. M.

See SPELLING REFORM MOVEMENT

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**MARCUS AURELIUS** — Roman Emperor from 161 to 180 A. D., — a wise ruler, a brave general, a just and temperate man. His reign was marked by several great misfortunes — a plague, a famine, and successive inroads of the barbarians along the northern and eastern borders of the Empire. Though the barbarians were in the end successfully checked, they were a source of anxiety to the Emperor throughout his reign. The most serious impeachment of Marcus's good judgment was his persecution of the Christians.

The significance of Marcus Aurelius in the history of education lies in the fact that he established at Athens certain chairs of academic study with endowment from the imperial funds, and, by thus virtually creating what has been called the University of Athens, advanced the cause of education throughout the Empire. Certain steps had been taken by the previous Emperor, Antoninus Pius, looking toward the establishment of academic studies on a formal basis under the direction of the central government, but not before Marcus was anything like organization of the educational forces of Athens undertaken. Marcus was from his youth a friend and companion of Greek philosophers and at all times an admirer of Greek learning. Even after he became Emperor, he attended the lectures of the famous sophist, Herodes Atticus. In the second half of his reign he established at Athens, by the side of the chair of rhetoric, established in the reign of his predecessor, a second chair of greater dignity than the former. The higher salary which went with it was to be paid from the imperial funds, and the appointment to the chair was to be made by the Emperor. Later, probably in 176, he endowed at Athens two chairs in each of the four principal schools of philosophy — the Academic, the Peripatetic, the Stoic, and the Epicurean. The appointments to these chairs were to be made, after examination of the candidates, by Herodes Atticus. The holder of the chair of oratory ranked, at least in dignity, above the other professors. Marcus aimed to make of the city a real university center, as Dio Cassius says, "he gave to the whole world teachers at Athens, with



annual salaries, in every branch of literary study."

The *Meditations or Thoughts* (τὰ εἰς ἑαυτὸν) of Marcus Aurelius in twelve books are a collection of moral reflections and ethical maxims written in the spirit of the Stoic philosophy. The first section deals with his own education, and is a document of great value in revealing the character of Roman education under Stoic ideals

J W H W

See STOICS.

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**MARENHOLTZ-BÜLOW-WENDHAU-SEN, BERTHA VON** (1810-1893) — The friend and admirer of Froebel (*qv*), who contributed more than any other person to make his work public. Of her early life it is not necessary to say anything here. She met Froebel in 1849, and at once appreciated the aims of the man who had been mentioned to her as "an old fool." She helped to introduce the unworldly teacher to others who could assist in bringing him into public notice. The chief among these was Diesterweg (*qv*). But her own efforts were considerable. Entering on her propaganda work in 1851, she did not relax her efforts until her death in 1893. In 1851 she lectured to a group of women in Berlin, explaining the *Mutter- und Koselieder*. With Diesterweg's help she founded a kindergarten at Pankow, but the period was unfavorable for any new educational ventures. In 1851 the establishment of kindergartens was forbidden in Prussia. After Froebel's death, which was a great blow to her, she devoted herself to the idea of founding an international Froebelian Society. She went to London in 1854, where she attracted attention. She lectured on Froebel and the kindergarten, and gave practical illustrations of this work in ragged schools (*qv*). Dickens noticed her in the *Household Words*, and an account appeared in the *Times* and *Athenæum*. While in London she published *Women's Educational Missions, being an Explanation of Froebel's System of Infant Gardens*. In 1855 she went to Paris, where she did similar work, was noticed in the press, and wrote *Manuel des Jardins d'Enfants*. She carried her propaganda into Belgium and Switzerland. In 1861 she returned to Germany, and with the help of a women's society founded a kindergarten in Berlin (1863), the prohibition having been removed in 1860. Then she established, with the cooperation of Karl Schmidt, Professor Virchow, and others, *Erziehung der Gegenwart*, an educational magazine. In 1870 she settled in Dresden, where she founded the *Froebelstiftung* with a kindergarten, a training

college for kindergarten teachers, and a home for kindergarten teachers and governesses. In 1872 she succeeded in bringing into existence the *Allgemeine Erziehungsverein*. Her zeal for the work took her to Italy, where she aroused interest in the kindergarten in Florence, Rome, Naples, and Venice. Many of her works have been translated into English and include the following among others: *Die Arbeit und die neue Erziehung* (*Handwork and Headwork*), 1864, *The Child, Its Nature and Relations*, 1872, *The Child and Child Nature* (London, 1906), *The Kindergarten and the Importance of Children's Play*, 1882, *Reminiscences of Friedrich Froebel* (Boston, 1887), *Theoretisches und Praktisches Handbuch der Froebelschen Erziehungslehre* (Cassel, 1886-1887).

See FROEBEL, FRIEDRICH, KINDERGARTEN

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**MARGARITA PHILOSOPHICA** — See ENCYCLOPEDIAS, ENCYCLOPEDIISM

**MARIA THERESA** (1717-1780) — Queen of Hungary and Bohemia, archduchess of Austria, and wife of the Holy Roman Emperor, Francis I. Interested as Maria Theresa was in securing the welfare of her country, she devoted considerable attention to education, not only in her immediate dominions, but also in Belgium. During her reign the control of the clerical party was diminished, the Jesuits expelled, and a general system of education introduced under the control by a Board of Studies (*Studienhofkommission*), in which the secular power was uppermost. She gathered around her the most capable educators of the day, *eg* Felbiger (*qv*), Kindermann (*qv*), and Van Swieten. The new law was promulgated in 1774, and its introduction, "we have observed that the education of both sexes, the basis of the real happiness of nations, requires our especial care," shows her deep concern for reform. She had also encouraged the first university lectures in Vienna on experimental physics (1745) and mechanics (1757). In 1749 she had founded a military school at Wiener-Neustadt, in which "shall be formed men only and of them soldiers." In Belgium she had also reorganized the secondary school system, after expelling the Jesuits. A board of studies was appointed, classics were edited, corporal punishment was abolished, and public examinations were introduced. To supply the need, new schools, Theresian Colleges, were added. The reorganization of schools of art, design, and architecture was also encouraged by her.

See AUSTRIA, EDUCATION IN.

## MARIETTA COLLEGE

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### MARIETTA COLLEGE, MARIETTA, OHIO

— A coeducational institution founded in 1830 as the Institute of Education, and chartered in 1832. A collegiate department only is maintained. The entrance requirements are fifteen units. The degrees of A.B. and A.M. are conferred. The total enrollment in 1911-1912 was 152. There is a teaching staff of eighteen members.

**MARION, HENRI** (1846-1896) — French educator who exercised a decisive influence on the real trend of educational methods in the University of France. He was active in the organization of secondary education for girls. He gave the first course of Educational Psychology and Morals at the Normal School of Fontenay-aux-Roses. The chair of Science of Education at the Sorbonne was established for him, and was occupied by him with great distinction until his death. Marion was the author of *Devoirs et Droits de l'Homme* (1879); *Leçons de Psychologie appliquée à l'Éducation* (1881); *Locke*, in the portrayal of whom he gives, according to M. Boutroux, a picture of himself; *La Solidarité morale*, in which he points out to what extent determinism, which leads to freedom, in realizing itself binds the individual to his own past by habit and to the racial past by heredity and education. *Mouvement des Idées pédagogiques en France* (1889); *Instructions sur la Discipline* (1890), which brought about a transformation of the discipline in French education by substituting order as willed by the pupils for order imposed from the outside; *L'Éducation dans l'Université* (1892), and, posthumous, *L'Éducation des jeunes Filles; la Psychologie de la Femme* (1900). Endowed with great charm, an excellent teacher, a man of good sense, a steadfast character, of fine and sensitive feeling, Marion exercised a decisive influence on several generations of teachers. His principle was that all means of the educative process ought to lead to the formation of a moral person (*moralisme*), and that national education well directed ought to improve the race and bring humanity to a better state (*mélhorisme*).

J. P.

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### MARIST COLLEGE, ATLANTA, GA —

A Catholic institution incorporated in 1902

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and conducted by the Marist Fathers. Grammar grades, high school, and college departments are maintained. Students are admitted by certification from high schools. The A.B. degree is conferred.

**MARIST FATHERS, THE, SOCIETY OF MARY.** — See TEACHING ORDERS OF THE CATHOLIC CHURCH.

**MARIST SCHOOL BROTHERS, THE** — See TEACHING ORDERS OF THE CATHOLIC CHURCH

**MARKINGS** — See SCHOOL MANAGEMENT; also RECORDS AND REPORTS.

**MARLBOROUGH COLLEGE** — See GRAMMAR SCHOOL, COLLEGE, COLLEGE, ENGLISH; PUBLIC SCHOOLS

**MARQUETTE UNIVERSITY, MILWAUKEE, WIS** — See JESUS, SOCIETY OF, EDUCATIONAL WORK OF

**MARSEILLES, UNIVERSITY OF.** — See AIX-MARSEILLES, UNIVERSITY OF; FRANCE, EDUCATION IN

**MARTHA WASHINGTON COLLEGE, ABINGDON, VA** — A college for women, established in 1853 and now controlled by the Methodist Episcopal Church, South. Preparatory, collegiate, and music departments are maintained. Fourteen points of high school work are required for admission to the college, which confers the degrees of A.B. and B.S. In 1911-1912 the teaching staff consisted of nineteen members, and the student body of 145.

**MARTHA'S VINEYARD SUMMER SCHOOL** — See SUMMER SCHOOLS

**MARTIANUS, MINEUS FELIX CAPELLA.** — See CAPELLA, MARTIANUS MINEUS FELIX

**MARTIN OF BRAGA, or BRACARA** (c. 520-580) — Bishop of Dumio in northwestern Spain, where he was the leader in the conversion of the Suevi to the Catholic faith. He is the author of a little work on moral training, *Formula vitæ honestæ*, also known as *De differentiis quatuor virtutum*, which enjoyed great popularity in the Middle Ages. In this and other works of a moral and ascetic character he is largely dependent upon Seneca.

### Reference —

- Catholic Encyclopedia*, s.v. *Martin of Braga*.

**MARTINEAU, JAMES** (1805-1900). — English philosopher and divine, brother of Harriet Martineau, was educated at Manchester College, and became a Unitarian minister. He was for forty-five years professor of mental and

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moral philosophy at Manchester New College, London. He exerted a wide influence as a preacher, and won a high reputation as a writer on religion and philosophy. This was somewhat injured by his radical criticism of Spinoza and his idealistic theory of the Church, which was of an academic and impracticable character and fell still-born. In philosophy he was an intuitionist, holding that men have a power of conscience by which they can estimate moral values without the help of experience. His best work was done as a teacher of ethics and a defender of fundamental truths against the attacks of atheism, skepticism, materialism, and other negative tendencies in the nineteenth century. He wrote many volumes of sermons and essays for the periodical press. His chief works are the *Types of Ethical Theory*, the *Study of Religion*, and the *Seat of Authority in Religion*. These contain his best teaching in its final form. W R

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**MARTINIQUE** — See FRENCH COLONIES, EDUCATION IN

**MARWEDEL, EMMA** (1817–1893) — Kindergarten. She was educated in the schools of Germany, and for six years was connected with the kindergarten training department of the Industrial Art School for Women at Hamburg (1865–1871). Through the efforts of Elizabeth P. Peabody (*qv*) she was induced to come to America and engage in the work of training kindergartners. She conducted training schools for kindergartners at Washington from 1872 to 1876, and at Los Angeles and San Francisco from 1876 to 1890. Among prominent American kindergartners trained by Miss Marwedel are Kate Douglas Wiggin and Nora A. Smith. Her published writings include *Conscious Motherhood, or the Earliest Unfolding of the Child* (Boston, 1889), and *The Connecting Link to Continue the Threefold Development of the Child from the Kindergarten, to the Manual Labor School* (San Francisco, 1890). W. S. M

### Reference: —

- MONROE, WILL S. Emma Marwedel and the Kindergarten. *Education*, February, 1904

**MARYLAND AGRICULTURE COLLEGE, COLLEGE PARK, MD** — A state institution established by legislature in 1856 and opened in 1859. The following departments are maintained: agriculture, botany and vegetable pathology, chemistry, civil, electrical, and mechanical engineering, physics, English and civics, entomology and zoology, horticulture, languages, mathematics, military service, ora-

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tory, physical culture, veterinary, and preparatory. Students are admitted by special examination. The degrees of B.S., M.S., A.M., M.E., and C.E. are conferred. The enrollment in 1910–1911 was 416. The teaching staff consists of thirty members.

**MARYLAND COLLEGE FOR WOMEN, LUTHERVILLE, MD** — Chartered in 1853 and 1895 as an institution for the higher education of young women. Preparatory, collegiate, and music departments are maintained. High school graduates are admitted to the junior class. The degrees of A.M. and B.L. are conferred. The teaching staff consists of eighteen members.

**MARYLAND, STATE OF** — One of the original thirteen states. It is located in the South Atlantic Division, and has a land area of 9860 square miles. In size it is about the same as New Hampshire or Vermont. For administrative purposes the state is divided into twenty-four counties, and these in turn into school districts. In 1910 Maryland had a population of 1,295,346, and a density of population of 130.3 per square mile.

**Educational History** — The original colonial charter made no mention of education. In 1695 the colonial assembly passed two acts, one for the encouragement of learning, and the other a supplicatory petition for the erection of free schools. The first was repealed in 1704, and the second in 1696, and neither resulted in any action. In 1796 a "petitionary act for free schools" was passed, looking to the erection of free schools of a higher grade in each county. As a result of this, King William's School was founded at Annapolis as a preparatory school for William and Mary College. The plan inaugurated at this time, of founding one free higher school in each county, directed the educational efforts of Maryland for a century and a half, and is still to be seen in the annual appropriations to certain schools and academies, in consideration of the free instruction of a certain number of pupils. In 1723 a fund for the erection and support of a free higher school in each county was begun, by an import tax on pitch, pork, and tar, and trustees, called visitors, were appointed for each county, to manage the fund for each county, establish and maintain the school, and to have perpetual succession as a body. In 1728 the visitors were directed to see that the masters of each higher school taught as many poor pupils gratis as the visitors might direct. A county system of higher schools, or academies, was thus definitely established, and the principle of charity school education for the children of the poor became a fixed policy. What had been intended to be free schools, due to lack of funds with which to maintain them, were gradually transformed into pay schools with a fixed number of poorer pupils. Almost no mention of education occurs

in the laws from this time on until after the close of the Revolution. The schools languished for want of funds, and a number gave up their funds for other purposes.

The first state constitution, adopted in 1776, was amended twelve times during the next seventy years, but without any mention of the subject of education. The constitution of 1851 was similarly silent, except for the one provision forbidding ministers, teachers, and religious orders and sects from receiving property left as a legacy or gift for their support. The first mention of education occurs in the constitution of 1864.

In 1782 Washington College was established at Chestertown, on the east shore, and in 1784 St. John's College was established at Annapolis, on the west shore. Annual legislative grants forever, of £1250 and £1750 respectively, were promised, and the two institutions together were to constitute the University of Maryland. In 1798 the policy of dispersion, which has wrought such havoc in education in Maryland, was begun, when the annual grant to Washington College was reduced £500 and the sum spent in making grants of £100 each to five academies, two of which had just been chartered. In 1805 the University of Maryland act was repealed, and the money ordered to remain in the treasury until otherwise disposed of, and in 1811 the sum was ordered to be distributed to a number of schools and academies. In 1827, and again in 1831, unsuccessful attempts were made to divert the academy funds to elementary education; and in 1831 the academy grant was equalized to \$800 for each county. This system remains to the present time, the state virtually supporting two systems of secondary education. In 1823 each academy was ordered to receive at least one poor child for every \$100 of public money received, and this proportion has since been increased. The Maryland school law of to-day defines in detail the number and method of selection of the free pupils for these schools. In 1812 a new charter was granted to the College of Medicine in Maryland, and it was allowed to affiliate with its schools of law, divinity, and the liberal arts. The law and medicine faculties still survive, as departments of a so-called University of Maryland.

In 1799 the Benevolent Society of the City of Baltimore was organized to provide elementary education for the female children of the poor. In 1805 St. Peter's School for poor children was established. Between 1801 and 1817 many academies and higher schools were incorporated and aided, and during these years the lottery, as a means of aiding education, reached its height. In 1812 a school fund had been begun by a tax on banks, which in 1813 was changed to a rate of taxation on bank stock. In 1814 the unclaimed estates of persons dying intestate were added in Baltimore. In 1817 a lottery to raise \$50,000 a year for five years

was ordered, the proceeds to be added to the fund. In 1825 certain interest received from the United States was ordered added, and, in 1839, some railway stock was substituted for a portion of the Surplus Revenue previously added.

In 1816 the first direct tax, a tax on the property of five counties to provide schooling for the poor children of those counties, was levied, and later in the same year this tax was extended to all the counties of the state. The tax was to aid rather than to provide, and the children benefited were a class and not all.

In 1826 the first general school law for Maryland was enacted, but the uniformity of its action was nullified by the provision that the law could go into effect in any county only after its adoption by popular vote in the county. A Superintendent of Public Instruction for the state was to be appointed by the Governor, the justices of the levy courts in each county were to appoint a board of nine county commissioners, and eighteen additional inspectors of primary schools, who were to visit the schools once each quarter, and to report as to their condition. Counties were to be divided into school districts, and three district trustees, a district clerk, and a district collector, were to be elected for each. All teachers were required to hold teachers' certificates, issued on examination by the Inspectors. The income from the state school fund was to be apportioned to the counties and to the districts on the school census, and all additional funds were to be raised by district taxation. The act was to apply to the city of Baltimore, if within five years the city did not establish a system of schools. The law was so far in advance of public sentiment that it could not be put into operation, and the close of the Civil War found Maryland without any effective system of public instruction beyond the limits of the city and county of Baltimore. (See BALTIMORE, CITY OF.) From this time on no further attempt was made to establish a state school system.

The state constitution of 1864 was the first to mention education. Thus, and the law of 1865 based upon it, provided for a centralized and an effective system of administration, with a State Superintendent of Public Instruction, an *ex officio* State Board of Education, county school commissioners appointed by the State Board of Education, a state school tax of not less than ten cents on the \$100, and an additional tax of five cents to build up a permanent school fund of \$6,000,000. The State Superintendent was to report to the next legislature a plan which would provide for a uniform system of free public schools for six months each year in each school district of the state. A normal school was established in Baltimore by the legislature of 1865.

In 1867 a new constitution was adopted, which is still in force, and in 1868 a new school

law was adopted as provided for in the constitution. This was more in harmony with the strong feeling of local liberty in the state, and has remained as the basis of the present system. The State Board of Education and the state superintendency were abolished, but some of the functions of the State Board were given to the board of trustees of the state normal school, and the principal of the normal school was made an *ex officio* superintendent. The board of county school commissioners was to be elected by the people instead of being appointed by the State Board. An elected "board of school-house district trustees" was created to appoint the teachers and manage the property of each school district. The school term was increased to ten months, and county taxation was authorized to supplement the state school money. No provision was made for the education of colored people, except to provide that taxes paid by them should be spent on their schools. This law was much more popular than that of 1865, and much greater progress was made under it.

In 1870 the 1868 law was repealed and re-enacted with some changes. The State Board of Education was restored, under the name of State School Commissioners, and made to consist of the principal of the normal school and four others, appointed by the Governor from among the presidents and examiners of the county boards of school commissioners. County boards were, in turn, to be appointed by the judges of the circuit court, instead of elected, and school district boards were made to consist of three trustees, appointed annually by the county boards, instead of being elected. Life teachers' certificates were provided for for the first time. In 1872 provision was made for the establishment of schools for colored children in each county, and a state appropriation was made therefor. In 1874 the Governor was added to the State Board of Education (name changed in 1872), and the Board was given some legislative powers. The election of teachers by district boards of school trustees was made subject to the approval of the county boards. In 1904 the State Board of Education, and in 1906 the county boards of school commissioners, were reconstituted and given their present form.

In 1896 a normal department was organized at Washington College, Chestertown, and in 1898 a second state normal school was provided for at Frostburg. In 1908 a third state normal school was provided for colored teachers, to be located in Baltimore, and college courses in pedagogy were allowed to be approved by the State Board of Education for state certificates. In 1908 aid for high schools providing manual training courses was first given by the state, and in the same year state grants for commercial courses in high schools were also provided. In 1904 provision was made for an annual state grant of \$150,000, to be distributed

to the counties and to the city of Baltimore, on school census, to provide free textbooks. In the same year a law was enacted, providing for a minimum salary of from \$300 to \$450 per year for white teachers, and in 1908 this law was amended so as to provide higher minimum salaries for teachers of experience. A state pension law was also enacted in 1908, and an educational commission appointed. In 1910 the high schools were classified and standardized, and definite aid extended to them out of the state school fund.

**Present School System** — The educational affairs of the state are under the care and supervision of a State Board of Education, consisting of the Governor, the State Superintendent of Public Education, and six citizens appointed by the Governor for six-year terms, two of whom must be of the minority political party. The principals of the state normal schools and the head of the normal department of any state schools are *ex officio* members, but without the right to vote. It is the duty of the State Board to carry out the school law, and in doing so they may make rules and regulations having the effect of law, they are to interpret the school law, decide disputes, and their decisions are final, to issue uniform blanks and to require uniform accounts and reports, to examine candidates for the office of county superintendent, and they may suspend or dismiss county superintendents for cause, to grant professional certificates to teachers of long and successful experience, and to act, *ex officio*, as a Board of Trustees for the state normal schools, and to approve a pedagogical course for colleges wishing to be permitted to grant teachers' certificates to their graduates.

The State Superintendent of Public Education is also appointed by the Governor, for a four-year term, and may be removed from office by the State Board of Education by a two thirds vote. His salary is fixed by the State Board. He is *ex officio* a member of this body, and its secretary and executive officer. It is his work to inform himself as to the condition of education in Maryland, to work to improve educational conditions, to receive and examine all reports from county boards, to endorse normal school diplomas from other states, to arrange dates for teachers' institutes, and to help in the preparation of the program, to print and distribute the laws, an Arbor Day pamphlet, an Institute Manual, the Proceedings of the Maryland Teachers' Association, and such circulars as may be needed, to serve *ex officio* as a member of the State Library Commission, with the principal and one of the faculty of a state normal school to examine the high schools of the state and to report the results to the State Board of Education, and personally to inspect the manual training courses in the high schools of the state, and to approve them for state aid.

For each county there is a board of county school commissioners, also appointed by the

Governor. In six of the larger counties the board consists of six members, in the remaining counties, of three. The term of office is six years, one third appointed every two years, and one third being of the minority political party. No teacher is eligible, and the Governor may remove any member for cause. This board elects the county superintendent of public education, who also acts as treasurer and secretary of the board. The county board has general supervision and control of the schools of the county, and may make rules and regulations, not contrary to law, for that purpose, may select sites, build, repair, and furnish schoolhouses; is to adopt, purchase, and distribute the textbooks to be furnished, must approve the appointment of the principal teachers for all schools, and appoint all assistant teachers, on the advice of the principal, may consolidate schools and transport pupils, may determine the amount of county school tax to be levied; may change the boundaries of districts as seems desirable; hears all charges against teachers, and settles all disputes within the county subject to appeal to the State Board, must maintain one or more free schools for colored children in every election district, must maintain a high school when presented with a high school building by any election district or districts; and must make a report annually to the State Board of Education and to the people of the county.

The county superintendent of public education, elected by the county board, acts as its executive officer. He examines all candidates for county teachers' certificates, and grants certificates to those who pass; must visit each school in the county from one to three times each year, depending upon the number of schools in his county, attends all meetings of the board, and may speak, but has no vote, prepares an annual report for the State Board, and must devote his entire time to the work of supervision. His salary is fixed by the county board.

For each school district a board of district school trustees is appointed each year by the county boards. Each district board is allowed, on approval by the county board, to elect its principal teacher, who thereupon becomes *ex officio* secretary of the district board. These boards have the care and repair of the schoolhouse and furniture of the district, may make repairs, if approved by the county board; may exercise general supervision over the school, subject to the rules and regulations of the county board; may admit, suspend, or expel pupils and may levy additional district taxation to provide a longer term of school. The city of Baltimore is a district operated under a special charter (See BALTIMORE, CITY OF).

**School Support** — Maryland received no school lands, and the permanent school fund, including the Surplus Revenue fund, which has

but a nominal existence, is about one million dollars, and yields about \$50,000 a year, or about 1 5 per cent of all revenue raised. The annual state school tax of sixteen and one eighth cents on the \$100 produces about 40 per cent of all money raised. The remainder comes from the free school fund, and grants for secondary education. The annual state grant of \$150,000 for free textbooks now comes out of the general state school tax. About 58 per cent comes from a county school tax of fifteen cents, which, by agreement between the county school board and the county commissioners, may exceed fifteen cents. The total amount expended for education in 1909-1910 was \$4,060,341, of which 44 per cent was expended by the city of Baltimore.

**Educational Conditions** — Of the population of 1910, about 20 per cent were negroes, and about 90 per cent were native born. Of the foreign born, one half were Germans and one sixth Irish. Only in three counties do the negroes equal the whites in number. It is necessary to maintain two school systems for the two races. Aside from the city of Baltimore, which contains 42 8 per cent of the total population of the state, the state is essentially a rural state, as 49 2 per cent live in rural districts.

The law requires a school term of ten months "if possible." The average length of term for eleven counties and the city of Baltimore was ten months, for eleven counties it was nine months. In respect to length of term provided, Maryland ranks with the New England states. The attendance, however, is poor, being but an average of 102 9 days for each pupil enrolled in 1909. Twenty-one per cent of the total enrollment and 22 per cent of the teachers were in the colored schools, which is more than their percentage of the total population. The state has no general compulsory education law, which accounts for these low figures. Baltimore city and Allegheny County enforce attendance. Of the total population of 1900, ten years of age or over, 11 1 per cent were illiterate. Of the two races, 5 2 per cent of the whites and 35 1 per cent of the colored race could not read or write. The average value of all the schoolhouses in the state, including the city of Baltimore, is but about \$1600. In the rural districts, and particularly in the negro districts, many of the school buildings are of small value.

**Teachers and Training** — The state employed 5414 teachers in 1910, 3736 being outside of the city of Baltimore. Of this number 823, or 22 per cent, were employed in the colored schools, 212 being in the city of Baltimore. No statistics are available to show the kind and amount of training which these teachers have had. Two grades of county teachers' certificates are issued on examination, the difference being in the subjects examined on. A very meritorious provision is that each

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certificate is valid for six months after obtaining a school, after which, if the Superintendent's inspection warrants, the certificate is made valid for five years. County superintendents must hold a certificate issued by the State Board of Education, which also issues, without examination, life diplomas for seven years of successful teaching, five of which must have been in Maryland. Normal school diplomas from outside of the state may be accepted by the State Superintendent, and the diplomas of the three state normal schools and the normal department of Washington College are also accepted in any county.

SCHOOL	LOCATION	FOR MAIN- TENANCE	FOR
Maryland State Normal School	Baltimore	\$20,000	Whites
Maryland State Normal School	Frostburg	7,000	Whites
Normal Department Washington College	Chestertown	4,500	Whites
Maryland State Normal School No. 3	Baltimore	5,000	Colored

The salaries of teachers are fixed by the county board, at the time of employment, except that no white teacher can be paid less than \$300 a year, and no white teacher of three years' experience less than \$350 a year. If the teacher holds a first-class certificate and has taught in Maryland five years, the minimum is \$400, and if eight years, \$450. Any incapacitated or indigent teacher of sixty years of age or more, who has taught twenty-five years in the schools of Maryland, may be retired on an annual pension of \$200.

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The Maryland Teachers' Reading Circle was established in 1890, for the improvement of teachers in service, and the law requires that this shall be encouraged by the State Board of Education. A teachers' institute, of at least five days, must be held in each county, and teachers are required to attend. The state now maintains four normal schools (see above table). For each of these, county and city boards of school commissioners are to select candidates for admission and grant a certain number of scholarships for the course.

**Secondary Education** — The state at present maintains a double-headed system of secondary education, and, as a result, few good public high schools, outside of Baltimore, have been developed in the state. Many of the old academies have surrendered to the state and become public secondary schools, but seventeen of the old incorporated academies and schools still receive state grants of from \$150 to \$3000. The law of 1910 attempted to classify and standardize the high schools of the state, provided definite state aid for approved schools, to be paid from the state school fund instead of by special appropriations, and made the approval of both the County and the State Board of Education necessary for the establishment of new schools. This new law will do much to give Maryland a good system of secondary education. The county agricultural high schools, provided for in 1912, will also prove a very important feature.

**Higher and Special Education** — The same policy of dispersion of aid which characterizes secondary education also applies to higher and special education. The University of Maryland consists only of medical and law departments, first opened in 1807 and 1814 respectively. The Maryland State Agricultural

INSTITUTION	LOCATION	OPENED	CONTROL	STATE AID	FOR
Charlotte Hall Academy . . .	Charlotte Hall	1774		\$ 6,600	Males
Washington College . . .	Chestertown	1783	Non-sect	13,275	Both Sexes
St. John's College . . .	Annapolis	1789	Non-sect.	14,200	Males
Medical Department of University of Maryland . . .	Baltimore	1807		4,000	Males
Mt. St. Mary's College . . .	Emmitsburg	1808	R. C.		Males
Law School, University of Maryland . . .	Baltimore	1814			Males
New Windsor College . . .	New Windsor	1843	Presby.		Both Sexes
St. Mary's Female College . . .	St. Mary's City			6,000	Women
McDonough Institute . . .	La Plata			5,000	Both Sexes
St. John's Literary Institute . . .	Frederick			400	Males
Maryland Institute . . .	Baltimore			10,000	Both Sexes
U. S. Naval Academy . . .	Annapolis	1845	Nation		Males
Loyola College . . .	Baltimore	1852	R. C.		Males
Kee Mar College . . .	Hagerstown	1852	Non-sect		Women
Maryland College for Women . . .	Lutherville	1853	Luth.		Women
Rock Hill College . . .	Ellicott City	1857	R. C.		Males
Maryland Agricultural College . . .	College Park	1859	State	15,000	Males
Morgan College . . .	Baltimore	1867	M. E.		Both Sexes
Western Maryland College . . .	Westminster	1867	Meth. Prot.	15,800	Both Sexes
College of Physicians and Surgeons . . .	Baltimore	1872		4,000	Males
Johns Hopkins University . . .	Baltimore	1876	Non-sect	25,000	Males
Baltimore Medical College . . .	Baltimore	1881		4,000	Males
Woman's College of Baltimore . . .	Baltimore	1888	M. E.		Women
Woman's College . . .	Frederick	1893	Reform		Women

## MARYVILLE COLLEGE

College, at College Park, was opened in 1859. Some state aid has from time to time been extended to Johns Hopkins University. In 1912 a state school of technology was established in connection with the university, with a state tax of  $\frac{3}{4}$  cent annual revenue. This will produce \$50,000 each year. The dispersion of educational effort may be seen from the table of colleges in the state on previous page.

The state maintains the Maryland School for the Deaf and Dumb, at Frederick, and grants state aid to St. Mary's Industrial School (for boys) and St. Peter Claver's School, both at Baltimore. The Maryland (reform) School for Boys, at Baltimore, and the House of Reformation, for boys, at Cheltenham, are supported by public funds. E P C

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**MARYVILLE COLLEGE, MARYVILLE, TENN** — A coeducational institution founded in 1819. Preparatory, collegiate, education, music, and art departments are maintained. The entrance requirements are fifteen units. The degree of A B is granted by the institution. The total enrollment in 1911-1912 was 649. The teaching staff consists of thirty-nine members.

**MASON, LOWELL** (1792-1872) — First apostle of public school music in the United States. He was born at Medfield, Mass., and received the rudiments of an elementary education in the common schools. After several years of teaching in the district schools of Massachusetts, he went to Georgia, where he taught music and conducted choirs and singing societies. Returning to Boston in 1827, he organized the Boston Academy of Music with the aid of William James Webb (*qv*). Through William C. Woodbridge (*qv*) he became interested in the Pestalozzian movement and went to Switzerland to study the work of Nageli (*qv*) and Pfeiffer. He brought back with him a collection of Swiss and German schoolbooks containing class music and songs.

Failing in his efforts to induce the city of Boston to include music as one of the required studies of the elementary schools, he organized classes of children on Wednesday and Saturday afternoons and taught gratuitously from five to six hundred children for several years. The juvenile concerts that he gave from time to time convinced the people of the value of his work, and music was made one of the required subjects in the course of study.

## MASSACHUSETTS COLLEGE

In addition to his work with the children and the Boston Academy of Music, he was president of the Handel and Haydn Society, and in a variety of ways he sought to improve and extend musical taste in New England through the giving of concerts, the formation of singing societies, the organization of church choirs, and the establishment of lecture courses on musical subjects. In 1837 he became associated with Horace Mann (*qv*), and during the next twelve years he gave much of his time to the training of teachers of common school music in the institutes and normal schools of Massachusetts. "His long continued work as a practical teacher, his rare tact in developing the vital principles of instruction, his sympathy with youth and childhood, and the perfect simplicity and elementary character of his teaching gave him an indescribable power over his audiences."

His influence was likewise great through his published works. His *Juvenile Psalmist* was published in 1829. It was one of the first music books ever published for Sunday schools, and it was widely used. During the next few years he published fourteen music books for children. He also published many works for glee clubs, church choirs, and singing societies, and his *American Tune Book*, six hundred thousand copies of which had been sold before his death, greatly enriched American hymnology. As a creative tone artist, he limited his efforts to church tunes, but many of these are highly creditable productions. His contributions to the pedagogy of music may be found in the *Proceedings* of the American Institute of Instruction and the educational journals of his day. W. S. M.

See MUSIC

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**MASON, LUTHER WHITING** (1821-1896). — Music educator and author. He was self-educated, became supervisor of music in the schools of Kentucky and Ohio (1853-1861), and during the Civil War served as a drum major. From 1865 to 1880 he was connected with the public schools of Boston as supervisor of music. The next three years (1880-1883) he spent in Japan as organizer of public school courses of music in that kingdom. He wrote a series of music textbooks widely used in the United States. W. S. M.

**MASSACHUSETTS AGRICULTURAL COLLEGE, AMHERST, MASS.** — A coeducational institution established under the Morrill Land Act of 1862 and opened in 1867. In 1882 the state experiment station was located at and later incorporated with the college. All instruction is free to citizens of



## MASSACHUSETTS COMMISSION

Massachusetts, to candidates who meet the entrance requirements — fourteen units of high school work. The following departments are maintained: agriculture, horticulture, botany, entomology, plant and animal chemistry, veterinary science, mathematics, social sciences, and humanities. Extension work is conducted by the college, and provides short courses, lecture courses, and correspondence courses. The degrees of B.S., M.S., and Ph.D. are conferred by the college. The enrollment in 1911-1912 was 520. The faculty consists of sixty members.

**MASSACHUSETTS COMMISSION OF INDUSTRIAL AND TECHNICAL EDUCATION** -- See COMMISSIONS, EDUCATIONAL.

**MASSACHUSETTS INDUSTRIAL COMMISSION** — See COMMISSIONS, EDUCATIONAL.

**MASSACHUSETTS INSTITUTE OF TECHNOLOGY, BOSTON, MASS** — An institution incorporated in 1861 for the purpose of "aiding generally by suitable means the advancement, development, and practical application of science." It was not until 1865 that it was possible to make an actual beginning even with the most modest equipment in leased rooms of a building in Summer Street, Boston. The equipment in men, however, was strong from the beginning, the best known of the original faculty of ten being Rogers, the founder and first president, and Eliot, afterwards president of Harvard. The courses in these early days were especially designed to prepare men for mechanical and civil engineering and for the professions of the architect and the chemist. In 1881 President Rogers was succeeded by General Francis A. Walker, under whose guidance the number of students increased from 300 to 1200 and the number of the instructing staff from 39 to 153. Following General Walker were: James M. Crafts (1897-1900), Henry M. Pritchett (1900-1907), and Richard C. Maclaurin (1909-).

The Institute is one of the land grant colleges, and in addition to the income that this position secures, it receives an annual grant of \$100,000 from the legislature of Massachusetts. Its tuition fee is \$250, and its budget for 1911 was \$615,571. The government is vested in a Corporation, consisting of five *ex officio* members, thirty-five life members, and fifteen members elected for terms of five years from a group of candidates nominated by the alumni. The Corporation conducts much of its business through an Executive Committee consisting of the president, treasurer, and five other members. The instructing staff in 1911 consisted of 245 members, of whom 91 were of professorial grade. These professors constitute the faculty, which has the immediate supervision of all matters relating to the courses of instruction and to the admission and conduct of

## MASSACHUSETTS, STATE OF

students. Exclusive of the summer school, the number of students in 1911-1912 was 1566, of whom 399 were from other colleges, and 212 were college graduates representing 112 colleges. Over a hundred came directly from foreign countries and almost every state in the Union was represented. There were only seven women, although women are admitted to any of the courses. The regular course of undergraduate study runs between the end of September and the beginning of June for four years, and leads to the degree in any one of the following fourteen branches: civil engineering, mechanical engineering, mining engineering and metallurgy, architecture, chemistry, electrical engineering, biology and public health, physics, general science, chemical engineering, sanitary engineering, geology and geodesy, naval architecture and marine engineering, and electrochemistry. In each of these courses a large proportion of work of a literary and scientific character is insisted upon, and a serious effort is made to break down the barriers between professional and cultural studies. Opportunities are also afforded for study and research leading to the advanced degrees of M.S., Ph.D., and Doctor of Engineering. Although research is carried on in all departments, there are laboratories especially designed for purposes of research in physical chemistry, applied chemistry, and public health, and contributions from these laboratories are published periodically by the research departments. R. C. M.

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**MASSACHUSETTS, STATE OF** — One of the most important states, educationally, in the Union. The first permanent settlement in New England was made at Plymouth, in 1620. Salem was settled in 1628, and Boston, Charlestown, Newtown (Cambridge), Roxbury, Dorchester, and Watertown were settled by the Massachusetts Bay Company in 1630. The Massachusetts Bay Colony at once became the leading colony, and in 1691 Plymouth Colony was united to it by the new charter granted by William and Mary, which remained in force until the Revolution. In 1788 Massachusetts entered the Union, as one of the thirteen original states. In size the state has but 8039 square miles, being fifth from the smallest state, but in population it ranked sixth from the largest in 1910, and the density of population, 418.8 per square mile, is only exceeded by that of Rhode Island.

Its population in 1910 was 3,366,416. For administrative purposes the state is divided into 33 cities and 321 towns. The towns are small, being somewhat analogous to a Western township. The cities are towns which have incorporated under a city form of government, or a segregated area so incorporated. There are also fourteen county divisions, but these are little used.

**Educational History** -- Education began in Massachusetts under most favorable auspices. The colonists who settled in the Massachusetts Bay and Plymouth colonies were men of broad and liberal education, who had come to the new world for conscience' sake. The population of our country has never been so highly educated since as it was during the first fifty years of Massachusetts history. Many had been educated in the endowed grammar schools of England, and one man in every 250 was a graduate of an English university. Almost all had been conspicuous in Church and State in the mother country before coming to the new world. Their religion called for a knowledge of God's word, and this in turn called for education. They early set up schools, patterned closely after those they had known at home. Fearing that education and religion might die with the first generation, they provided at once for institutions to perpetuate both.

The beginnings of education in Massachusetts were made at Boston, in 1635, when the town, then five years old, requested Brother Philemon Purpont to become schoolmaster. The Boston Latin School traces its history back to this time (See BOSTON, CITY OF). The next year the General Court of the colony voted an appropriation of "£400 toward a school or college," which was located at Newtown in 1637. In 1638 John Harvard, dying, bequeathed his library and half his property to the new college, and the name of Harvard College was given to the new institution, and the town where it was located was renamed Cambridge, in loving memory of the *alma mater* of so many of the early colonists. The grant made by the court for the new college was a most important one, and was equal to the entire colony tax for a year.

Other towns also established schools at an early date. Charlestown arranged with William Witherell in 1636 "to keep a schoole for 12 month, to begin the 8 day of August, and to have £40 this year." In 1637 Rev. John Fiske opened a school in Salem. Dorchester opened a public tax-supported school in 1639. Newbury granted ten acres of land to Anthony Somerby in 1639 "for his encouragement to keep a school one year." Schools were opened in Ipswich in 1641, Cambridge in 1642, and Roxbury in 1645. In 1641 the General Court appealed to the elders of the church to prepare "a catechism for the instruction of youth in the grounds of religion." In 1642 the court

enacted the first school law of the colony, which was an attempt to provide generally what a few towns had so far provided individually.

By this law the court, in view of the neglect of many parents and guardians in the training of their children "in learning and labor . . . profitable to the commonwealth," ordered the selectmen of the towns to take account of all parents and masters as to their children's education and employment. They were to divide the towns so that each should have the oversight of a certain number of families, and they were to see that the children could read and understand the capital laws of the country, and that they were also put to some useful work. Parents or masters refusing to give proper accounts were to be fined, and their children might be taken away from them. The civil authorities might be called upon by the selectmen to secure the enforcement of the law. This law laid down certain principles of fundamental importance in the matter of public education. Education was by it declared to be necessary for the welfare of the colony, the obligation to furnish it was placed upon the parent, and the right of the colony to compel parents to furnish it was asserted.

Five years later, in 1647, the colony in a new law went still further, and required the towns to furnish a school or schools. This law of 1647, commonly known as "that old deluder Satan law," is the real foundation of the Massachusetts school system, and has often been called the mother of all of our school laws. A college had been established, and elementary schools and grammar schools were now ordered established in all towns. Every town of fifty families must appoint a schoolmaster to teach the children of the town to read and to write. The wages of the schoolmaster were to be paid by the parents, or by the town, as the majority might order. Every town of 100 families must also provide a grammar school, the master of which was to be able to instruct the youths sufficiently to enable them to enter the university. In 1654 the court ordered that all teachers must be sound in the faith and free from scandal in their lives, on pain of dismissal. Plymouth Colony also attempted somewhat similar legislation, though somewhat later, and on the union of Plymouth Colony with that of Massachusetts Bay in 1691, the law of 1647, with its various amendments, became the common school law for the entire united colony. In this new law the colony laid down still further fundamental principles. Towns were now to be compelled to provide schools; a standard of instruction was fixed by the colony; public taxation could now be resorted to to provide what the colony required; and higher education, leading to the university, also must be provided, and might be provided at public expense. The law of 1654 declared the right of the colony to examine and certificate all teachers. These principles were so fundamen-

tal in their nature that we have acted along these lines ever since, while they were at the same time so far in advance of the people that it was found difficult to enforce the laws, and even Massachusetts has not fully caught up with them yet

The fine for failure to comply with this law was at first fixed at £5. A supplementary law of 1683 further required all towns of 500 families to maintain two grammar schools and two writing schools, and in the reenactment of the laws in 1692, under the new province charter of 1691, the penalty for neglect to maintain the required schools was raised to £10. In 1701 the Massachusetts Court complained that the law was "shamefully neglected by divers towns, and the penalty thereof not required." At the same time the penalty was increased to £20, and a law was enacted whereby the master of the grammar school must be approved by the minister of the town and by the ministers of the two nearest towns, or by any two of them, and providing that no minister could be accepted as the schoolmaster of his town.

The grammar schools of Massachusetts did much, during the seventeenth century, to contribute to the fame of the colony as an educational center. The work of Ezekiel Cheever (*qv*), and of Elijah Corlett, who taught the school at Cambridge for forty-three years, are especially noteworthy. Other towns founded grammar schools during the seventeenth century, many of which were locally famous. Many grants in aid of schools, such as the grant of Thompson's Island to the town of Dorchester in 1636, the grant of 1000 acres of land by the General Court in Cambridge in 1659, for the support of a grammar school, the will of Thomas Bell in 1671, granting 200 acres of land to support a school for the children of the poor in Roxbury, and the income from the Cape Cod fisheries, granted by Plymouth in 1670, were made during the seventeenth century for the support of schools.

In the eighteenth century conditions changed. The early fervor for schools and learning in large part died out. It was a period of warfare and invasion, on the one hand, and of the founding of new settlements and towns, with a westward movement of the population, on the other. Between 1700 and 1760, 123 new towns were founded, and in the next ten years forty-five more, nearly all of which were west of the Connecticut River. Schoolmasters were becoming scarce, even by the end of the seventeenth century, due largely to the unwillingness of the towns to bear the financial burden of the schools, and special favors began to be granted to them in lieu of proper wages. In 1692, as an inducement to enter the work, teachers were exempted from taxes; in 1693 they were exempted from militia duty, and in 1699 they were exempted from the watch. Women teachers, too, became more common,

and the dame schools were gradually absorbed into the town school system. The "moving school" (*qv*) became common in the newer and more sparsely settled towns. Towns which felt themselves too poor to provide a sufficient number of schoolmasters employed one and sent him around among the districts, and he gave instruction in each in proportion to the contribution of each toward his support. The support of the required grammar school, too, became a grievous burden, and many towns were indicted for failure to comply with the law. In a few towns it, too, became a moving school. The school spirit declined, and the school decayed.

The constitution of 1789 and the school law enacted by the new state embodied into law the practices as well as the principles of the past 150 years. The old laws had contained requirements so high that they could not be enforced. While retaining the old principles, the new law set requirements capable of being enforced. The district system was legalized. Towns of fifty families were to support an English school for six months, instead of the whole year as before, and the school might be split up into any number of sessions. Towns of 100 families were to continue such a school for an aggregate of twelve months in each year. Towns of 150 families were to maintain an English school for twelve months, and a grammar school for six months, though such schools might be held in any number of places during the required time. Towns of 200 families were to maintain both schools for an aggregate of twelve months. The old law had required a grammar school in every town of 100 families, while the new law freed 120 towns from the old obligation. In 1824 another law freed all but seven towns, all of them commercial towns, from the ancient obligation. With the rise of the privately endowed academy having a more modern course of study the old grammar schools died out, and in many towns almost faded from memory.

All teachers in the higher schools were required by the law of 1789 to be college graduates, though, instead, a certificate from "a learned minister, well skilled in the Latin and Greek languages, settled in a town where the school are proposed to be kept," or from two equally well qualified ministers in near-by towns, would answer as well. Teachers in more elementary schools must also obtain a certificate, and the effects of the War of the Revolution are shown in the new requirement that only citizens of the United States could be employed as teachers, under penalty of a fine of 20s. a month. Ministers, selectmen, and other persons were enjoined to "use their best endeavors" that all should attend the schools, and the ministers and selectmen were appointed a visiting committee to look after the schools.

The decline in the desire for schools and learning, which set in in the eighteenth cen-

ture, continued and became more marked, and the first fifty years of the existence of Massachusetts as a state was a period during which the town schools reached their lowest level. The moving school and the district system (*qv*) destroyed the efficiency of the common schools, and the rise of the academy undermined the old town grammar schools.

For the purpose of locating the districts in which the moving school should be held, the towns had been laid off into districts. By the law of 1789 the division into districts was legalized and the district system established, and in 1800 the power to levy a local tax was granted. This meant the breaking up of the town into school districts, each with its own school, or fraction of a moving school. With the disintegration of the towns the old grammar schools disappeared. In 1817 these school districts were given full corporate powers, and in 1827 the full culmination of the district system was reached when the towns were required to appoint a prudential committeeman for each school district to care for the school property of the district and to select and appoint the teacher for the school. Towns might allow districts to select their own committeemen, and this procedure was the one usually followed. As Mr. Martin has so well expressed it, "the year 1827 marks the high-water mark of modern democracy, and the low-water mark of the Massachusetts public school system." Horace Mann termed this legislation the most unfortunate ever enacted for the schools of Massachusetts.

The first of the endowed academies was opened in Newbury in 1763. William Dummer, dying in Boston in 1761, left his mansion house and farm at Newbury to found and endow a school, to be maintained on the estate. In 1782 its name was changed to Dummer Academy. In 1778 Phillips Academy was established at Andover, in 1784 Leicester Academy was founded, and in rapid succession other academies were opened at Derby, Bristol, Marblehead, Westford, Westfield, Plymouth, and New Salem. To three of these state aid was granted in the form of Maine lands. Numbers of petitions for similar aid and charters now came in, and in 1797 a legislative committee was appointed to determine the future policy of the state toward these institutions. The report favored the continuance of the policy of aiding, by means of grants of land, these privately endowed academies, and by 1840 as many as 112 acts of incorporation had been granted for academies to be located in eighty-eight towns, and in every county of the state. These institutions were intended to prepare boys for the colleges. Their curriculum was more modern than the old grammar schools had provided, and many able students were attracted to them. A few took first rank; many others possessed only a local reputation. They upheld a higher standard of education and

teaching than the grammar schools had done. Under their influence Harvard College was able materially to increase its entrance requirements. On the other hand, the academies fostered the idea of private education, and thus acted injuriously on the public school idea. The wealthier patronized the tuition schools, and the poorer were left to get what they could from the free town schools. The limited and inefficient town schools led to the founding and endowing of the academies, and the more the academies succeeded and prospered, the poorer the town schools became. At about the same time that the district system became supreme the academies reached their greatest development. These were dark days for the public school idea. Boston made the beginnings of a new movement by the establishment of the English High School in 1821, the first public high school in America, a high school for girls in 1825, and the first evening high school in 1836.

Against this condition of apathy and indifference a number of public-spirited men began an energetic campaign. Mr. James G. Carter (*qv*) was the leader of the movement. Beginning in 1820, as a young college graduate, he devoted his energies for seventeen years to the building up of a sentiment for public education which finally culminated in the establishment of the Massachusetts Board of Education in 1837. With his voice and his pen he depicted the low state of education in Massachusetts, and aroused the state to action. Largely as a result of his efforts a number of laws of the first importance were soon enacted.

The first was a law which put a slight check on the district system, by differentiating school interests and instituting supervision. The law of 1789 had first required a form of supervision, through the medium of the ministers and the selectmen, or by a committee especially chosen for the purpose. Many towns took advantage of this and appointed school committees. School committee records in Newburyport date back to 1790; in Boston to 1792, and in Hingham to 1794. A law passed in 1826 made the appointment of a school committee compulsory, and gave to them charge and superintendence of the schools of the town. They could also determine the textbooks to be used, and were to examine and certificate all teachers. The districts objected most vigorously to this law, and the next year it was so modified as to virtually nullify it in many towns.

In 1827 another new law was passed, which, for the first time in the history of the state, made the entire support of the schools by taxation compulsory. Since 1647 support by taxation had been permissive and voluntary, and the schools of many towns had been so supported. In others fees had been charged, rate bills levied, voluntary contributions made, and various forms of maintenance employed. The law of 1827 made taxation compulsory on all

towns, and put into effect, after 180 years, the principles enunciated in the law of 1647

In 1834 another bill of importance provided for the creation of a school fund, not to exceed one million of dollars. The Maine lands were to be the chief source of the fund, and, profiting by the experience of New York and Connecticut, the distribution of the income of the fund to the towns was made contingent on the raising by the towns of at least \$1 for each child of school age (four to sixteen years) and in addition making the school returns required by law.

In 1836 the first law relating to child labor was enacted. By it the employment of children under fifteen years of age was forbidden, unless they had attended school for three months during the school year.

In 1837 the act of the greatest importance of all was passed, creating the Massachusetts State Board of Education, to be composed of the Governor, Lieutenant Governor, and eight members to be appointed by the Governor, for eight-year terms, one to retire each year. They were to choose as their executive officer a secretary, and it was made his duty "to collect information of the actual condition and efficiency of the common schools and other means of popular education, and to diffuse as widely as possible throughout every part of the commonwealth, information of the most approved and suitable methods of arranging the studies and of conducting the education of the young." The board was without authority to enforce. Its work was to study conditions, publish results, and to persuade communities to take proper action. It was also to appoint assistants to the Secretary, known as agents, who were to travel about the state studying conditions. At one time the board had six of these in the field, examining schools, advising committees, and stimulating communities to action.

On June 29, 1837, Horace Mann (*qv*) was elected as the first secretary, and was reelected annually for twelve years. With him began the great revival in education, not only in Massachusetts, but in New England, and its influence was felt in every Northern state. The history of this important period is largely the history of the work of Horace Mann himself. A new school system was created by his efforts; uniformity was introduced, a new interest in public education was awakened, and the new system virtually created was accepted by the legislature and the people, and has continued and developed ever since. The influence of his work extended to every Northern state, and the period of his labors is known in history as that of the great educational revival.

In 1838 the first public normal schools in the United States were established, partly by the legislature and partly by private support, two being opened at Barre and Lexington in 1839, and a third at Plymouth in 1840. In 1842 these schools were definitely adopted by the

state and named state normal schools. A fourth state normal school was established at Salem in 1854, a state normal art school at Boston in 1870, a sixth normal school at Worcester in 1874, and four additional schools were established in 1894. In 1847 the Lyman Industrial School for boys was established at Westborough, and in 1856 a similar school for girls was established at Lancaster. In 1847 the legislature authorized the towns to provide supplementary schools for adults, and ten years later such schools were made an integral part of the school system. In 1883 the support of such schools was made compulsory on all towns having a population of 10,000 or over, and in 1886 the support of an evening high school was also made compulsory on all towns of 50,000 inhabitants or over. In 1848 state grants of aid for teachers' associations were made for the first time.

In 1850 the first truancy law was enacted, the towns being permitted to enact by-laws to remedy the evil. As this proved ineffective, and as the number of persons in the state who could not read and write was rapidly increasing, due to foreign immigration, and as such persons have always been looked upon with distrust by the state, the legislature enacted, in 1852, the first compulsory attendance law in the Union. By the terms of this law parents were required to send all children between eight and fourteen to school for at least twelve weeks each year, unless excused from attendance on account of poverty, or because otherwise instructed. The school committee was to notify the town treasurer of violations, and he was to enforce the law. The exemptions and indirect provisions for enforcement practically nullified the law. In 1862 the towns were required to make by-laws against truancy, and in 1873 they were also required to appoint truant officers, and the appointment was given to the school committee instead of to the town authorities. Later the twelve weeks were changed to twenty weeks, and then to thirty weeks, and in 1898 all children seven to fourteen years of age were required to attend school during all of the time the public schools are in session. The poverty excuse was removed, and, later, the option of attending private schools was to be allowed only after the private schools had been approved by the school authorities.

In the early fifties a strong demand was made by the churches, in a number of states, for a division of the school money, and in 1853 the demand was made in Massachusetts. Not only was the demand refused, but the legislatures of 1854 and 1855 in succession approved of an amendment to the state constitution forever prohibiting such a division of funds. This was ratified at once by the people, and at the same time the daily reading of the English Bible in the schools, which up to this time had been voluntary, was made compulsory. Subsequent acts have so modified the law that the

children of parents who object may be exempted from attendance.

The first superintendent of schools in Massachusetts was employed by Springfield in 1840; but it was not until after Boston, in 1861, employed a superintendent that supervision became an important feature of the school system of the state. The commercial and manufacturing cities adopted the idea first, and from these centers it has extended to the whole state, — every child and teacher in the state now having the benefit of close and professional supervision. In 1888 the union of towns to employ a superintendent of schools was authorized, and the plan of aiding small towns to employ a superintendent of schools was begun, and in 1900 the formation of unions and the employment of a superintendent was made compulsory on all towns after July 1, 1902. Aid was also given to the poorer unions for the salaries of their teachers, where a superintendent is employed and receives state aid.

The law of 1647 had required instruction in reading and writing, and to this the law of 1789 had added English language, orthography, arithmetic, and decent behavior. In 1826 geography was added, and in 1857 the history of the United States. In 1858 drawing was made an optional subject, and in 1870 it was added to the list of regular studies. In 1885 instruction in temperance physiology and hygiene was added to the list, and in 1908 instruction as to tuberculosis and its prevention. In 1869 the consolidation of schools was authorized, and much has been done since 1885 in this work. In 1872 towns were authorized to support free industrial schools, but little was done in this direction until quite recently. In 1873 towns were permitted to furnish free textbooks and supplies to pupils, and in 1884 this was made a compulsory requirement. In 1893 school committees were authorized to provide evening lectures. In 1894 every town of 20,000 inhabitants was required to provide instruction in manual training as a regular part of its course of instruction. In the same year a law was passed providing for the inauguration of a state system of examination and certification of teachers, but no appropriation to carry the law into effect was made, and after remaining a dead letter for a number of years, it was repealed. In 1895 a high school tuition law was passed by which small towns were to be reimbursed for all or part of the tuition paid for the attendance of their pupils in other towns, and in 1898 the high school law was reenacted and made quite definite in the matter of its requirements on the towns. In 1898 the term of school required of small towns was increased from six to eight months. In 1899 the support of vacation schools was authorized. In 1906 the State Board of Education was directed to establish a state registry bureau for the employment of teachers. Medical inspection, made permissive at first, was re-

quired of cities and towns in 1906, the bill requiring the appointment of school physicians in each town or city, and making an annual examination of each school child compulsory. In 1908 an act was passed requiring all towns of over 10,000 inhabitants, not provided with proper playgrounds, to vote at the next election on the question of providing such. One playground was required for the first 10,000 inhabitants, and one for every additional 20,000. Of the twenty-five cities voting, twenty-three accepted the law. In 1908 a law authorized cities and towns to establish a pension law.

In 1905, on the recommendation of Governor Douglas, a Commission on Technical and Industrial Education was appointed. This commission made a very valuable report in 1906, and among other things recommended the creation of a Commission on Industrial Education of five to consider and plan for a comprehensive system of industrial and technical education for the state. This was done, the commission being created for three years, and being independent of the State Board of Education. In 1909 the legislature reconstructed the State Board of Education by abolishing both it and the Industrial Commission, and creating a new State Board of Education to consist of one member of the Industrial Commission, four members of the old state board, and four additional members, all to be appointed by the Governor and to serve for three-year terms, after the first appointments, to secure a retiring one third each year. The appointments were made during the early part of 1909, and the old State Board of Education, created in 1837, gave way to a new and a somewhat similar body, created to secure greater initiative and a more progressive policy. The old office of Secretary was abolished, and a Commissioner of Education was appointed instead. This is the most important change made in the Massachusetts school system in decades.

**Present School System** — The new State Board of Education, created by the act of 1909, appoints as its executive officer a Commissioner of Education, and two Deputy Commissioners. The Commissioner is appointed for five-year terms, but may be removed from office at any time by a two-thirds vote of the Board. The board is free to go anywhere to secure these men.

The State Board of Education acts as a trustee for any funds created or donated for educational purposes; has control of the distribution of the income from the school fund to the towns, subject to the authority of the legislature; has charge and supervision of the normal schools of the state, acting as a board of regents, or trustees, for the ten schools; prescribes the form of all census returns, registers, and reports; requires all public schools, and all private schools, reform schools, and almshouses to report to it in full each year as

to their work and finances; has charge of the education of the deaf and blind of the state in institutions, since 1906 has conducted a teachers' registry bureau, arranges for teachers' institutes, and grants state aid to those properly organized, approves (certificates) superintendents of schools for such supervisory unions as receive state aid, and may form and readjust such unions so as to provide supervision for stranded towns. Succeeding to the powers of the Industrial Commission, it will have power to investigate the need for and to extend industrial education, to provide lectures on the subject, to visit and report on all such schools; to initiate and superintend the establishment and maintenance of such schools, with the cooperation and consent of the municipality involved, and to expend all state money appropriated for the purpose of aiding such schools. The board is required to make a detailed annual report to the legislature, showing the condition of education in the state and the work done by it and its executive officers. The seventy-five annual reports so far made by the board are of very great value, and might serve as models for other states. The board possesses little real power or authority, and most of its acts in the past have been performed through its secretary, or its agents. Thus will doubtless continue to be the case with the new board and its commissioners.

Each city and town has control of the schools within its boundaries. Cities, except as provided in their charters, operate under the general school law. A school committee, elected by the city or town, has charge of the schools in each. A number of cities operate under special charters or laws, and have different forms of organization, but all conform to the general school law in most particulars. (See articles on BOSTON, CAMBRIDGE.) Each city or town is free to outline and prescribe its own studies, there being no state course of study or state requirements beyond the list of statutory school subjects and certain requirements as to types of schools which must be maintained by the larger towns. Each city or town of 10,000 inhabitants must provide evening schools for the instruction of those over fourteen years of age, every city or town of 20,000 inhabitants must provide instruction in manual training, as a part of its elementary and high school courses, every city and town of 50,000 inhabitants must provide an evening high school, if there are fifty children over fourteen years of age desiring to attend; every town of 500 families must maintain a four years' high school for forty weeks each year, and every town of less than 500 families must either maintain such a school or provide free tuition in the high school of some neighboring town. Other cities and towns may provide such instruction, and any town may provide playgrounds, vacation schools, evening schools, evening lectures,

kindergartens, and instruction in agriculture, sewing, and cooking.

Each town school committee is to have full charge of the schools under its jurisdiction; must appoint a secretary, selects and examines teachers for the schools, but may accept Massachusetts state normal school diplomas in lieu of an examination, may dismiss teachers, as it deems best, and, after one year of service in the city or town, may employ them at its pleasure, may consolidate the schools and transport the pupils at public expense, must prescribe the course of study and the textbooks to be used and must furnish textbooks and supplies free to all pupils in all the schools; may supervise and control all athletic organizations in connection with the schools, and may employ a superintendent of schools. Two or more towns may unite to form a supervisory union and employ a superintendent, for one-year terms. If such a union raised \$750 above the average paid during the past three years for the salary of the superintendent, the state will grant an additional \$750 for the same purpose, and in addition \$500 to increase the salaries of the teachers within the union. Towns having a valuation of over \$2,500,000 cannot share in these benefits. Such unions must last at least three years, and at the time of formation the aggregate number of teachers should not be less than twenty-five nor more than fifty.

Every town must provide a sufficient number of schoolhouses, and for failure to do so a fine of from \$500 to \$1000 may be exacted, and if a town fails or refuses to raise money for the support of schools it may be fined twice the highest amount ever before raised for schools. Three fourths of such fines shall go to the town paying it, to be used for schools, while the remaining one fourth is to be forfeited to the county and to be used for county purposes. All teachers must keep a state school register, and the secretary of each school committee must make the proper returns, including a school census of all children five to fifteen years of age, and towns failing to report may be fined from 10 per cent to 100 per cent of their share in the school fund, or, if not entitled to a share of the school fund, may be fined \$200, the income from such fines to be added to the principal of the state school fund.

All schools must be kept equally open to all children, without reference to race, color, or religion. Vaccination must be insisted upon by the towns. Every city or town must appoint one or more physicians for medical inspection, and provide them with proper facilities for their work. Pupils, janitors, teachers, and buildings must be examined. In cities this may be done by the Board of Health. Sick children must be sent home, and both the parents and the Board of Health notified. Tests of sight and hearing must be made at least once each year, the State Board of Health prescribing the nature of the tests and

furnishing the material for the tests to the teachers.

The Massachusetts system of school management is peculiar among the states. Much is left to the towns, and little has been given to the central authority. Only within recent years has the state shown a tendency to increase the power of the central authority and to make prescriptions in its laws. The state oversight has been that of advice rather than direction, suggestion rather than compulsion. School legislation in Massachusetts has been characterized by an exceeding tenderness for the feelings of the towns, and the intense individuality of the towns and cities has been unduly considered and respected. As a result a diversity of practices is still retained, such as varying fiscal years, and different methods of calculating the cost of the schools, such as would not be permitted in any state west of the Alleghany Mountains. Nearly all progressive legislation has had to go through certain stages in its evolution. The first has been the permissive, or voluntary stage, marked by an adoption of the measure by the more progressive cities and towns, and a determined resistance to it by a residue of rather unyielding conservatism. Finally, after a long and rather slow process of education, the legislature has been induced to order the resisting towns to comply. This is in part made necessary by the peculiar methods of school support in use in the state. Not, for example, until all but forty-seven towns had voluntarily extended their schools to eight, nine, and ten months, did the legislature pass the eight-month school bill. Not until all but thirty-nine towns had voluntarily abandoned the district system, did the legislature finally abolish it. Educational progress in Massachusetts is a process of the education of the people, results are reached somewhat slowly, but they are likely to be permanent when finally attained.

**School Support** — The state school fund, created in 1834, has been slowly increased until it reached the sum of \$5,000,000 in 1908. In 1894, when the principal of the fund was \$3,770,548, the legislature directed that \$100,000 be added from the general treasury each year until the fund reached \$5,000,000. Being one of the original states, Massachusetts never received any school lands from Congress, and the Surplus Revenue of 1837 given to it was spent for general purposes by the state. The income from the present fund, which is about \$220,000 at present each year, is distributed only to the smaller and poorer towns, all towns having an assessed valuation of over \$2,500,000 being deprived of any share in the fund. The basis of distribution is a combined and a sliding one, varying with both the assessed wealth of the town and the percentage of the town's taxes spent for schools. The state also makes certain small appropriations for superintendents' salaries (mentioned above), and

for high school tuition and teachers' institutes. All of these, together with the income from the state school fund, constitute 2.18 per cent of the total expense for education in the state. Certain local funds, tuition charges, and gifts constituted 3.43 per cent more, and the remainder, 94.39 per cent, comes from local taxation. In the cities and the larger towns, the entire income for schools comes from local taxation alone. Massachusetts stands almost alone in this particular, and the burden of local taxation and the resulting school facilities provided exhibit very great inequalities. What some towns can provide with ease, others can provide only with the greatest effort, and still others cannot provide at all and never will be able to provide.

The total amount expended for education during the last year for which reports are available (1910) was approximately \$20,000,000. Based on the total population of the state, this was equal to a per capita expenditure of about \$6 a year as against \$5.54 for the North Atlantic division, and \$4.27 for the country as a whole.

**Educational Conditions** — Of the population of 1910, 98.8 per cent were white, and but 1.2 per cent colored, 69.8 per cent were native born, and 30.2 per cent foreign born; 22.2 per cent were estimated as being between the ages of five and eighteen, and but 48.7 per cent were males. While the population averaged over the state is dense (418.8 per square mile), many towns have but a small population. Only 7.2 per cent of the total population live in country districts, and 80 per cent live in cities of 8000 or over. The state is essentially a commercial and a manufacturing state, with many important manufacturing towns.

In material conditions the schools of the state make an excellent showing. Most of the city school buildings are among the best of their kind, and the average value of all the school buildings of the state was a little over \$15,000 in 1910. Of the total expenditures each year for education, only about 60 per cent is spent for salaries, about 21 per cent being spent for new and better school buildings.

In instruction the schools offer much that is commendable. Manual training is taught in all but the smaller towns. Domestic science is to be found in the curriculum of most of the cities and many of the towns. Agricultural instruction is offered in a few places. Drawing, long a required subject, has been carefully supervised by the state since 1871, and excellent work has been done in the subject. Text-books and supplies are furnished free in all schools. Medical inspection is general. Kindergartens, evening high schools, evening drawing and technical schools, public playgrounds, and vacation schools are maintained by the larger cities and towns. A few industrial schools have also been established recently.

The state presents many educational inequalities.



ities, due to the great inequalities of the towns in taxing power. In some of the smaller and poorer towns the schools naturally are far below the standard of the schools elsewhere in the state, and below what schools anywhere ought to be. As some of the towns are steadily growing poorer while the cost of education is constantly increasing, this will always be so so long as the state insists on each town carrying so largely the burden of local support. While the enlarged school fund has been of much service to the poor towns, there is still need of further aid looking toward a much greater equalization of the burdens and the advantages of education. As it is to-day, good schools not infrequently go with the lighter tax and poor schools with the heavier tax.

The average length of term provided in Massachusetts was 170 days in 1910, and in but a very few cases fell below 160 days. The larger towns and cities provide approximately 200 days of school. In the matter of school attendance the state is very strict. Every child seven to fourteen years of age, and every child under sixteen years of age who cannot read and write, must attend some school, taught in the English language, every day it is in session. If the child is absent five days in six months, without proper excuse, parents may be fined \$20. A private school may be approved for attendance only if it teaches all of the required studies and in the English language, and if the school committee is satisfied that it is as thorough and efficient as the public school. The bad physical condition of the child is not accepted as an excuse, unless efforts are being made or have been made to cure the child. Every town and city must appoint truant officers, though two or more towns may unite in making such an appointment. These officers may apprehend children without a warrant, and take them to school. Each county, either by itself or in union with another county, is required to maintain a County Training (Truant) School, for the confinement of habitual truants, absentees, and school offenders. Vicious inmates may be sent to the Lyman School for boys, if under fifteen, or to the Massachusetts Reformatory for boys, if over fifteen. Girls may be sent to the State Industrial School for Girls. Parents, if able, may be compelled to pay for the support of such children while in the schools.

The state is equally vigilant in the matter of child labor. No child under fourteen can be employed in any kind of labor during the hours that the public schools are in session, nor at other times before 6 A. M. or after 7 P. M. Saturday work in mercantile establishments is allowed. No child under sixteen can be employed without a work certificate, to be issued by the school authorities, and only to the proper persons. To be eligible, all such persons under the age of sixteen must be able to read and

write the English language, the standard for this test being that of admission to the fourth grade of the public schools. Every factory employing such children must keep the work certificates on file and keep a list of such children posted in the factory. Factory inspectors and truant officers are to seek out all cases of illegal employment and good fines are inflicted for violation of the law. All illiterate minors over sixteen must attend evening schools, and a record of attendance must be filed each week with the employer. Towns may license bootblacks and other occupations in which minors engage, and may control the admission of children to places of amusement. These laws have been made necessary by the great influx of uneducated foreigners into the mill towns and manufacturing cities of the state. The illiteracy among the native whites was but 0.8 per cent in 1910, but among the foreign whites it was 14.6 per cent, while for the state as a whole the average was 5.9 per cent.

The development of the private and parochial school in Massachusetts has been one of the marked features of the school work of the state during recent years. Nowhere are the parochial schools better organized or stronger than in southern New England, and the Roman Catholic Church has there made a strong effort to gather the children of the foreign immigrants into its parochial schools, so long as it is able to provide for them. The fact that Massachusetts has better attendance laws than most states, and insists upon all schools being taught in the English language, and upon private schools being as good as public schools, is largely because of this condition.

**Teachers and Training** — The state employed 15,278 teachers in 1910, 92.3 per cent of whom were women. Of this number, 13.7 per cent were graduates of colleges, and 50.4 per cent were graduates of normal schools. Of the total number of teachers employed, 14.3 per cent were in high schools, and 9.7 per cent in evening schools.

The certification of teachers is still in the hands of the town school committees, except that the legislature of 1911 provided for the certification of teachers in state-aided high schools by the State Board of Education. In the larger cities and in some of the towns, this is done in a very satisfactory manner, in many towns it is done only indifferently, and, in a few towns, according to reports made in recent years, the examination of teachers is conducted in a very perfunctory manner or neglected entirely. The law demands that the school committee "shall require full and satisfactory evidence" of the moral character of teachers, and "shall ascertain, by personal examination, their qualifications for teaching and their capacity for the government of schools." Massachusetts normal school diplomas may be accepted in place of an examination. The law is so lax that the way is open for any form of

abuse, and no general certification standards are possible under it. Only in the larger cities and towns do any real standards exist. No other form of certificates are issued, except by the larger cities, and no provisions exist in the law for the recognition of any form of certification from outside the state.

The state maintains nine normal schools, as follows. Bridgewater, Fitchburg, Framingham (formerly at Lexington), Hyannis, Lowell, North Adams, Salem, Westfield (formerly at Barre), and Worcester. In addition, the state also maintains the Boston Normal Art School. The cities of Boston and Lowell also maintain city normal schools. All of these schools rest upon the high schools in the matter of admission requirements.

**Secondary Education** — There were 230 public high schools in the state in 1910, employing 2210 teachers and enrolling about 55,000 students. Boston maintains fourteen day and six evening high schools, and Boston, Cambridge, and Springfield maintain technical high schools in addition to the regular type of high schools. Besides the public high schools, there were ninety-one private high schools employing 725 teachers and enrolling approximately 6400 students.

All cities and towns of 500 families are required to maintain a high school, and all towns of less than 500 families are required to provide high school tuition for their pupils in neighboring high schools. If the valuation of the town is less than \$750,000, the state reimburses the town for all of the tuition paid; and, if over \$750,000, the state pays one half. In 1910 the state granted aid to ninety-seven towns for 1114 pupils, at a total cost of \$38,808.43. If any town of less than 500 families maintains a high school, the state grants it \$500 in aid (forty-four towns in 1908). All high schools must have a four-year course, and be maintained forty weeks each year. Two adjacent towns, each having less than 500 families, may vote to unite to form a union high school.

The work done in the high schools of the state is of good grade, and the standards maintained by the Massachusetts colleges insure a good quality of work along traditional lines.

**Higher and Technical Work** — The Massachusetts Agricultural College, at Amherst, opened in 1867, is the only institution of higher learning maintained by the state. It offers courses only in agriculture, and enrolls about 250 students, practically all men. There has been agitation in Massachusetts within recent years looking toward the establishment of a state university, but the large cost seems to be a strong factor against the plan. For some years the state has provided forty scholarships for boys in the Massachusetts Institute of Technology and a like number in the Worcester Polytechnic Institute, and an alternative proposition has been made to increase these. So great has been the demand for these scholarships that the state has for a number of years divided most of them into half scholarships, and the number has been increased recently. The legislature of 1911 voted \$100,000 annually for ten years to the Massachusetts Institute of Technology in return for free scholarships. Harvard University was originally founded by the colony, and for 150 years was, in part, supported by it, but it is no longer connected with the state. Until after the Revolution, money for the salaries of the faculty was voted annually by the General Court, and the election of president and professors was under its jurisdiction, and until 1865 the chief officers of the commonwealth were members of the governing board of the university. Since 1865 all connection with the state has been severed. The State Board of Education was instructed by the legislature in 1911 to consider the whole question of state-aided higher education, and to report its findings at a subsequent session.

The different institutions of higher learning in the state, not including strictly professional schools, are —

INSTITUTION	LOCATION	OPENED	CONTROL	FOR
Harvard University	Cambridge	1638	Nonsect	Men
Williams College . .	Williamstown	1793	Nonsect	Men
Amherst College . .	Amherst	1821	Nonsect	Men
Mount Holyoke College	South Hadley	1837	Nonsect	Women
College of the Holy Cross	Worcester	1843	R C	Men
Lasell Seminary	Auburndale	1851	Nonsect	Women
Tufts College	Tufts College	1854	Nonsect	Both sexes
Massachusetts Institute of Technology	Boston	1865	Nonsect	Both sexes
Massachusetts Agricultural College . .	Amherst	1867	State	Both sexes
Worcester Polytechnic Institute . .	Worcester	1868	Nonsect.	Men
Boston University . .	Boston	1873	M E	Both sexes
Smith College . . . .	Northampton	1875	Nonsect	Women
Wellesley College . .	Wellesley	1875	Nonsect	Women
Radcliffe College . .	Cambridge	1879	Nonsect	Women
Clark University . . .	Worcester	1889	Nonsect.	Both sexes
Simmons College	Boston	1902	Nonsect	Both sexes

**Special Institutions** — The commonwealth provides for the education of children whose physical or mental defects forbid their attendance upon the public day schools, by giving the Governor power, on the recommendation of the State Board of Education, to place all such defective children in special institutions and to pay part or all of the expense of their maintenance and instruction. Such children are under the care of the State Board of Education until discharged. The institutions approved are: —

The American School for the Deaf, at Hartford, Connecticut

\* The Clark School for the Deaf, at Northampton

The Horace Mann School for the Deaf, at Boston

The Sarah Fuller Home for Little Deaf Children, at Medford

\* The New England Industrial School for Deaf Mutes, at Beverly

The Boston School for the Deaf, at Randolph

\* The Perkins Institute and Massachusetts School for the Blind, at Boston

\* The Massachusetts School for the Feeble Minded, at Waltham

The Boston Nursery for Blind Babies, at Roxbury

(Those prefixed by \* are maintained by the state)

The state also maintains an Industrial School for Girls, at Lancaster, the Lyman Industrial School for Boys, at Westboro, and a Reformatory School for Boys at Shirley. The state also assists in the maintenance of large and well equipped textile schools at New Bedford and Lowell, and the law creating the Industrial Commission in 1906 provided for state aid to any town or towns of from one fifth to one half of the total cost of maintenance for industrial schools for the instruction of children over fourteen years of age in the principles of agriculture and domestic and mechanical arts. The law also provides for a Board of Commissioners of three, to be appointed by the Governor, who are to maintain, from state appropriations, the Massachusetts Nautical Training School, to provide a ship and all necessary books and materials, and to arrange for a six months' cruise each year in or near Boston Bay.

E. P. C.

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**MASSACHUSETTS TEACHER.**—See JOURNALISM, EDUCATIONAL

**MASTER or MAGISTER** — The word appears to mean nothing more than chief (Magis-ter), and the original sense of the word appears to be best preserved in such phrases as "master-cook," "master-mason," and the like. Perhaps its earliest use is in the title of the *Magister equitum*, or "master of the horse," the chief of the cavalry, appointed by the Roman dictator as *magister populi*, or chief of the whole people. In this sense it was always used as it is used to-day.

But already in classical times it had acquired a special connotation as meaning schoolmaster or teacher. Cicero in the *De Oratore* not only speaks of masters *simpliciter* — to mean teachers of boys, but also uses the medieval sounding phrase "masters of the liberal arts." Juvenal uses *ludimagister* and *magister* as equivalent terms. In medieval times this became its general and almost exclusive use, and from this use it had developed into a title of honor, which has now become our universal "mister" so universal that there is no one probably to whom it is not applied, except to a criminal in the dock. Alcuin in his poem, c 770, *On the Bishops and Saints of the Church of York*, in his catalogue of the library speaks of "Beda magister," "Beda the master," or "Master Bede," as if it was as much his recognized title, derived from his office of teaching the young monks, as in later days the "Venerable Bede," became. Alcuin also describes his own master Albert as having been made proclaimed "master in the city," when he was made master of the school of York. It is probably from the date of the rise of universities at the end of the eleventh and the early part of the twelfth centuries, from c 1090 and perhaps first in connection with the Doctor of Laws at Bologna that the term *Magister* becomes used as a regular title; *Magister Inerius*, *Magister Abelardus*. It then became restricted, and from being used of any who taught school came to mean one who had taught school at one of the *Studia generalia*, a regent master of the schools of a university. At Bologna, however, the title "master," which was exactly equivalent to "doctor" or teacher, — Alcuin describes Egbert of York when teaching the school as *Egregius doctor*, — was dropped in the faculty of law for that of doctor. At Paris and Oxford, too, the title of "doctor," began to be more usually restricted to the theological masters, and at Salerno and elsewhere to the medical

masters, by whom it has now in common parlance been almost entirely annexed. But in theory always there was no distinction, and the Master of Arts was the teacher and held the highest degree in his faculty as much as the Doctor of Theology in his. But as it became usual and eventually necessary to take the course in arts and become a regent master of arts before passing on to the faculty of theology, which was the mistress of all the sciences, it came about that in later days doctor was esteemed as a higher title.

Perhaps the most curious thing about it was that the title of *magister* among the ecclesiastics completely eclipsed the title of *dominus*, or lord, so that eventually those who had not "risen to the height of the mastership," but had stopped short as bachelors, — at first a kind of pupil teachers, a sort of apprentices in the arts and the art of teaching, — became known as *Domini* in distinction from those who had become regent masters; and shared the title with the "inferior clergy" who had never been to the University at all, and the lay lords of manors and of Parliament. The height of the title of master was perhaps reached when it was bestowed upon the simple layman, Thomas Cromwell, when he was Privy Seal, and "Prime Minister" in the State and wielded, as Vicar-General of Henry VIII, papal powers in the Church; in contrast with William of Wykeham, who, when he occupied a similar position under Edward III, is called by Froissart simply "Dominus," "Sir Wiccan." Its gradual spread to every one of any position at all was due to the rise of the middle classes and the increase in the numbers of the peerage, to the invention of the order of baronets by James I, and the increase of the knighthood. A. F. L.

The general usage was transferred to the American colonies, where the term was applied to both Latin grammar and elementary school teachers, the former at first termed masters and the latter school masters, though the distinction was not clear nor the usage fixed.

See DEGREES, TEACHING AS A PROFESSION; UNIVERSITIES

**MATERIALISM** — The theory that matter is the sole ultimate existence, and that all mental phenomena are in reality effects of matter, so that, if our knowledge of matter were complete, we could deduce from its laws and conditions so-called mental phenomena with the same certainty as phenomena of heat or electricity. The atomic school of antiquity represented by Democritus and Leucippus is generally regarded as the founder of philosophic materialism. These tenets were taken up by the Epicureans and find a classic expression in the *De Rerum Natura* of Lucretius. The atheistic character of this school brought materialism into ill repute, and among the many heresies of the Middle Ages few were frankly materialistic in character. The Epicureans, however, de-

fended the liberty of the will, as they found it necessary to introduce chance and spontaneous variation of direction of motion into matter. Some of the modern materialists have been strong theists, as Joseph Priestley (*q.v.*).

The modern interest in the problem of knowledge and in consciousness (see IDEALISM) has tended to reduce the importance of materialism, if not actually to eliminate it. The objective idealist has claimed that "matter" itself is ultimately but a "category" of thought or spirit in its determination of an objectively knowable world. Subjective idealists have claimed that conscious facts are the only ones directly known, and that "matter" is at most but a dubious inference from mental phenomena. Others have claimed that the principles of the conservation of energy contradict materialism, since the circuit of transformations of energy is complete on the physical side alone. The seeming dependence of mental phenomena upon brain changes is in reality but the concomitance of two independent series — a doctrine that under the name of Parallelism (*q.v.*), has given a turn to the Leibnitzian conception of Preestablished Harmony which has been very popular. Others, like Spencer and Huxley, have held that from one point of view mental phenomena are resolvable into physical; from another, physical into mental. Hence, the conclusion that both series are but symbolic manifestations of some ultimate unknown and unknowable reality. Even those writers, who, like Haeckel, have more openly maintained a materialistic monism, have generally endowed "matter" with some primitive inchoate psychical impulses and feelings and have thus approximated panpsychism or the doctrine that the world and mind are both arrangements of a more basic "mind stuff." J. D.

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**MATERNITY.** — See PARENTHOOD, EDUCATION FOR

**MATHEMATICS** — Attempts to define so broad a subject as mathematics have not been very successful. Benjamin Peirce, one of the best of the American-trained mathematicians, said that "mathematics is the science that draws necessary conclusions." Such a definition trespasses upon the domain of logic, but there are many who would relate logic and mathematics, as sciences, more closely than is commonly done. Professor Bôcher has suggested a basis of definition: "We may seek some hidden resemblance in the various objects of mathematical investigation, and, having found an aspect common to them all, we may fix on this as the one true object of mathematical study. Or we may abandon the attempt to characterize mathematics by means of its *objects of study*, and seek in its *methods*

its distinguishing characteristic. Finally there is the possibility of combining these two points of view." When, however, we attempt to define the science with respect to its objects, we are confronted by so many difficulties that there seems but little hope of success. There seems more chance of favorable results in attempting to define the science by means of methods, and numerous efforts in this direction have been made. Professor J. W. Young has recently suggested the defining of "abstract mathematical system" as a system of symbols devoid of content except such as is implied in the assumptions concerning them, and then saying that "mathematics as a whole might then be defined as consisting of all such abstract mathematical systems together with all their concrete applications." These attempts at defining the science serve at least to show the broadening of the subject from century to century.

With this broadening of the science itself has come not merely the difficulty of definition, but also the difficulty of stating in concise terms the certain reasons for studying the subject. We may set forth certain reasons for studying this phase or that, but for studying a science that is so broad that we can hardly define it, and so far-reaching in its applications, it is manifestly well-nigh impossible.

In the elementary portions of the general field it is possible to assign some reasons for studying the science. Among these, utility stands out prominently, and indeed there are few parts of mathematics that have not very definite applications to some other line of science or to some of the arts. Not only is there the definite application of the present to be considered, but there is potential application. No one thought when complex numbers were first suggested that they would in our day play a part in the theory of electricity, for example, nor did the Egyptians and Greeks see in their shadow reckoning the forerunner of the trigonometry that uses the slide rule and logarithms in its computations, as at present. Certain of the reasons for the study of mathematics are set forth under the various branches considered in this work.

There is no well-defined basis for the satisfactory classification of the branches of mathematics. Indeed, the modern tendency is toward the uniting of these branches rather than their differentiation. In elementary mathematics this tendency shows itself in the use of the simple equation and the introduction of mensuration in arithmetic, in the use of the facts of mensuration thus learned in algebra, in the use of algebra in the elementary course in geometry; and in the use of both algebra and geometry to a greater extent than formerly in trigonometry. Many would like to see the union of elementary mathematics made still more close, and it is probable that the interrelation of algebra and geometry will become more and more pronounced.

D. E. S.

For a further study of the subject see the articles on the various branches of mathematics, including ALGEBRA, ANALYTIC GEOMETRY, ARITHMETIC, CALCULUS, ELEMENTARY MATHEMATICS, FUNCTION, GEOMETRY, TRIGONOMETRY.

**MATHEMATICS, HISTORY OF** — See ALGEBRA, ANALYTIC GEOMETRY, ARITHMETIC, CALCULUS, COMPUTUS, CONICS, FRACTIONS, GEOMETRY, NOTATION, PROJECTIVE GEOMETRY, TRIGONOMETRY.

**MATHEMATICS, LABORATORY METHODS IN** — At various times it has been sought to present elementary mathematics somewhat after the laboratory method of the natural and physical sciences. The movement has been fostered by those who see in algebra and geometry a powerful adjunct to physics, as well as by those who wish to make mathematics as concrete as possible. Within reasonable limits the spirit of such a movement is one that is approved by many teachers. Whenever it is possible to show the concrete applications of mathematics in such a way that the interest aroused thereby outweighs the loss in the theory that is occasioned by the time expended, the result is salutary. There have, however, been extremists who have abused the spirit of the movement, and have gone to the laboratory to illustrate, by tedious means, principles that are substantially axiomatic to the normal mind, thus sacrificing valuable time and even dulling the interest. This is seen in the laborious devices often employed for explaining the axioms of algebra, when a ruler balanced on a book answers the purposes much better. It is also seen in the great expenditure of time sometimes involved in graphic work that has little bearing upon the subject in hand, and particularly in the tendency that is sometimes observed to turn the class in mathematics into one in mechanics or general physics.

The result of the efforts has been valuable in the industrial schools, where the aim is not mathematics as a science, but the study of the relatively few types of application that are needed in the lower lines of mechanical work. Here the laboratory, with its practical measurements, its making of working drawings, and its use of such instruments as the slide rule, has a definite place. In the non-technical high school the spirit of the laboratory may profitably show itself in the use of concrete illustrations whenever such use elucidates the mathematical processes, and in making the subject as real as possible. But to devote any considerable amount of time to this effort has not, in general, been thought wise. There is a large field of pure mathematics that is and should be developed for its own sake, just as literature is developed, and it would be unfortunate to neglect this for the benefit of those who are abnormally unable to appreciate it.

The equipment for laboratory work includes drawing boards and instruments for graphic illustration and for the making of working drawings; the slide rule, logarithmic tables, and, if possible, one of the more elaborate forms of computing machines, measuring instruments, including calipers, scales for weight, diagonal scales, steel tapes, and units of capacity, in both the common and metric systems; sets of geometric solids, a transit and surveying rods, a blackboard ruled for coordinate graphs, a spherical blackboard, and similar material. Indeed, a considerable amount of this material should find place in every high school, even where the narrow type of laboratory work is introduced. D E S.

**MATHER, INCREASE** (1639-1723) — Sixth president of Harvard College. He was graduated from Harvard in 1656, and subsequently studied at Trinity College, Dublin, where he took his A M degree in 1658. Returning to America in 1661 he became pastor of a church in Boston. He became a stirring figure in the life of the colony, opposed the aggressions of King Charles II, and in 1688 was sent to England to procure redress of the grievances of the colony. He was acting president of Harvard in 1681 (after the death of President Oakes), but he declined at that time to become the permanent head of the institution. He succeeded President Rogers as president of Harvard on June 11, 1685, and held the post until Sept 6, 1701. Through his efforts the college was authorized to create bachelors and doctors of theology. "As president he was careful not only to give the students direction in their literary pursuits, but also to impart to them religious instruction. He frequently called them one by one into the library, and there, with the affection of a parent and the fidelity of a minister of the gospel, he would confer with them respecting the salvation of their souls." It was largely through the efforts of Mather that the Presbyterian and Congregationalist bodies in New England were united. His writings include a history of the troubles of the English settlers with the Indians, and numerous religious works. W S M

See HARVARD UNIVERSITY.

**MATHEWS, JAMES MACFARLANE** (1785-1870) — First chancellor of New York University. He was graduated from Union College in 1803, engaged in the work of the ministry, and was one of the leaders in the organization of New York University (then University of the City of New York) and its first president (1830-1838). He was the author of works on religion and travel. W. S. M.

**MATURITY TESTS** — The difference between a child's general physiological development and his mental development has been emphasized by calling attention to the fact

that the child's mental age may be different from his physiological age. In an extreme case an imbecile may be twelve years of age and yet have the mental development of a child of two years of age. In order to ascertain the degree of mental maturity which a child has attained, series of tests may be applied to discover his relative ability in visual recognition, in language, in imagination, in power to deal with numbers, etc. C. H. J.

See GROWTH; TESTS, PSYCHOPHYSICAL.

**MAUGER, CLAUDIUS** (fl. 1650). — Teacher of French in London, a native of Blois, who had left France on account of religious persecution. He was apparently a teacher in France before he came to England, and obtained a living in London by private and school teaching, particularly in the girls' school of Mrs Margaret Kelvert. In 1652 he published the *True Advancement of the French Tongue*, and in 1656 he issued the second edition of a *French Grammar*, in which a Latin as well as an English version is given, that points to the probability that the first edition was a French-Latin work published in France with the English added for the second edition as published in London.

See MODERN LANGUAGES IN THE SCHOOLS

**MAURICE, JOHN FREDERICK DENISON** (1805-1872) — Divine and educational reformer, born at Normanston, near Lowestoft, England, the fifth child of Michael Maurice, who at the time of his son's birth was educating private pupils at Normanston Manor House. Frederick was educated by his father in Puritan principles. He was a precocious child. Intended by his father for the Unitarian ministry, he revolted against Unitarianism and the narrow outlook of English nonconformist circles in his time. With a view to becoming a barrister he entered Trinity College, Cambridge, in 1823, that university being chosen as it imposed no religious test upon students at matriculation. At Cambridge, Maurice was one of the founders of the Apostles' Club, and became an intimate friend of John Sterling. While still at Cambridge he was coeditor of the *Metropolitan Quarterly Magazine*, in which he declared his admiration for Coleridge and attacked Bentham. In 1828 he joined the debating society founded by John Stuart Mill, MacCulloch, Charles Austin, Romilly, and others, and is mentioned by J S Mill (*Autobiography*, p 128) as a Coleridgean, and, with Sterling, representative of "a second Liberal, and even Radical, Party, on totally different grounds from Benthamism and vehemently opposed to it, bringing into these discussions the general doctrines and modes of thought of the European reaction against the philosophy of the eighteenth century." This became Maurice's habitual standpoint. He was opposed both to the Benthamites and to the Tories. For a short period he was editor of the *Athe-*

*næm.* His mind gradually turned toward taking holy orders, and he resolved to go to Oxford, where he entered Exeter College in 1830. In 1831 he entered the Church of England. After a curacy near Leamington he became, in 1836, chaplain to Guy's Hospital, giving lectures to the students on moral philosophy twice a week. In 1837 he married the sister of Sterling's wife. In 1839 he became editor of the *Educational Magazine*, and delivered a course of lectures on the subject, *Has the State or the Church Power to educate the Nation?* In these lectures he protested against the theory that the secular State should take over the whole of national education out of the hands of the religious bodies. In 1840 Maurice was appointed Professor of English Literature and History at King's College, London, and in 1846, one of the professors in the theological department of the college and also chaplain of Lincoln's Inn. Among his congregation at the latter were Thomas Hughes (*qv*), J. M. Ludlow, and the nucleus of the Christian Socialist Party. They and Charles Kingsley (*qv*) became the devoted friends of Maurice. In 1844 he founded Queen's College, the first of the collegiate institutions in England for the higher education of women. He had been led to take an interest in this subject by the experience of his sister, Mary, who had established a school at Southampton. The profound movement in political and economic thought which stirred England and Europe from 1842 onwards led to the establishment (first in Sheffield, 1842) of people's colleges formed by the voluntary effort of workingmen students for self-improvement and instruction. The idea of the Sheffield People's College suggested to F. D. Maurice and his friends in 1853 the foundation of a similar institution in London, and this led to the establishment of the Working Men's College, the most famous and influential of all efforts to promote the higher education of working people. The founders of this college laid stress upon the need for brotherliness and fellowship in all higher education, upon the fact that in its true form such education is mutual education and that teachers and taught must meet as human beings, with full confidence in one another and without reserve. The first of the fundamental principles of the college ran as follows: "Our position as members of a society which affirms the operation of trade and industry to be under a moral law (a law concerning the relations of men to each other) obliges us to regard social, political, and human studies as the primary part of our education." The teaching staff of the Working Men's College included Ruskin, F. J. Furnivall, T. Hughes, Professor Westlake, Dante Gabriel Rossetti, Lowes Dickinson, E. Vansittart Neale, Grant Duff, Thomas Woolner, Charles Kingsley, Ford Madox Brown, Frederic Harrison, and Edward Bowen. The lectures which introduced the idea of the Working Men's College

to the British public were subsequently published in 1855 by F. D. Maurice, under the title *Learning and Working*.

In 1853 a bitter theological controversy had severed Maurice's connection with King's College. In 1860 he was appointed to the charge of St. Peter's Chapel, Vere Street, London, and as a preacher had great influence on the most thoughtful men and women of his time. He died April 1, 1872, and is buried at Highgate.

Maurice is one of the most revered figures in the intellectual and spiritual life of England during the Victorian era. As to the validity and permanent significance of his contributions to the intellectual thought of his time opinions have always varied. A large circle found guidance in his teaching, ranking him with S. T. Coleridge among English thinkers. Frederic Harrison, on the other hand, and others inclining to the Positivist standpoint, speak of him as muddle-headed (see Frederic Harrison, *Autobiographic Memoirs*, 1911). From the educational point of view, Maurice's personal influence was of historic importance. He and his friends were the first to touch the older English universities with a sense of direct personal responsibility for the adult education of the working classes.

M. E. S.

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**MAURITIUS, EDUCATION IN** — The small island of Mauritius has been under British control for a century, having been acquired by conquest in 1810 and formally ceded to that power by the Treaty of Paris, 1814. The island, which has an area of 705 square miles, supports a population of 378,000, of this number two thirds are natives of African origin, Chinese, mixed peoples, and white settlers. In religion, according to the census of 1901, 206,000 were Hindus, and above 40,000 Mohammedans. The Roman Catholic Church claimed 113,224 and the Protestants, 6644. A dual system of free schools, government and denominational, is maintained, both aided from the public treasury. In the government schools 8634 pupils were enrolled in 1909, with an average attendance of 5433. In the state-aided denominational schools the enrollment was 10,631, and average attendance, 7234. Secondary and higher education are provided by the Royal College and its affiliated schools. The total government expenditure for education in 1909 was £40,394 (\$196,315).

A. T. S.

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**MAXCY, JONATHAN** (1768-1820) — College president. He was educated at Providence and engaged in the ministry of the Baptist Church. He was president of Brown University (1792-1802), Union College (1802-1804), and the College of South Carolina (1804-1820). He published several pamphlets on religious and educational subjects.

W. S. M.

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**MAXIMUS PLEANDES** — A celebrated scholar and writer who lived in the fourteenth century. He was a Greek monk, and spent the greater part of his life at Constantinople, where he pursued the study of theology, rhetoric, history, mathematics, and poetry. Little is known of his history except that he was sent as an ambassador to Venice, and that he was still living in 1352. Numerous works of his are extant, one of the most important being a work on arithmetic, based on the Hindu numerals.

D. E. S.

**MAY, SAMUEL JOSEPH** (1797-1871) — Normal school principal. Graduating from Harvard College in 1817, he taught for many years in the schools of Massachusetts. He was principal of the Framingham (Mass.) State Normal School (1842-1845), and was active in the American Institute of Instruction (*q v*). His educational writings include *Education of the Faculties*, *Renewal of Education*, and numerous articles in educational journals.

W. S. M.

**MAYNOOTH UNIVERSITY, DUBLIN** — See IRELAND, EDUCATION IN

**MAYO, AMORY DWIGHT** (1823-1907) — Educational author. He studied at Deerfield Academy and Amherst College. After teaching in the public schools of Massachusetts for five years, he entered the ministry, and for twenty-five years was pastor of Universalist and Unitarian churches, and for several years lecturer at the Meadville Theological School. He led the so-called Christian amendment movement which sought to incorporate in the constitution of the United States the right to use the Bible in the public schools. From 1880 to 1885 he was one of the associate editors of the *New England Journal of Education*, and during his closing years was engaged by the Bureau of Education of the United States in the study of educational problems. His published writings include *Religion in the Common Schools* (1869), *Industrial Education in the*

*South* (1885), and a series of articles on the history of American common schools, published in the annual *Reports* of the Commissioner of Education of the United States. W. S. M.

**MAYO, CHARLES** (1792-1846) — English educator, born in London and educated at Merchant Taylors' School and St John's College, Oxford, where he graduated in 1814. He was ordained in 1817, when already headmaster of the grammar school at Bridgnorth, Shropshire. In 1819, whether it was through the influence of Mr Synge of Glamore Castle, Wicklow, or whether he was persuaded by friends to take charge of some English boys at Yverdon, he joined Pestalozzi's establishment as its chaplain. Here he remained until 1822, when he returned to England and opened a school on Pestalozzian principles at Epsom, soon after (1826) he removed to Cheam. His work was strongly imbued with an intense moral and religious purpose. He met with great success, and intending pupils were placed on the waiting list years before they could be admitted. Hermann Krusi, Jr., taught here for a time. Through Mr J. S. Reynolds, Mayo and his sister helped to found the Home and Colonial School Society (*q v*) and the training college for teachers connected with it. Mayo's great service to English education was to call attention to the Pestalozzian principles, although in introducing them generally to the schools he diverged widely from their spirit by formalizing them in model lessons and textbooks. He lectured on Pestalozzi before the Royal Institution in 1820 and collaborated with his sister in several schoolbooks and a memoir on Pestalozzi. Among his works may be mentioned *Observations on the Establishment and Direction of Infant Schools* (1827), *Practical Remarks on Early Education* (1837), frequently reprinted by the Home and Colonial School Society, a lecture on Pestalozzi's life prefixed to Miss Mayo's *Pestalozzi and his Principles*.

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**MAYO, ELIZABETH** (1793-1865). — English Pestalozzian, sister of Charles Mayo, whom she assisted from 1822 to 1834. In 1843 she became associated with the work of the Home and Colonial Society (*q v*), and had charge of the criticism and professional training at the society's training college, duties which she exercised with great skill. She collaborated with her brother in several Pestalozzian textbooks, which formalized and in a large measure stultified the spirit of the work. Her own works enjoyed great popularity, and include: *Lessons on Objects* (1831); *Lessons on Shells* (1832); *Lessons on Scripture Prints* (1840);



*On Religious Instruction* (1849); *Model Lessons for Infant Schools* (1848-1850)

See MAYO, CHARLES, and the references there given.

**MEAN.** — See STATISTICAL METHOD.

**MEANING** — This term has come into common use in psychology to refer to that phase of experience which goes beyond the impression. Thus, as one looks at a word, the impression consists of certain black and white spaces. The word, however, calls up a whole series of ideas which give meaning to the impression. The meaning which attaches to an experience may be more or less complex. Thus the meaning which the student of constitutional history attaches to the date 1776 and the meaning which a child in the elementary school attaches to the same date will differ vastly in complexity.

The term "meaning" serves one very important function in psychological discussions. It draws attention to the fact that the additions which we make to impressions are not commonly in the form of full explicit memory images. Thus, the first time that the child learns the meaning of the word "dog" he sees the animal, thus adding a visual image to the sound. The second time he may call up an image of the dog, or he may see a second animal to add to his interpreting experience. The third and fourth times his experience continues to develop, until finally the word "dog" has a very full significance. Psychological analysis of this last stage reveals the fact that the meaning added to the word is not a mere series of reproductions of that which the child saw the first, second, third, and subsequent times. It is rather an epitomized and thoroughly assimilated residuum of all that has gone before. It may contain very little visual imagery. It may be for the most part a thrill of friendly emotion with a vague visual or tactual image. In any case, the meaning is a digest of the experiences rather than a train of images.

Teachers who insist on too much memory work will find a corrective for their methods in a careful study of the psychology of meanings. C. H. J.

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**MEASLES** — Measles is a highly contagious disease due, probably, to a bacillus hæmophilus similar to Pfeiffer's influenza bacillus. This bacillus is frequently found in the secretions of the conjunctiva, the nose, and the respiratory tract.

The initial symptoms are similar to those of a cold, and the characteristic symptoms are an eruption of small red spots especially on the

forehead and the back of the neck, and in most cases a white spot, the so-called Koplic spot, on the mucous membrane of the inner surface of the mouth or on the conjunctiva. The disease usually remains at its height for a day or two and then gradually subsides, and, if there are no complications, in a fortnight or less, the patient has usually recovered. In many cases, however, serious complications, especially bronchitis, pneumonia, or tuberculosis, result. The period of incubation is from eight to sixteen days, sometimes still longer, and the patient may be a source of infection for other children three days before the disease can be diagnosed by ordinary methods. It is spread chiefly if not entirely by personal contact, apparently seldom if ever carried by a well person, only rarely does an individual have the disease twice. The eruption is probably due to the formation of antibodies in the organism to combat with the disease, a view in harmony with the popular idea that a generous breaking out is a good symptom.

In regard to the disease many erroneous ideas are prevalent. It is not ordinarily considered a serious disease, it is supposed that every one must have it, and apparently many think that the sooner a child has it, the better, and even physicians are apt to think it is uncontrollable. On the contrary, measles is often a fatal disease with young children. It is especially serious for weak and anæmic children, those who have latent tuberculosis, and those who have a tendency to certain diseases, such as disease of the ear, the heart, and the respiratory organs. According to Dr. Kerr, under whose supervision the extensive London investigations have been made, "measles is the most fatal disease of childhood and the one that plays the most havoc with school attendance" (Kerr *Report of the Medical Officer*, London, 1905, p. 30). While not as serious in this country as in England, investigations in many countries have shown the great mortality where the disease occurs in the early years before the age of six. The total number of deaths from measles in the registration area covered by the U. S. Census for the year 1908 was 4611. In Prussia for the year 1906 it was 9107, and it is estimated that every year there are about 15,000 deaths from this disease in the United Kingdom.

The aim of hygiene is to postpone the disease to as late an age as possible. It should be kept out of the kindergarten at whatever cost to school work. The postponement of the disease even to the elementary grades means that a smaller number of children will have it at an early age. And the aim is also to make the time between epidemics as long as possible, for this again means that fewer young children will have the disease. In the view of some it is an uncontrollable disease, and thus we had better allow it to exist in chronic form than try to combat it and have periodic epidemics.

## MEASLES

Modern studies, however, indicate that in the school at least it can be in large measure controlled

The scientific method of managing measles based upon the facts just mentioned consists of four things. first, a complete registry of all cases kept by the board of health, so that as soon as a case occurs in any school it will be possible to see just how many of the children have already had the disease. Second, in case of a kindergarten or primary class where a considerable part of the children are susceptible, closure of the class when measles becomes epidemic in the city, whether a case has occurred in this particular kindergarten or not, or else notification of all parents warning them to watch their children carefully in case of colds or the like. Third, whenever a case of measles appears in a class, exclusion of all children of the same family who have not had the disease, and, eight days after the first case appears in any class, exclusion of those susceptible for a period of eight days so that the second crop of cases will occur while the children are at home, together with notification of all parents to watch their children. Fourth, careful instructions of both parents and teachers in regard to necessary precautions

The great difficulty in treating measles is that of detecting the first case at a sufficiently early period to prevent infection. The success, however, of Dr Eberstaller's method, and the probability that an earlier diagnosis of the disease will soon be possible, give good hope that soon it may be controlled at least to such an extent that it can be kept out of the kindergarten and the primary grades. The Koplik spots, although not present in all cases, are a sign of measles, and this often renders possible an earlier diagnosis than the general symptoms. Moreover, recent studies by Hecker show that there are important changes in the blood which perhaps will soon permit a diagnosis of the disease several days earlier than has hitherto been possible. Probably before the community is educated to the proper care as regards measles, it will be quite possible to diagnose the disease at the time when it first becomes contagious

Children who have measles should be kept out of school for a period of three or four weeks, and brothers or sisters who have not had the disease should be excluded from school; but the consensus of the best authorities seems to be that it is an unnecessary and wasteful precaution to exclude other members of the family who have already had the disease. Frequently a great injustice is done in the higher classes by such unnecessary exclusion. School closure on account of measles is apt to occur after it becomes unnecessary and useless; for the children have been exposed to the disease, and the only good of closure is to appease the alarm of excited parents. Closure to be effective must occur when the first case occurs

## MECHANICAL CALCULATION

Whenever a case of measles appears, whether the school be closed or not, parents of unprotected children should be notified

The general adoption of a scientific method of managing measles would probably result in the saving of many lives, much chronic illness, and great interference with school work

W H B

See CONTAGIOUS DISEASES, INFECTIOUS DISEASES; MEDICAL INSPECTION

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**MEASURE** — See MUSICAL NOTATION

**MEASUREMENT** — See ABILITY, PSYCHOLOGY, EXPERIMENTAL; STATISTICAL METHODS, TESTS, PSYCHOPHYSICAL.

**MEASURES** — See DENOMINATE NUMBERS; METRIC SYSTEM.

**MECHANICAL ARTS SCHOOLS.** — A term of indefinite connotation, applied occasionally to institutions of technical or industrial education of higher or secondary grade. Its widest use was in the Morrill Act of 1862. For these institutions see AGRICULTURAL EDUCATION, TECHNICAL EDUCATION. It is also occasionally applied to Manual Training High Schools. See MANUAL TRAINING

**MECHANICAL CALCULATION** — The methods of calculation by means of the Hindu-Arabic numerals taught in our schools to-day are comparatively modern, and are not as generally used throughout the world as is often supposed. Up to the sixteenth century calculations were performed mechanically by all peoples on some form of the abacus (*q.v.*), thus was due to the fact that our present system of Hindu-Arabic numerals with its symbol for zero and the important feature known as *place value* had not been developed until this period.

Our present methods of written computation were not possible earlier, for they depend upon a more perfect notation than the Roman, such, for example, as the Hindu-Arabic. This situation is readily appreciated when one attempts to add a column of figures expressed in the Roman notation. The Romans never used their numerals for calculation, but merely to record results obtained mechanically on the abacus.

Though the sixteenth century developed this new method of computation, the majority of people continued to compute mechanically, and even to-day Japan, China, Russia, and a number of smaller countries do all computing on the *swanpan* or *sooban*, or on some similar form of abacus. In the banks in any of these countries one is surprised to find exchange computed as rapidly and accurately on these little counting frames as it would be by an expert accountant in this country.

During the last twenty-five years a part of the civilized world is rapidly returning to mechanical calculation, substituting for the abacus the modern calculating machine. This new development has gone so far in the United States that most large accounting rooms and banks are now using from one to two hundred such machines, and in some of the larger department stores all of the bookkeeping is done by machinery. Even the familiar cash register seen everywhere in small as well as large shops is, in addition to a money drawer, an adding machine which automatically adds the sales as they are made and gives a grand total at the end of the day.

Modern calculating machinery is divided into two large classes: (1) adding machines, and (2) multiplying and dividing machines. Adding machines are usually operated by keys like a typewriter, some of them, like the Burroughs Adding Machine, print each item added, while others, like the Comptometer, give only the results without printing. The latest development is a combination of the adding machine and the typewriter, an arrangement which makes possible a complete system of mechanical bookkeeping. The Elliott-Fisher is a representative machine of this type. All the machines above mentioned are used very extensively in banks and business houses.

Multiplying and dividing machines are divided into two classes: (1) those which multiply by continued addition, and (2) those which multiply directly. The former machine is the simpler and was originally conceived in 1668 by Leibnitz, the great mathematician. In its modern form it is known as the Thomas Arithmometer. The Unitas, the Brunsviga, and the Triumphator are other modern machines of this type. Of the machines which multiply directly the Millionaire is a representative. On all these machines, which are operated by hand or electricity, long multiplications and divisions are performed with absolute accuracy

in a few seconds. These machines are extensively used by insurance companies and large manufacturing companies.

For approximate calculation a simple mechanical device known as the *slide rule* is much used by engineers. It consists of two strips of wood, each about ten inches long, which slide on each other and which are marked with a graphic logarithmic scale, thus making it possible to perform mechanically simple multiplications and divisions, as well as to find powers and roots.

The use of modern calculating machinery is rapidly extending, and will in all probability have some slight influence on the future teaching of arithmetic. Although the machine will never do away with the teaching of this subject, it will put a premium upon accuracy and will lessen the necessity of teaching rapid calculation.

C. B. U

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**MECHANICAL DRAWING** — See DRAWING, INDUSTRIAL EDUCATION, TECHNICAL EDUCATION.

**MECHANICAL ENGINEERING**. — See TECHNICAL EDUCATION.

**MECHANICS' INSTITUTES** — **England** — Associations of artisans and workingmen which sprang up under the rising influence and importance of the industrial occupations at the end of the eighteenth and the beginning of the nineteenth century. Their aim was mutual improvement and study of the sciences as they applied to industries at a time when school facilities were practically nonexistent for the lower classes. Addresses by teachers of science, lectures by members, discussions, experimental work, provision of libraries, evening classes, and day schools were among the activities in which many of the mechanics' institutions engaged. Societies for mutual improvement began to make their appearance in the seventeenth century, e.g. the Society for the Reformation of Manners, in which Defoe was interested, was founded in 1690. The history of mechanics' institutions, however, is usually traced back to two sources — Birmingham and Glasgow. At Birmingham there was organized in 1789 a Sunday society for the purpose of keeping the members of the Sunday

school together, lectures were arranged in mechanics and physical science. In 1796 this society became the Birmingham Brotherly Society, which was joined by the Birmingham Artisans' Library (f 1797). More important, however, was the influence of John Anderson and Dr. Birkbeck (*qq v*). At Anderson's University, founded by the former, Birkbeck was able to get into touch with the artisan class, and gave courses to meet their needs. In 1823 the Glasgow Mechanics' Institute was established by former members of Anderson's Institution. Meanwhile a strong appeal was made in 1814 in the *Monthly Magazine* for the establishment of literary and philosophical societies for the middle and lower classes; suggestions were here advanced for the arrangement of mechanics' institutes. In 1821 Mr Leonard Horne, a merchant and geologist, founded the Edinburgh School of Arts. The London Mechanics' Institution was founded in 1823, with Dr Birkbeck as its president, and with the strong support of Lord Brougham. It was through the influence of the latter that the Society for the Diffusion of Useful Knowledge (*q v*) was established in 1825, with the needs of mechanics' institutions and popular libraries in view. The institution included a library, circulating and reference, and a reading room, a museum of machines, models, minerals, and natural history, a workshop and laboratory, classes for arithmetic, algebra, geometry, and their applications, and provided lectures to its members on natural and experimental science, mechanics, astronomy, chemistry, literature, and the arts. The majority of the managing committee consisted of workmen, a common feature in most successful mechanics' institutes. In the same year the Mechanics' and Apprentices' Library was founded in Liverpool, which was influenced by the New York Mechanics' Institution. The equipment and provision of classes and lectures followed the same lines as of the preceding. A feature of the instruction here given was the distribution of prizes. A day school for boys is also maintained as a preparation for the higher work of the evening schools. The Manchester Mechanics' Institution, founded in 1824, has played an important part in the development of technical education in Manchester. It was established "to enable artisans of whatever trade they may be to become acquainted with such branches of science and art as are of practical application in their trade." The building had special accommodations for work in science. Lectures were given twice a week on natural philosophy, natural history, literature, and the useful arts. Classes were held for instruction in writing, grammar, elocution, and composition, arithmetic, algebra, and geometry, architectural and mechanical drawing, vocal music, French, Latin, German, and chemistry. A large library and day schools for boys and girls were also maintained. The institution emphasized more

and more technological instruction, and made rapid progress after the members came to it with better preparatory equipment. In 1880 its title was changed to technical school, and in 1892 it was taken over by the Corporation, which has erected for its school of technology one of the best equipped buildings of its kind in the world. Mechanics' institutions spread rapidly up to 1830, and met with more or less success. Of considerable interest are the few successful institutions which arose in rural centers, *e.g.* Lewes, Chichester, Lincoln, Hastings, and St Leonards', with circulating boxes of books, traveling lecturers, and local branches among the neighboring villages and hamlets. But the chief centers were London, Lancashire, and Yorkshire. In 1839 a Metropolitan Association of Mechanics' Institutions was formed, following the example of the Union of Mechanics' and other Literary and Scientific Institutions in the West Riding of Yorkshire, and in 1747 the Lancashire and Cheshire Union and in 1848 the Yorkshire Union (with eighty-six institutions) came into existence. According to Sadler, in 1850-1851 there were 610 literary and mechanics' institutions, with a membership of 102,000, following a statement of the Earl of Carlisle in 1846, one in fifty-four of the population in Yorkshire belonged to a mechanics' institution, and in some places one in seventeen.

While the mechanics' institutions were to a certain extent successful, it has been doubted whether they attracted the class of people for whom they were intended. The artisan and lower classes had not the educational foundations to profit by the institutions, and in many cases the fees for membership, classes, and schools appears too high. The educational work of the institutions declined during the class struggles of 1848, but were again stimulated by the grants of the Department of Arts and Science (1859). With their schools of design and scientific instruction, the institution laid the foundation for the development of technical schools.

In the early part of the nineteenth century a number of such institutes were founded in the cities of the United States, and formed an important factor in the developing interest in public education. The institutes of New York, Rochester, and some other cities yet exist. The movement for the establishment of such institutions was connected with the Lyceum movement (*q v*).

See ADULT EDUCATION

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**MECKLENBURG-SCHWERIN, GRAND DUCHY OF, EDUCATION IN.** — See GERMAN EMPIRE, EDUCATION IN

**MEDIEVAL EDUCATION.** — See MIDDLE AGES, EDUCATION IN.

**MEDIAN** — See CURVE, GRAPHIC; STATISTICAL METHOD

**MEDICAL EDUCATION — History** — In the sense in which the terms are now used medical education has a brief history, for scientific laboratories are even in Germany less than a century old and organized clinical teaching even more recent. Nevertheless, on the continent of Europe, medicine has been for centuries one of the four learned faculties constituting the university. At Salerno, Montpellier, Paris, and other medieval universities the subject was taught canonically. Hippocrates, Galen, and other authorities were expounded to students by professors, each of whom was capable of teaching every branch. The development of anatomy and the physical sciences toward the close of the Middle Ages affected medical thought rather than medical education, for the universities lacked the facilities and the spirit requisite to the adaptation of educational methods to scientific advance. In consequence the most important part of the student's training was obtained after he left the university, and as hospital or physician's apprentice he procured a limited amount of concrete experience. Medical education began to lose its medieval character in Germany early in the nineteenth century, when university laboratories and subsequently university clinics began to be established. Its most rapid strides have been made since 1856, at which date Virchow enunciated his cellular pathology, — the most fruitful single contribution ever made alike to medical education and to medical science.

In Great Britain medical education has followed a different line of evolution. It began in the hospitals, not in the universities. Hence it has been from the first consistently practical. Originally each hospital physician had his own students who, having paid him for the privilege, "walked the wards" in his company. Anatomical and other instruction they procured at private establishments outside the hospitals. In the course of the nineteenth century the various elements were brought together to form hospital schools: the teachers joined to form a faculty, their separate apprentices, brought together, formed the student body; the necessary laboratories were one by one built in close proximity to the hospitals.

Latterly, the marked development of laboratory teaching has tended to force the medical schools into the universities. The hospital schools have been unendowed private ventures, relying on fees. For many years they were

highly profitable, but the needs of laboratory instruction now absorb all fees and call for additional support. The future of medical education in Great Britain lies with universities which, whether endowed or state-supported, will be in position to develop medical laboratories and clinics of modern type.

America practically repeats British experience. The reader is referred for additional details to the account of medical education in America given below.

Medical education aims to bring a number of sciences and a considerable body of knowledge acquired through experience to bear in the treatment of disease. Modern medical education differs from all previous forms of the same discipline in the increased scope and importance of the recognized sciences and the consequent limitation of the part played by mere clinical experience.

In former times, despite the fact that theoretical exposition of traditional medical doctrine consumed a considerable part of the student's time, his actual training was procured practically as an apprentice in hospitals or in the private practice of his preceptor. With the development of the underlying sciences the range of theoretical exposition has been greatly contracted and the apprenticeship has itself fallen into disuse, as it has become necessary and possible to substitute for it more systematic training in medical schools and hospitals connected with them. At the present time the details of medical education vary greatly from country to country. As it is impossible to describe fully the methods pursued in all civilized lands, the present article will restrict itself to four representative countries, namely, Germany, Great Britain, France, and the United States.

For further details concerning medical history, see GALEN, HIPPOCRATES, UNIVERSITIES, MIDDLE AGES.

**Germany and Austria** — Medical education in Germany and the Teutonic countries in general is, and has long been, exclusively and entirely a university affair, the medical faculty being one of the four traditional faculties constituting the complete German university. This has proved a most fortunate circumstance, for in consequence of the connection of medicine with the university all modern developments in the underlying sciences have been at once brought to bear in the solution of clinical problems, since the hospitals have been throughout the last century under university control. The ideals of the university, which combined research with teaching on a high plane, have been the ideals of medical education in Germany. The profession has therefore always been an educated profession and the German physician an educated man. Matriculation in the medical faculty has been limited to graduates of the German gymnasium precisely as matriculation in any other university

faculty Up to 1900 this privilege was confined to graduates of the classical gymnasium. Since that day it has been extended on equal terms to graduates of the Realgymnasium and the higher Realschule, with the single additional requirement that graduates of the last-named school must demonstrate an elementary acquaintance with Latin, which subject is not included in the program of the higher Realschule. Despite the lengthy tradition favorable to the classical gymnasium as the basis of all university study, the two scientific secondary schools are gradually making inroads and the proportion of medical students from them is likely in the future to grow steadily. The following table shows the situation in this respect in three recent semesters:—

SEMESTER	TOTAL MATRICULATION IN MEDICAL FACULTY	FROM CLASSICAL GYMNASIUM	FROM REAL GYMNASIUM	FROM HIGHER REALSCHULEN
1908 (Summer)	2,786	2,379 (85.3%)	320 (11.5%)	87 (3.2%)
1909 (Summer)	3,669	2,877 (78.4%)	589 (16.1%)	293 (5.5%)
1910-11 (Winter)	3,536	2,832 (80.1%)	535 (15.1%)	169 (4.8%)

Discussion is still in progress as to which of the three permissible secondary schools constitutes the fittest discipline preliminary to a medical education. The overcrowding of the medical curriculum, partly because of the necessary providing for all the sciences, partly because of the expansion of the medical field itself, is one of several factors responsible for the gradual veering of opinion in the direction of the scientific gymnasium.

The medical curriculum of the university may be divided into three parts, the first containing the sciences which are not in themselves strictly medical, but are essential to a thorough mastery of the medical sciences proper. The sciences in question are chemistry, physics, and biology, including botany. The second division includes the medical sciences proper; namely, anatomy, physiology, pharmacology, pathology, bacteriology, and legal medicine. The third group contains the clinical subjects, medicine, surgery, obstetrics, gynecology, pediatrics, ophthalmology, dermatology, etc. The sciences of the first group—chemistry, physics, and biology—do not, properly speaking, belong to the medical curriculum, and are indeed, as a rule, taught by the philosophical faculty. Only the traditional domination of the classical gymnasium could have kept these sciences so long in the medical curriculum. In consequence of the heavy burden which the student of medicine carries, his study of the preliminary sciences is hurried and unsatisfactory. He is instructed in them almost altogether by lectures, illustrated by

professorial demonstration. In chemistry alone is he actually required to take a practical course. His overwhelmingly theoretical training in these fundamental branches is an obstacle from which the average German student of medicine does not in most cases recover, for, though the teaching is as concrete as illustration can make it, the student does not himself master the chemical and physical manipulations upon which his subsequent studies so largely presume.

The instruction in anatomy is both practical and theoretical. The student is required to procure thorough training in dissection and in practical histology. In addition he attends lectures on general and special anatomy, and toward the close of his medical course is required once more to review the subject by following a course in topographical anatomy. In physiology likewise his instruction is both theoretical and practical, but the lectures are more heavily emphasized than the practical course, which may or may not closely accompany them. Pharmacology and hygiene are presented theoretically with demonstrations. The course in pathology is, like that in anatomy, both theoretical and practical. The student attends lectures on the principles of pathology, on general pathology, and special pathology, all of which are abundantly illustrated with fresh and preserved specimens. In addition he must, in order to pass his examination, himself take part in autopsy work. Bacteriology is assigned to hygiene.

Each of the subjects which have been mentioned in the preceding sketch has in the German university its own institute, or laboratory, as we should call it. The institutes are organized and equipped on substantially similar lines. The head, called the director, is the professor, devoting himself entirely to his specialty. He has a few assistants, the precise number varying with the size of the institute, the number of students, and the number of subdivisions the institute contains. For example, the institute of anatomy invariably contains two subdivisions—gross and microscopical, the institute of physiology has, as a rule, separate subdivisions for chemical, physical, and operative work; the institute of pathology, when completely developed, as at Berlin, contains divisions for gross pathology, pathological histology, experimental pathology, chemical pathology, and bacteriology. It happens not infrequently that one or more of the subdivisions mentioned may be missing, now on account of lack of funds, again, because a suitable incumbent may not at the moment be available. In the long run, these defects are of no consequence to the student, for in the course of his wanderings—the German student being given to migrating during his medical studies—he will find at one university what he may have omitted at another.

The arrangement and equipment of the insti-

tute invariably take thought for both teaching and research, for the German university professor, in the medical faculty as elsewhere, is at one and the same time instructor and producer. The institute contains lecture halls, classrooms, and separate suites for the investigative work of the professor, his assistants, and research students. Laboratory facilities differ in extent, but not in type, in the different universities. They are large at Berlin, Vienna, Leipzig, and Munich,—the anatomical institute at Munich being a palatial structure; they are small and more modest in appearance at Greifswald, Würzburg, Graz, and other universities. But in essential character and equipment all take thought for teaching and research at the same high level. This uniformity is due in no small degree to the custom of "calling" professors from one institution to another. Obviously, to induce a rising scientist to leave one post for another, as good or better facilities must be offered to him.

The German student is required to complete his work in all the sciences already named except pathology and bacteriology, before undertaking clinical study. To these sciences he is required to devote at least five semesters. German teaching of these subjects has obvious points of strength as well as weakness. The student is taught by progressive scientists in active laboratories. He works, therefore, in a highly stimulating atmosphere. Abundant opportunities are given to him to do more than the required minimum in any subject in which he develops interest or capacity. Having satisfied the examination requirement, he may enter one of the many advanced courses offered in all institutes or he may as undergraduate volunteer (*Famulus*) make himself practically a part of the organization of the laboratory during vacation time, or, having passed the necessary examinations, he may pause long enough to undertake a piece of original research under the direction of the professor. How large a proportion of the German medical students actually take advantage of the opportunities thus afforded it is difficult to say, but the German system of university instruction is explicitly designed to favor these more active and energetic individuals. The weakness of the instruction lies in the excessively demonstrative character of the required teaching. In all subjects a large part of the student's time is consumed in attending lectures and witnessing demonstrations,—even in anatomy, where, however, there is no lack of practical instruction besides. The unambitious student, who contents himself with doing only what he is by the letter of the law compelled to do, receives an education which is far too theoretical and passive. The practice of medicine involves the actual application of the sciences to clinical problems, but this application can be made only by students who have acquired a practical scientific technique. On the tech-

nical side, however, German medical education is weak unless strongly reinforced by voluntary activity on the student's part. While the best German students can get a rich, varied, and concrete training, the average student and the poorer student may escape with inferior practical training.

Germany is perhaps the only great country in which clinical education is on precisely the same footing as that of the underlying sciences. The German professor of medicine and surgery is a university professor selected for capacity only. As the clinical branches are under complete university control precisely as any other subject, the state seeks its clinical teachers wherever it can find them. Professors of medicine and surgery are therefore called from one university to another like professors of mathematics, philosophy, or chemistry.

There is a common notion that the German government is enabled to choose clinical professors in this fashion because the state, or, what is the same thing, the university, actually owns the hospitals in which clinical instruction is given. It is supposed that these hospitals have been created simply for the purpose of furnishing the proper opportunities for clinical instruction. As a matter of fact, this is by no means universally the case. In Prussia and in Württemberg the hospitals in which the universities carry on their clinical teaching are state institutions in which, therefore, the university enjoys complete privileges, but in principle the case is not otherwise in other states in which the hospitals are not state institutions. In Leipzig, for example, where the State of Saxony maintains its university, the clinical teaching of the university is carried on in the wards of a municipal hospital. The same situation exists in Munich, where the Bavarian government procures the requisite medical clinics for its university by making a contract with the municipality. At Strassburg the Empire makes a similar arrangement for certain wards with an endowed hospital, as does the Austrian state in Vienna. In Graz a provincial hospital is utilized, in Würzburg a hospital supported by a religious endowment. In all these instances alike the state enjoys essentially the same privileges. It has the right to appoint professors, who in virtue of their appointment to university chairs become physicians and surgeons to the hospitals in question, and the university professor whose clinic is situated in a municipal or endowed institution has the same rights and privileges as are enjoyed by the university professor in Prussia who teaches in a university hospital. These different arrangements work smoothly for two reasons. In the first place the university professor, who is also a hospital physician, receives a salary. His university and hospital work constitute, therefore, the first claim on his time and attention. In the next place executive responsibility and medical care are sharply

differentiated The hospital authorities, whoever they may be, appoint a hospital administrator who looks after everything that pertains to housekeeping It is his duty to attend to all details involving supplies, repairs, nursing, etc Equally complete is the authority of the hospital physicians and surgeons in reference to the medical and surgical conduct of the wards Superintendent and physicians are not accountable to each other, but both are accountable to the higher authority Thus all friction is avoided As these arrangements obtain in all hospitals alike, there is no essential difference between university and non-university institutions

The clinic differs from the scientific institute previously described in having to care for patients, it resembles the scientific institutes in having also to provide for both teaching and research Its equipment and organization reflect the three purposes for which it exists. The staff consists of the professor, known as the director of the clinic, assistants varying in number according to the size of the clinic, and advanced and voluntary workers who come into the clinic for the purpose of following the work of the staff or engaging in original research The equipment consists essentially of the wards, lecture halls always equipped for complete clinical demonstrations, classrooms for the conduct of undergraduate courses, research laboratories for the work of the professor and his immediate assistants The research laboratories vary in character with the interest of the professor They are, as a rule, equipped for investigation on the chemical, physiological, or bacteriological side of clinical problems As a rule, the professor is in general charge of the clinics and the laboratories Each assistant has a separate ward to look after, and, as a rule, is at the same time in immediate charge of one of the laboratories. While the entire staff is often engaged together on some large problem, the individual members of the staff are usually occupied with their own problems besides The required clinical teaching takes the form of clinical or surgical demonstration The undergraduate students assemble daily in the amphitheater connected with the clinic to witness a clinical demonstration by the professor Two, sometimes three, cases are shown each day. The professor describes in great detail all the significant features of the case, explains the various alternative diagnoses, gives the considerations which determine his judgment in favor of one as against the others, and thereupon launches into a scientific discussion of the disease in question from all its different aspects, pointing out how it is to be distinguished from other similar affections, the course it runs, the treatment to be applied, and the outcome to be expected For these lectures thorough preparations have been made in advance, and it is not too much to say that, as a rule, they represent a very high order of demonstrative performance.

A medical education largely made up of demonstrative lectures is obviously open to the objection already pointed out in connection with laboratory teaching; namely, that it is too theoretical and too passive By way of meeting this criticism various devices are resorted to First, the professor is required to call down into the arena from the amphitheater every student at least twice in the course of a semester This student, who is known as a *Praktikant*, is expected to examine the patient, to make a diagnosis, and to offer suggestions as to treatment. The professor quizzes him and requires him to defend his propositions The device cannot be regarded as a great success The students are nervous, timid, and unequal to the responsibility of making and defending a diagnosis on short notice, for they have had no previous opportunity to examine the patient exhibited Moreover, the moment the professor devotes himself closely to the *Praktikant* the rest of his audience becomes inattentive Most professors, therefore, attend mainly to the audience, the part of the *Praktikant* becoming very often almost nominal In the smaller universities the device works more satisfactorily because, the class being small, greater informality is possible

2 A second corrective is found in the practical courses in physical diagnosis and clinical microscopy given by the assistants in the clinic The professor, who has complete control of the material and facilities of the clinic, encourages his assistants to offer special courses designed to train small groups of students in the arts of percussion, auscultation, and palpation, and in the microscopic and chemical examination of urine, sputum, etc These courses are offered in large numbers, and as abundant material is at hand in the clinics and out-patient departments, the student gets an excellent training Similar courses are offered in surgery, where dressing, bandaging, and diagnosis are thus taught, and in the woman's clinic, where the student learns the important obstetrical manipulations

3 As in the laboratory branches, and more commonly than in the laboratory branches, students are invited to enter the clinic informally, chiefly during vacation time, as *Famuli*, or undergraduate volunteers They are thus privileged to follow as closely as they will all the activities of the clinic

4 At the conclusion of the student's course, after he has passed all his examinations, he is required to spend a so-called practical year in an approved hospital As a rule, at least one half of this period must be spent in ward work

In addition to the required work, above dealt with, the clinics, like the scientific institutes, offer a great variety of courses and a great variety of optional opportunities for the benefit of graduates and undergraduates who are eager to do more than is required of them. On



the clinical side, as on the laboratory side, everything is done to encourage the unusual student. The average and poor students can undoubtedly get along with very little practical exertion on their part, but no student who is eager to do something above the minimum ever lacks abundant opportunity and encouragement. These optional opportunities are so extensive and so largely utilized that they must fairly be considered the very essence of the German system of medical education. Despite its defects, it is therefore probable that the German profession is more scientifically trained than that of any other modern nation. Beyond question this is true of the leaders, namely, the professors and their assistants. Nowhere else, indeed, is there to be found anything that is equivalent to the German assistant who, attaching himself to a laboratory or clinical chief, remains in scientific service for a long period of years, sharing the productive work of his superior, carrying on his own investigations, and coming into close contact with a large body of students. From the assistants, division chiefs and professors are almost invariably selected. The prolonged activity of the assistants in the fundamental sciences prepares them to carry on clinical and surgical work on a thoroughly scientific basis.

In the actual arrangement of his course of study the German student has very considerable leeway. He is controlled only by certain restrictions imposed by the examination ordinance. It is required that he pass all examinations in the scientific branches as far as pathology before he can obtain time credit in any of the clinical subjects. The curriculum is thus divided into two mutually exclusive parts, the first containing physics, chemistry, biology, botany, anatomy, and physiology, the second pathology, hygiene, and all the clinical branches. No fixed order is prescribed for these subjects on either side of the dividing line. This looseness of structure enables students to migrate freely from one institution to the other, an admirable feature, since every student can thus procure for himself the conditions of study which he prefers and the instruction of any teacher whom he especially desires to follow. On the other hand, it is not without its disadvantages, for not infrequently the natural sequence of subjects is disarranged, to the unmistakable disadvantage of the student. Chemistry and physics, for example, should undoubtedly precede physiology, which employs them both. Nevertheless, it happens that a student will complete his required work in physiology before completing either or both of the subsidiary sciences. In the clinical division sequence is in general less material. There are, however, certain principles of order which cannot be safely neglected. Before entering a medical clinic the student requires to understand the more common pathological terms and phenomena, and he must obviously know how

to procure and how to interpret common physical signs, he ought, therefore, to have followed a course in percussion, auscultation, and palpation. Before entering the surgical clinic he should have followed an elementary course in surgical diagnosis and should have learned bandaging, dressing, etc. Obstetrics in the same way presupposes proper training with the manikin. These fundamental correlations having been enforced, it makes little difference in what order the student obtains his clinical training. The student is recommended by a plan of studies put forth by the different faculties to procure for himself at the proper time the fundamental training just described. Nevertheless, he is not required to do so. He may enter any of the various clinics without the proper preliminary discipline, and he not infrequently does. In some cases the technical training is acquired subsequently by following the practical courses above described. Other students procure it by serving as *Famuli* or volunteers in the various clinics prior to their examinations. Others pick up fragments in different ways and trust largely to good fortune. The same result already mentioned thus reappears. The minimum training may be decidedly unsatisfactory. Meanwhile there is hardly any limit to the training that can be procured by earnest and capable students.

It might be supposed that the examinations for the license to practice would interpose so as to cut off those students who have slighted their duties. This is the case in theory, but not in practice. The real guarantee of the competency of the German doctor is not so much the examination now about to be described as the high entrance basis already touched on. Before admission to the university the German student must have passed through a severe educational discipline which rejects the feeble and trains to severe habits of application the more competent. While in the early semesters of university life there is doubtless some reaction from the gymnasial discipline, it is nevertheless true that the German student has a trained mind. He is capable of and accustomed to hard work, and in this fact is found perhaps the most significant factor in connection with the high level of German medical education.

Two examinations are conducted in Germany, one for the title of practical physician (*praktischer Arzt*), the other for the degree of Doctor of Medicine. We may consider the latter first. The degree of M.D. is an academic title, and gives the holder the right to teach. As the examinations leading to it are held subsequently to those which give the title of practical physician, they are largely matters of form. The student is required to prepare a thesis, to submit to a brief interrogation by a committee of the faculty, and to pay certain heavy fees.

The examination for the license to practice

is a much more serious affair. It is known as the state examination, as distinguished from the degree examination, which is a concern of the university as a teaching body. The state appoints an examination commission at each university, made up almost entirely of professors. These commissions delegate the examinations in the different branches to the professors immediately concerned. Examinations take place almost continuously throughout the semester, students being examined singly or in small groups. The examination ordinance prescribes in great detail how the various tests are to be carried on. The first examination lasts four days, of which anatomy consumes two, physiology one, and the remaining subjects one. The regulations specify that in anatomy each candidate must describe a designated part, make a dissection, answering questions as he proceeds, and prepare two microscopical preparations. The examination in physiology covers general physiology, including physiological chemistry, and requires both oral and practical work. The examinations in physics and chemistry are oral only and are meant to keep in view the needs of the future physician. In zoology, comparative anatomy and physiology are to be emphasized, in botany, the anatomy and physiology of plants, especially those with medicinal properties. Should the student fail to pass in any subject, he is allowed two more trials from two to twelve months later. If he fails a third time, he is denied any further chance to retrieve. As a matter of fact, examiners are so reluctant to deprive a student of his career that those who come up for the third time are invariably passed.

The clinical examination, which is considerably more complicated, begins with pathology divided into two parts, pathological anatomy and general pathology, occupying one examiner two days. The candidate must do part of a *post mortem*, writing the protocol. He must make several microscopic preparations, expounding at least one, and finally must be subjected to an oral quiz on the principles of the science. The medical examination falls into two parts, and lasts almost a week. In the first part, conducted by two examiners in the medical wards or out-patient department, the candidate must examine two patients, making diagnoses, suggesting treatment, and giving a prognosis. At home he must write a critical account to be handed in next day. Thereafter daily for four days he must visit the patient once a day or oftener and report his observations to his examiners. The second part consists of a written examination in prescription writing and an oral examination in pharmacology and toxicology.

The surgical examination embraces four parts, and also lasts about a week. The student must handle two cases on much the same lines laid down for medicine, must be examined practi-

cally in bandaging, setting of fractures, etc., and must operate on the cadaver. Obstetrics, ophthalmology, and psychiatry are handled in the same fashion. A single day is devoted to oral examination in hygiene and bacteriology. As a rule, the subjects are arranged at intervals of six weeks. The student must pass in every subject before he can begin his practical year.

The merits of the examination are undoubtedly great. Its general tendency is to force the student to acquire practical skill. The foreknowledge that to pass anatomy he must dissect, to pass in medicine he must make a physical examination and diagnosis, to pass in obstetrics he must participate in a delivery, cannot but exert a favorable influence on the course of his studies. Moreover, the moral and practical influence of meeting his teachers face to face is marked. On the other hand, it must be confessed that examiners are frequently lax. The mere fact that examinations spread through the entire semester conduces to leniency, for, as the professor has all his other engagements to attend to, he is, especially in the larger universities, tempted to hurry, and haste is more apt to result in laxity than in severity. Moreover, though many weak students drop out before the third trial, those who persist can count confidently on being passed. In Austria students are sometimes rejected at the third trial, but on application the Emperor grants further opportunity, so that as a matter of fact, in Austria as in the German Empire, the student who persists will ultimately be successful.

The cost of a medical education is heavy, varying less than one would be disposed to think as between large and small towns. About 300 marks usually are required for tuition fees, books, etc.; living expenses, exclusive of clothing, are estimated at about 1200 marks for the two semesters, 7500-8000 marks make the minimum for the entire course, and leave the student without allowance for examination fees or vacations. Twenty years have made no material change in this respect.

The lot of the needy student is, however, variously relieved. The payment of fees is after all a private matter in the hands of the professor; he is free to waive his rights entirely or to grant a respite, if he pleases. At certain universities, committees are appointed, who, evidence of pecuniary incapacity being shown, grant a delay of six years, at the close of which period the proper officials endeavor to collect the debt; further postponement is common. Scholarship funds also exist, the income of which is annually distributed. In the two semesters 1905-1906, out of a total attendance of 40,509 in Prussian universities 5023 enjoyed fee-exemption; 8435 (many of course already counted among those exempted from fees) received additional aid; among them 966,720 marks were distributed.

**Great Britain** — Medical education in Great

Britain is not, as in Germany, controlled by the government, but practically control has been delegated by the government to certain corporations; namely, the royal colleges of physicians and surgeons to be found in London, Edinburgh, Glasgow, and Dublin, to universities possessing medical departments, and to the General Medical Council, a representative body consisting of delegates chosen by all the corporations above mentioned and the registered profession at large. Each of these corporations, with the exception of the General Medical Council, conducts examinations which admit to practice, and each has in theory complete freedom to conduct such examinations as it will. As a matter of fact, however, all conform to something like the same standard, a consequence partly of corporate pride, partly of professional solidarity, partly of the influence of the General Medical Council. The General Medical Council was created by statute in 1858 for the purpose of publishing annually an accurate register of authorized practitioners in order that the public might be enabled to discriminate the trained from the untrained. The Council was also given the right to inspect and to criticize the qualifying, or, as we should say, licensing examinations. This privilege has been skillfully cultivated so as to increase greatly the importance of the Council. It has, as a matter of fact, no coercive power over medical education. It cannot visit a medical school, it cannot dictate the curriculum, it cannot refuse to register a candidate who presents the qualification of one of the above-named corporations, even though it should hold the qualifying examinations to have been unsatisfactory. It can at most protest to the qualifying body itself, and in the event that the offending body fails to meet the objections raised by the council through its representatives it can carry its protest to the Privy Council, which has large powers of action. As a matter of fact, extreme measures have not been necessary. Publicity and constant hammering on the part of the council have succeeded in bringing the less conscientious and advanced examining bodies up to the standard regarded by the General Medical Council as satisfactory.

The situation in Great Britain is much complicated by the fact that medical education was originally altogether in private hands, where it still rests in large measure. The English doctor originally got his education as an apprentice, attaching himself to a hospital physician, whom he accompanied on his rounds and sometimes on his visits. His fundamental training in anatomy he got in the private classes which flourished in London, Edinburgh, Glasgow, Dublin, etc. As students increased in number and hospitals increased in size, the apprentices were brought together to form a school and the hospital physicians and surgeons formed a teaching faculty. These conditions prevailed generally up to very recent

times. The student fees formed a substantial source of income to their teachers, who also profited subsequently by acting as consultants to their students when the latter went out into practice.

This proprietary order is now in process of destruction. The necessity of providing the student with training in the fundamental laboratory branches has eaten up the profits of the proprietary medical school. Almost everywhere practicing physicians have ceased to teach chemistry, physics, anatomy, physiology, and other laboratory branches. As far as these subjects are concerned the British medical school is rapidly approaching the German plan of organization. In the Scottish universities, at Oxford and Cambridge, in the provincial universities, and in the King's and University colleges in London the scientific branches belong to the universities and are handled like other university subjects. They are taught by specialists, in laboratories equipped, as far as financial resources permit, for teaching and research. But nowhere as yet in Great Britain does a university really control its clinical facilities. Clinical teaching, therefore, remains as formerly in the hands of the visiting staffs of the local hospitals. At Glasgow, Edinburgh, and Manchester the local universities have procured some limited privileges in respect to the designation of teachers of medicine and surgery, but in general the clinical branches in Great Britain are taught incidentally by the practicing physicians who form the unpaid staffs of hospitals maintained by volunteer subscription. To this point we will recur in giving an account of the methods of clinical teaching.

No legal minimum is established in Great Britain in respect to general education which must precede the study of medicine. The various bodies dealing with the subject concur, however, in enforcing a requirement which includes English, Latin, arithmetic, algebra, and plane geometry. A student is admitted to a medical school on presenting a satisfactory certificate showing that he has passed the required examinations in these subjects. This standard is indisputably low. It can be met by an ordinary boy of fifteen or sixteen years of age. Students are, in fact, considerably older, the discrepancy being due to the unorganized condition of secondary education in England. (See EXAMINATIONS.)

The medical curriculum must be five years in length, and is on the average considerably longer. Its first year is devoted to instruction in the basic sciences — physics, chemistry, and biology. Anatomy and physiology take up the next eighteen months. The rest of the time is devoted to clinical studies, in which pathology is included. The teaching methods are much more concrete and practical than in Germany. Though systematic lectures are held in all subjects, the main emphasis in instruction falls

on the practical exercises, which are well developed. Conditions are less satisfactory in chemistry, physics, and biology, because these subjects cannot be satisfactorily handled when crowded into a single year, but in anatomy and physiology theoretic instruction is distinctly subsidiary. In physiology especially the English excel. The laboratories in this subject have practically without exception individual equipment for every student, enabling him under direction to carry out all the important simpler experiments for himself. Around this experimental course all instruction in the subject centers. An important obstacle, however, arises from the stringent laws governing vivisection. The student's own work is limited to pitted frogs.

The equipment and scope of the scientific laboratories in Great Britain are, except in physiology, generally inferior to those in Germany, because medical schools lack adequate financial support. The university régime has not yet completely established itself, in consequence of which university departments of medicine often rely largely upon student fees which are necessarily inadequate to support teaching and research laboratories. While everywhere interested individuals are found engaged in research at one point or another, research is not yet characteristic of the English laboratory as it is of the German. In many schools anatomy is limited to dissecting, the head of the department being assisted by young physicians waiting for practice. Physiology is in general much better, some of the London laboratories and the laboratories in Edinburgh, Glasgow, Liverpool, Cambridge, and Oxford being fully up to the best continental standard. Pharmacology and hygiene are quite undeveloped as separate laboratories of an experimental character. As a rule, the activity of the laboratory departments expends itself largely in routine teaching. The low standard on which students are admitted, the scant resources which the various institutions command, and the lack of development of scientific ideals combine to keep teaching to an elementary level. This tendency is assisted by the existence of the variety of qualifications and the discrepancies between them. The proprietary school depends for its success on passing its students. As the schools have no resources but fees, they must bend every effort to promote the success of their students in the qualifying examinations. Courses are therefore arranged to comply strictly with the examination requirements which each student has in view. No student is encouraged to do more than he needs. During his spare time he is assiduously coached by his instructor, who, being used up in drill work and practice, has neither time nor energy to engage in investigation.

Pathology is the connecting link in England, as in Germany, between the laboratory branches and the hospital. Material is in general abun-

dant, but pathological laboratories have been unable to develop on modern lines because of the strong prejudice against vivisection. In the London hospital schools pathology is limited to teaching in the dead house on morphological lines. In the universities the pathological department of the hospital is used for morphological work, while the professor sometimes maintains a separate experimental laboratory on the university grounds. At Glasgow alone does the university possess a modern laboratory of pathology in which morphological and experimental lines are combined. The hospital pathologist is now usually a specialist. His assistants are, however, generally young physicians and surgeons. The subject is taught with reference to its diagnostic use in medicine and surgery rather than as an independent scientific discipline. The students receive a course of instruction in the dead house, and are subsequently drilled in the museum to understand and to interpret pathological lesions as found in preserved specimens.

The English student gets his clinical education by attending the practice of the visiting physicians of a voluntary hospital. The quality of the instruction depends, therefore, altogether upon the character of the English hospital staff. Unlike Germany, where clinical professors are first of all teachers and are called to their posts after achieving distinction in inferior stations, the English hospital physician is a consultant who has in most cases attained his present appointment on the basis of seniority. Education and investigation are therefore secondary considerations. The hospitals lack the means and the attending staff lacks the time to engage freely in clinical investigation. The British student is, therefore, trained to be a practical doctor. He becomes quite expert on the technical side, but he does not receive the scientific discipline which is the distinguishing mark of modern medicine.

While British medicine suffers severely from the limitations just mentioned, it is nevertheless true that in respect to the student's contact with clinical material nowhere else in the world are conditions so favorable. In our discussion of Germany we pointed out that its clinical instruction was overwhelmingly demonstrative. In England, on the other hand, it is overwhelmingly practical. The British student has the freest access to the wards, which contain material enough for continuous participative instruction. Actual and continuous participation of the student in the care of the sick is thus the backbone of British clinical training. The student receives by way of instruction a practical discipline in noting and interpreting physical signs. At the conclusion of a fortnight he begins to "clerk." A physician, his assistant physician, and his house physician receive an assignment of perhaps six or eight students. The students are first taught the systematic taking of notes, whereupon the

house physician escorts the little group on its first ward walk, allotting to each student or "clerk," as he is called, a certain number of cases for which he is to be held individually responsible. Each clerk is required to obtain the complete history and description of each of his cases and to make the requisite chemical and microscopic examinations. He has all necessary freedom and facilities, entering the wards without ceremony and readily procuring such material as he may request. His notes become, as a rule, part of the hospital records of the case. The house physician makes rounds daily with the clerks between 9.30 and noon. Twice or thrice weekly in the afternoon the senior physician conducts the same group over the same ground, quizzing both house physicians and clerks as they move from cot to cot. As each case is reached, the clerk responsible for it steps forward, reads his notes, and defends his findings, his proposed diagnosis, and suggested treatment in reply to the interrogations of the chief. Every student is therefore sharply questioned on his own case, and witnesses at close range the cases belonging to other students in his group. When a case terminates fatally, the teaching group repairs to the dead house to witness the autopsy. This concrete routine continues during about six months. It is supplemented by systematic lectures covering the entire subject. A similar procedure is followed in surgery. The student gets in the first place six weeks of preliminary training in surgical dressing in the out-patient department, where he is taught to dress cuts, to apply bandages, splints, etc. The surgical teaching unit is composed of the surgeon in chief, the assistant surgeon, the house surgeon, and five or six students who follow the daily practical routine for a period of six months. In the operations, which take place four times weekly, the dresser, as the student is now called, is next to the house surgeon first assistant in his own cases. On the occasion of a bedside consultation between a physician and surgeon the students of both attend.

In midwifery every student serves as in-patient clerk to the obstetric physicians for at least six weeks, during which period he takes histories, conducts pelvic examinations under the control of the resident obstetrician, and serves as second assistant at operations. For a fortnight he is on duty in the out-patient maternity. Cases are assigned in rotation. On a clerk's first cases he is accompanied by the junior resident obstetrician. Later he acts alone under distinct restrictions as to seeking aid if difficulties arise. Material is so plentiful that, though twenty cases are required, a student may easily procure from thirty to fifty. English clinical teaching, therefore, amounts essentially to a series of posts or appointments, each characterized by the active participation of the student incumbent. The English clerk and dresser are trained by going through all

the motions which as physicians and surgeons they will have to perform. At the same time they work under such constant supervision and control that the interest of the patient is never imperiled.

The arrangement of the English curriculum is not wholly unlike that of the German. It is divided into two parts, though the precautions to prevent overlapping are less stringent than in Germany. In general, however, the student gives his first year to the basic sciences, the next year and a half or two years to the medical sciences, and the remainder of his time to clinical subjects. The specifications of the different examining bodies as to what he must do in each subject are very minute. He is required by the Conjoint Board in London to devote 180 hours to chemistry, 120 to physics, 120 to biology. The precise period which he must spend on anatomy, physiology, pathology, and each of the clinical subjects is likewise specified in the regulations. London University requires somewhat more, the Apothecaries' Society of London and the Triple Board of Scotland somewhat less.

The examinations follow instruction in emphasizing the practical and concrete. Much the most popular of the various qualifying bodies is the Conjoint Board of the Royal Colleges of Physicians and Surgeons in London, whose examination may be described as typical. Up to 1884 the two colleges conducted separate examinations. In that year they combined to form a Joint Board conferring a single diploma uniting both qualifications. The Board is managed by a joint committee who appoint as examiners teachers from the London and provincial schools. Though the examinations are wholly conducted by teachers, no teacher ever examines his own students.

The examinations in chemistry, physics, and biology, conducted by two examiners in each subject, are both written and practical. The practical and the written marks are combined to determine the student's grade. In anatomy and physiology four examiners each take part. They work in pairs, all being continuously engaged. Neither subject is counted without the other. In anatomy the oral test is conducted on a freshly dissected subject, dissected specimens in alcohol, and the bones. A living model is used for surface anatomy. In physiology no experiments are performed, but apparatus must be demonstrated, histological slides are employed as a basis for questioning. Simple experiments in physiological chemistry must, however, be carried out. Eight examiners officiate in medicine, acting in pairs. Two written papers are set, to be answered on consecutive days. The clinical examination takes place in an examination hall temporarily converted into a hospital ward. Each of the examiners sends from his hospital at least three patients. Every candidate is questioned on one "long"

and two or three "short" cases. The candidate studies the long case for ten minutes, after which he is questioned on it. Thereafter he is questioned more briefly on the short cases. In the evening of the same day he is orally examined in medicine and chemical pathology, including the examination of urine, pathological slides, and gross pathological specimens, fresh and preserved. The surgical examination, similarly conducted, consists of a written paper, clinical or practical work, surgical anatomy, and surgical pathology. Other subjects are disposed of in the same fashion.

The examiners serve for periods of four or five years. The service requires several days at a time twice or thrice a year. For it the ablest and busiest men in the kingdom are obtained. The General Medical Council has the privilege of sending its visitors to inspect the examinations. Through the circulation of examiners and visitors a fairly uniform standard has been generally procured.

The examinations thus just described are in point of principle perhaps the best to be found anywhere. They permit interaction between the schools and the profession, and they demonstrate the feasibility of giving a practical test to large numbers of students annually by the combined action of teachers and practitioners. Such defects as may be pointed out in the English examinations are attributable to the conditions under which medical education in England is carried on, and have nothing to do with the principle on which the examinations are conducted.

The effort to keep insufficiently endowed medical schools above water has led to a steady increase of tuition fees, which have thus doubled in the last half century. About 1870 the total cost of an education at a large London school was 95 guineas; in 1880, 132; at present, 180. The smaller metropolitan and the provincial schools are slightly cheaper, — Liverpool costing about £150. The expense varies somewhat with the choice of the qualifying agencies: it costs perhaps £10 less to prepare for the Conjoint Board than for a university degree. Scotland has not yet adopted the composition or combined fee. At Glasgow the sum total of separate fees amounts to £150. Adding in the expense of living, we may estimate the total cost involved at £250-300.

**France** — Medical education in France is, as in Germany, a university affair, but the medical faculty is only imperfectly developed on university lines. The professors in the medical department, in the laboratory as well as in the clinical branches, are practicing physicians, excepting only the anatomist at the larger universities. The appointments are made, with rare exceptions, from the local profession. Despite the association of medical teaching in France with the universities, the essential conditions resemble closely the proprietary arrangements characteristic of England.

In order to enter upon medical study the student must have achieved the baccalaureate that marks the termination of the *lycée*; in addition, he is required to pass a year in the study of the preliminary sciences. A baccalaureate course of secondary instruction plus a certificate covering the study of physics, chemistry, and biology, issued by the faculty of science, constitutes the basis of medical education throughout France.

The baccalaureate course takes any one of several forms, all leading to the same degree. Since the far-reaching secondary school reforms of 1902, complete parity has prevailed as respects the classics, the sciences, modern languages, and mathematics. A four-year primary course constitutes the uniform basis, seven years of secondary instruction follow, divided into two parts, four and three years in length respectively. In the first part, the student elects between the classics, omitting Greek if he desires, and a modern course largely scientific in content; in the second, he chooses one of four groups — the classic languages, Latin and modern languages, Latin and science, modern languages and science. The *lycées* of large cities are large and flexible enough to contain all the alternatives; at smaller places the authorities select with regard as far as possible to local conditions.

The French, like the German, boy is thus systematically trained with a clear view to a possible professional superstructure. The baccalaureate basis bears everywhere the same value. The teachers, who are shortly to begin training men to law, medicine, or what not, know exactly on what they have to build. It is true that, consistently with the Napoleonic origin of the system, the spirit of the *lycée* is less individual than the range of selection that it allows, but not improbably this is in part a survival from the former régime under which all were put through the same grind. Meanwhile, France has gone farther than any other country in stipulating that medical education shall repose not only on a sufficiently high and entirely uniform basis, but that this basis must be determined or supplemented by the specific requirements of modern medicine.

French medical education is overwhelmingly clinical in character. The French student is supposed to devote his mornings to hospital work. All laboratory instruction and all lectures on nonclinical topics are relegated to the afternoons. During the first year hospital attendance is optional. The afternoons of the first year are devoted to dissection. For this work the arrangements are still more or less crude and the teaching is confined almost wholly to dissection. The other sciences which occupy the afternoons of the subsequent years are demonstratively presented. Physiology is the only one which, even so, is adequately incorporated in the curriculum.

The clinical instruction of the French univer-

sities is conducted in municipal hospitals, in which certain privileges have been granted by contract to the State. In Paris, for example, the university controls eighteen services in hospitals scattered through the city. The heads of these various services, being university professors, are selected by the State from among those who have previously won in competition the position of associate professor (*agrégé*). As the university services are incapable of accommodating the number of students engaged in clinical study in Paris, the university recognizes the teaching of other incumbents of hospital posts. To each teacher, whether a member of the university faculty or merely a recognized hospital physician or surgeon, students are assigned in groups of twenty for terms of four months. The instruction is of a highly practical character. It begins and ends with the exhibition, examination, and observation of cases, and that too without preliminaries. There are no introductory or special classes in physical diagnosis or clinical microscopy. To acquire facility with the stethoscope, to learn percussion and palpation, a student is left to his own devices. In laryngology and otology alone are practical courses in technique conducted at the medical school.

The French student in general, the Paris student in particular, enjoys practically unrestricted opportunity to gain thorough familiarity with disease. Twenty students daily accompany a teacher through the wards. Each student receives by allotment two or three beds. His appointment runs for four months, during which period he has unobstructed access to his cases. He is expected to see them daily before the arrival of the chief. At the foot of each cot hangs a card bearing the names of those in charge. They are, to employ the English phraseology, clerks, to whom on reaching the case the teacher at once turns for a statement covering history, physical examination, etc. In the course of his two-hour clinic the instructor will exhaustively discuss three or four cases. Students other than those in personal charge of a case are free to interpolate questions or suggestions, and, the condition of the patient permitting, to verify by examination points of special note. Instruction in surgery and gynecology is largely limited to diagnosis. It proceeds on much the same lines as instruction in medicine. Students are at work in the wards examining patients by nine o'clock. An hour later the professor enters. The patient having been selected, the student in charge reads his report, the professor commenting as he proceeds. On a small black-board close by, professor or student sketches in order to show the size and relation of the parts in question or to depict a proposed operation. Toward the close of his studies the student is eligible to the position of *externe*, or assistant in the out-patient department, to obtain which post he must successfully com-

pete in examination. At the termination of the externship he is eligible to an internship, also after competitive examination.

The foregoing description shows at once the strength and the weakness of French medical teaching. It is weak in so far as laboratory instruction remains in an undeveloped condition. The only laboratory branch which the student has a chance to follow thoroughly is anatomy. On the other hand, as far as a physician can be made by clinical experience, the French student is admirably situated, particularly if he is fortunate enough to obtain the posts of *externe* and *interne*. In the latter, which lasts four years, he is in position to utilize, subject of course to the control of his chief, the almost unlimited clinical resources of the French hospitals.

The general arrangement of the French medical school does not favor investigation on modern lines. The laboratory branches are domiciled in the medical school in one part of the city, the clinical teaching is carried on in scattered hospitals elsewhere. The French medical schools, therefore, are lacking in organic character. There is little intercourse, social or scientific, between men occupied in the laboratories and those occupied in the clinics.

The arrangement of the French curriculum is very simple. The preliminary sciences — chemistry, physics, and biology — claim the first year, anatomy occupies the afternoons of the second. Banishment of the other medical sciences to the afternoon of the clinical year keeps them in a largely theoretical and distinctly subsidiary form. The clinical assignments, which constitute the main part of all French medical education, come in no fixed order. In general, medicine and surgery occupy the third and fourth years, obstetrics, psychiatry, and other branches, the fifth year.

The four years forming the medical curriculum proper are divided into sixteen "inscriptions," the five examinations being fixed in reference thereto. The first, devoted to a practical dissection and an oral in topographical anatomy, may come at the student's option between the sixth and the eighth inscriptions, the second, *viva voce* in histology, physiology, and physiological chemistry, between the eighth and tenth, the third, practical tests in operative medicine, topographical anatomy, and pathological anatomy, and oral in topographical anatomy, general pathology, parasitology, and obstetrics, between the thirteenth and sixteenth, at any time after the sixteenth, the fourth and fifth, including therapeutics, hygiene, legal medicine, materia medica, pharmacology, surgery, medicine, and obstetrics. Finally, the student must submit an acceptable thesis.

**America** — Medical education in the United States and Canada lacks the uniformity characteristic of medical education in Germany and France and the comparative uniformity which

prevails in Great Britain. During the first four fifths of the nineteenth century medical education in America was wholly proprietary in character. The so-called medical departments belonging to universities were nominal in their relationship. The rapid settlement of the country called for a large number of physicians much more rapidly than they could be effectively trained. What happened was this: Groups of physicians in different places banded themselves together to form so-called medical schools. These schools had in the first place neither resources nor facilities. They were practically establishments for didactic teaching of descriptive anatomy and for the inculcation of textbook knowledge of medicine, surgery, and obstetrics. They had originally no hospital connections whatsoever. In time wretched dissecting rooms, carelessly conducted by busy practitioners, were added, and clinical instruction was improved by the exhibition of an occasional patient from the dispensary.

A step in advance was taken when the group of men constituting the medical school happened to be the staff of a hospital. These men had, it is true, little interest in education, but it paid them to teach, because, in the first place, they received the fees of their students, and in the second place their students sent them frequent consultations after they engaged in practice. The hospital connection led to the building of amphitheaters in proximity to the wards and to the occasional exhibition of patients in them; but the teaching was for the most part of didactic character, and the student was without any effective contact with disease. The schools were thus nothing more than money-making ventures unrestrained by the law. A school that began in October would graduate a class the next spring. No educational requirement was made for entrance. Any applicant who could pay his fees was accepted. As state boards were not in existence, the school diploma was itself a license to practice. A student for whom a majority of the professors voted passed. Educating medical students thus became so profitable a business that chairs in medical schools became valuable pieces of property and were freely traded in. First and last, the United States and Canada have in a little more than a century produced 457 medical schools. Of these about 130 still survive. Illinois has produced 39, Missouri 42, New York State 43, Indiana 27, Pennsylvania 20, Tennessee 18. The city of Cincinnati brought forth 20, the city of Louis-

vill 11. Against these demoralizing conditions protests were raised from time to time, but little progress was made until the early eighties. Since that day the course of study has been gradually lengthened until it is now everywhere four years, though a year may still vary from six to nine months. The course of study has also been generally, though not universally,

graded. Almost without exception American medical schools all furnish some clinical teaching, though as yet only a few are adequately equipped in this respect. More progress has been made on the laboratory side, and it is almost universally conceded that the prospective student of medicine should possess some definite preliminary general education. The most important single event in the reconstruction of American medical education was the establishment in 1893 of the Johns Hopkins Medical School, entrance to which was limited to holders of a bachelor's degree.

In reference to their entrance requirements the medical schools of the United States and Canada now fall into three divisions. The first includes those that require two or more years of college work for entrance, the second those that demand actual graduation from a four-year high school or its approximate equivalent, the third those that ask little or nothing more than the rudiments of a common school education, perhaps not all of that.

About twenty institutions belong to the first class, all of them university departments supported and administered as actual parts of their respective universities —

University of California	University of Nebraska
University of Chicago	University of North Dakota
Columbia University	University of Pennsylvania
Cornell University	University of South Dakota
Harvard University	Syracuse University
University of Indiana	University of Utah
University of Iowa	Wake Forest College
Johns Hopkins University	Western Reserve University
University of Kansas	Yale University
Leland Stanford Junior University	
University of Michigan	
University of Minnesota	
University of Missouri	

Something like fifty medical schools constitute the second division. Great diversity exists in the quality of the student body of these institutions. The regents' certificates in New York, state board supervision in Michigan, control of admission to their medical departments by the academic authorities of some universities insure a fairly capable and homogeneous enrollment in some medical schools. Others—some of them university departments, some of them proprietary institutions — are quite lax in the interpretation of what constitutes a high school education. The reader must be warned that the assertions of the school catalogues and the requirements of the state boards cannot in general be relied on. Careful investigation alone can determine whether an institution that represents itself as on a high school basis really enforces its alleged standard. The third division contains schools that are practically without any adequate entrance standard at all. While these schools are most numerous in the South, they are to be found in almost all other sections of the country.



In their external aspect the curricula of American medical schools follow a certain general type. The first and second years are devoted to the laboratory branches and the third and fourth to the clinical branches. The laboratory branches are developed on something like the German model in the schools included in the first division above mentioned. These institutions have at least four separate laboratories, — anatomy, physiology, and biochemistry, pharmacology, pathology, and bacteriology. Hygiene is more or less prominent, especially at some of the state universities. In some schools increasing facilities are offered in all branches for both teaching and research. Most of the institutions here in question offer the entire medical course, but a few of them offer the laboratory branches in one place, the clinical in another — an arrangement greatly to be deplored, since both sides suffer seriously when isolated from one another. Six of these schools are so-called half schools, offering only the work of the first and second years. This arrangement involves perhaps no serious difficulty, as far as the teaching of anatomy and physiology is concerned, but unless, as at Oxford and Cambridge, a small hospital is at hand, pathology must be taught from museum specimens, models, and microscopic mounts, all of which have serious limitations. The schools of the second division move within narrower limits. Most of them live on fees. The best of them develop highly a department or two. The other departments are necessarily restricted. The quality of the student body likewise imposes limitations. Proper laboratory courses are impossible to boys whose preliminary education is defective. The best of the American medical schools on a high school basis endeavor, by careful selection of students and extraordinary pains in teaching them, to make the most of their situation. Less intelligently conducted institutions, content to operate on a lower plane, are commercially effective. Not a few are frankly mercenary.

There yet remains for our consideration the third division; namely, schools practically without any entrance requirements whatsoever. The conditions which prevail in these institutions are altogether scandalous. It is indeed stretching terms to speak of laboratory teaching in connection with them at all. Schools of this description may be found in the South without a dollar's worth of apparatus of any description whatsoever. In others the so-called laboratories prove to be dirty and disorderly rooms practically without equipment. Some of them have no dissecting rooms worthy the name. At others the dissecting room is filthy beyond description. Almost all make a pretense to teach chemistry, but schools can be found in which not even a complete set of reagents is at hand for the entire class.

In respect to facilities for teaching the clinical branches, conditions in America are even less

satisfactory than we have found them to be on the laboratory side. In order to teach clinical medicine, surgery, and obstetrics, a medical school requires adequate hospitals properly equipped with laboratories in charge of physicians and surgeons selected by the medical school on the basis of their fitness to teach and investigate. These fundamental requisites are met by very few of the medical schools in the United States and Canada. The University of Michigan, the Johns Hopkins Medical School, and the University of Pennsylvania are the most prominent examples of medical schools which are in complete control of hospitals of fair size, that of the Johns Hopkins Medical School having been recently increased by the addition of certain previously missing clinics. Of the three institutions named, however, only the Johns Hopkins Medical School has freely selected its clinical teachers from other institutions. A few other medical departments might be mentioned which are closely affiliated with certain hospitals, enjoying considerable influence in the selection of the hospital staff, which thereupon becomes their own medical faculty.

More generally, even those schools which under existing conditions are regarded as possessing fairly satisfactory clinical facilities have practically no voice in the appointment of the hospital physicians and surgeons who are their clinical teachers. In order to get teaching facilities at all medical schools have found it necessary to appoint to professorships individuals who happen already to possess hospital staff appointments. These individuals are rarely interested in teaching for its own sake, and still less commonly devoted to research. Teaching is with them a side issue to which they give a certain amount of time and energy, not so much because any immediate remuneration is attached thereto as because it leads to consultation business in the future. To make matters still worse, hospital appointments in America rarely involve continuous service. America has devised the so-called rotating system under which physicians and surgeons serve their hospitals for terms varying from two to four months, at the conclusion of which period a new staff comes on duty. In order, therefore, to enjoy teaching facilities throughout the year the medical schools are required to appoint to professorships all the successful incumbents of a hospital service, or, more commonly still, to piece together facilities acquired in different hospitals. These hospital appointments are made for personal or political, rarely for professional or scientific, reasons. The fact that they are unpaid and discontinuous is of itself fatal to serious endeavor. It need not surprise us, then, to learn that American hospitals are provided, as a rule, with no facilities for research. With few exceptions their laboratories are limited to routine. The pathological depart-

ment is a dead house, and often not even that

Even under such circumstances the amount of material that is available for instruction is almost invariably below what is regarded as satisfactory in Great Britain or on the Continent. The best of American medical schools controls only a few hundred beds. A very large proportion of those that are fairly well equipped have access only to some 100 or 150 beds. Proper facilities in infectious diseases and obstetrics are almost never found.

In all sections of the country schools can still be found that are practically without hospital connections of any kind whatsoever. In Massachusetts, New York, California, Illinois, Mississippi, Nebraska, Oregon, and other states, institutions with no, or almost no, clinical connections still confer the degree of M.D.

Methods of teaching medicine and surgery must under these circumstances vary greatly. In the Johns Hopkins Medical School a highly successful effort has been made to combine the best points of the English and German methods. German university ideals and the English clerkship and dressership have been united to form a highly effective pedagogic method. Following the successful experiment there made, the English clerkship has been introduced by other schools, whenever indeed hospital managers have been willing to receive students on an intimate footing in their wards. Less favorably situated schools have had to rely on amphitheater demonstrations, resembling the demonstrative clinics given in Germany. The inferior institutions cling to didactic textbook instruction.

The cost of medical education in the United States varies greatly. It has long been alleged that the inferior medical schools are maintained for the benefit of poor boys who could not otherwise procure a professional education. The hollowness of this pretense is exposed by the fact that a four-year medical education in the feeblest schools of Chicago, Philadelphia, or Baltimore costs in tuition fees and board about \$1500, for which sum a student could get two years of college work in a state university followed by four years in its medical department.

All chartered medical schools in the United States and Canada have the right to confer the degree of M.D., but this degree does not carry with it in America, as it does in Great Britain, the right to practice. The abuses in medical education led different states to create boards for the examination of those applying for the license to practice. The powers given to these bodies vary from state to state. In general, the state boards have the right to refuse an examination to students coming from low-grade educational establishments, but thus far this power has not been vigorously utilized. In addition, state boards are commonly authorized to refuse to recognize a medical education which has not been preceded by an adequate

general education, but as to this also the state boards have been very slow to assert their powers. The real secret of the failure of the state boards, however, to eliminate incompetent institutions is traceable to the almost universal employment of written examinations. The only sort of licensing test that will suppress schools without adequate laboratory and clinical facilities is a practical examination such as obtains in Great Britain and in Germany. Proprietors of feeble medical schools have long since found out that they can effectively meet the state board tests by drilling their students in the various compends that have been prepared with a view to meet the exigencies of the state board examinations. In consequence of universal laws forbidding teachers of medicine to be members of these boards, the examinations in question are conducted by men who have no touch with education and are consequently often decidedly unsuitable. The participation of teachers and the introduction of the practical examination would go far to assist in the rehabilitation of all medical education in America.

**Medical Sects.**—No special provision is made in Europe for sectarian education in medicine. Every intending practitioner is required to conform to the law. He must meet the requirements as to preliminary education. He must follow the regular course of medical instruction, and he must pass the requisite examinations. Having done so, he is free to call himself any kind of doctor that he chooses. As a matter of fact, it is found that, having complied with the usual requirements, only a negligible fraction prefer a sectarian designation.

Very different is the situation in the United States in this respect. There are in the United States some thirty sectarian institutions, about a dozen of them homeopathic, half a dozen eclectic, and the rest osteopathic. These schools have low entrance requirements, poor laboratory facilities, and almost without exception feeble clinical facilities. In general, the eclectic and the osteopathic schools are more wretched than the homeopathic. For the benefit of these institutions separate state boards are at times created, and their graduates are enabled to enter the practice of medicine on easier terms than are applied to the graduates of regular schools. Despite the fact that the laws deal with them favorably, sectarian schools are on the decline.

**Postgraduate Instruction.**—The rapid progress of medicine in recent years makes it advisable for men engaged in practice to make some systematic effort to keep in touch with recent development from time to time. This has led to the institution of postgraduate instruction in almost all parts of the world. In Germany postgraduate instruction takes one of several forms. The so-called Central Committee for postgraduate medical education,

established in 1900, organizes lecture and laboratory courses in all the leading German cities annually. These are meant for the benefit of practitioners who cannot leave home in order to engage in study elsewhere. The local courses are free of charge and are conducted partly by local physicians, partly by lecturers from other towns. The courses vary in character. Sometimes successive weekly addresses on different topics are given by different lecturers; again weekly clinics may be held, again practical courses are instituted, requiring two or three hours weekly and lasting two or three months. In the university towns the university instructors often offer continuation courses four weeks in length, dealing with all the newer topics likely to interest the practitioner. At Koln and Dusseldörf academies of practical medicine have been created, though they have thus far amounted to little more than the local establishments previously described. In addition to these more or less organized opportunities, postgraduate work can be procured in every German and Austrian university. Many courses are announced in the catalogues, but not infrequently practitioners, native and foreign, combine to request particular courses, arrangements for which can always be easily made. Little special provision for this sort of graduate study is made in Great Britain or France, though visitors are always welcome to the clinics in both countries. In Paris especially the rounds of well-known physicians are daily followed throughout the year by throngs of visitors. In London a Postgraduate Association has been formed which sells a composition ticket admitting to all clinics, clinical lectures, operations, and autopsies of the constituent hospitals. The most active seats of postgraduate training in England are the schools of tropical medicine in Liverpool and London.

In America the postgraduate school may be characterized as a compensatory adjustment. It is an effort to mend a machine that was predestined to break down. The more conscientious and intelligent men trained in the American medical schools above described were bound to become aware of their unfitness for the responsibilities of medical practice. The postgraduate school was therefore established to do what the medical school had failed to accomplish. Thirteen such institutions exist in the United States, of which those in New York and Philadelphia command good teaching hospitals. Their instruction is immediately practical in character, and has little to offer the well trained undergraduate student, who will do better to resort to a university for such additional opportunity as he wishes. It seems not improbable that the improvement of medical education in America may cut the ground out from under the postgraduate school as it has been here developed.

**Medical Education of Women** — Access to

the medical faculty on the same terms enjoyed by men was granted to women by the Swiss universities in 1876. The constituent states of the German Empire one by one adopted the same policy. Women have been admitted to the medical faculty of the Prussian universities on the same terms as men since 1908. The number of women students of medicine in Germany is, however, still small (241 in the summer semester of 1910), the reason being that secondary school facilities have not yet been provided in sufficient abundance. In Great Britain a medical school for women was established in London in 1874, — the London School of Medicine for Women, through which nearly one thousand students have passed since its opening. The other hospital schools of London exclude women. Of the provincial universities Durham, Manchester, Liverpool, Birmingham, Leeds, and Bristol are coeducational, as are Aberdeen and Dundee in Scotland. Edinburgh examines, but does not teach, women students of medicine. Glasgow teaches them in a separate establishment. In the United States both women's medical schools and coeducational medical schools exist. There were in 1909, 91 medical schools admitting both men and women, three admitting women alone. Of 921 women students in that year 752 attended coeducational institutions; 169 attended women's medical schools.

**Medical Education of the Negro** — The medical education of the negro is, particularly in the southern part of the United States, a matter of urgent importance. The relations of the two races are such that both suffer in point of health if either is neglected. A considerable supply of well trained negro physicians needs, therefore, to be procured. For this purpose there exist now in the United States six medical schools for negroes, but of these six only two — one at Howard University, Washington, D C., the other Meharry Medical College at Nashville — are in position to give a fair training in medicine. A F

For existing conditions in medical education in other countries, see the articles on education in the respective countries; *e g* BELGIUM, EDUCATION IN, NETHERLANDS, EDUCATION IN; etc

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Karger, *Das Medizinische Berlin*; G Mamlock, *Wegweiser für Aerzte*, J Pagel, *Aerzteführer durch Berlin*. As to Vienna see *Aerztliche Fortbildungskurse*, published by Urban and Schwarzenberg

**Great Britain** — The two leading London medical journals, *The Lancet* and the *British Medical Journal*, publish annually in August or September "Educational Numbers," containing full information respecting all British medical schools, examinations, etc. Every school issues a calendar

**France** — An English Handbook to the Paris Medical School by A. A Warden (London, 1903)

*Livret de l'Étudiant L'Université de Paris* — obtainable from the Bureau des Renseignements à la Sorbonne, 47 Rue des Ecoles, Paris

*Programme-Général des Cours et Conférences*. Imprimerie Chaix, Boulevard St Michel

Every university issues its own *Livret de l'Étudiant*  
**America** — The *Journal of the American Medical Association* (Chicago) publishes annually in August an "Educational Number," giving full information respecting all American medical schools. The Council on Education of the American Medical Association (Chicago) also publishes a large number of pamphlets dealing with the same topic. Every medical school issues a catalogue.

## MEDICAL INSPECTION OF SCHOOLS.

— Medical inspection is an extension of the activities of the school in which the educator and the physician join hands to insure for each child such conditions of health and vitality as will best enable him to take full advantage of the free education offered by the State. Its object is to improve health conditions among school children, safeguard them from disease, and render them healthier, happier, and more vigorous. It is founded on a recognition of the intimate relationship between the physical and mental conditions of the children and the consequent dependence of education on health conditions. Systems of medical inspection have been in existence for some eighty years, but it is during the past quarter of a century that its rapid and world-wide spread has taken

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place. It is now a movement, national in scope, in most of the important countries of the world. It is found in all of the continents, and the extent of its development in different countries is, in some measure, proportionate to their educational enlightenment.

**Status in Different Countries.** — *France.* — The first work seems to have been done in France, where the law of 1833 and the Royal Ordinance of 1837 charged school authorities with the duty of providing for the sanitary condition of school premises and supervising the health of school children. A few years later, in 1842 and 1843, decrees were promulgated directing that every public school should be regularly inspected by a physician. Despite these early beginnings, genuine medical inspection, in the modern sense of the term, was not begun in France until 1879, when the work was organized in Paris. Eight years later medical and sanitary inspection were made obligatory in all French schools, public and private

At the present time, medical inspection in Paris is carried on by a corps of 210 school physicians, who are selected by competitive examinations, and each of whom has supervision over not more than 1000 children. At least twice each month these doctors visit each school and make careful examinations of the sanitary conditions of the premises, giving special attention to lighting, ventilation, cleanliness, and water supply. After this, a visit is made to each classroom, and the children are selected who appear to need special attention. After this general inspection, individual examinations of children are conducted in the inspector's private room. Three classes of children are examined. first, those whom the doctor has selected as appearing to need special attention; second, those referred to him by the teachers and masters, and, third, those who have returned to school after absence from unknown cause. Each child is given a thorough physical examination during the first months of school life, and a complete record of the results is entered on an individual record sheet, which follows the child through his subsequent school career. Measurements of height and weight are made every six months, and entered on these sheets, together with records of illnesses and the results of physical examinations. Parents are informed of any defects or diseases discovered, and urged to secure remedial treatment. In the other cities of France the systems followed are based on that of Paris, but are in general less thorough, and in the smaller places are mostly restricted to measures for the prevention of contagious diseases.

*Germany.* — Dresden began work in 1867, when vision tests were instituted. Frankfort-on-the-Main appointed a school doctor in 1888, and the example was rapidly followed by other cities. Wiesbaden soon developed a

plan that was widely copied and became a model for the work throughout the empire. The procedure followed by the school doctor on his monthly visits to each school closely resembles that already described as followed in Paris. General inspections of premises and classrooms are first made, followed by individual examinations of selected pupils. Each child is given a physical examination before first entering school, and subsequent ones in the second, fourth, sixth, and eighth years of school life. A record sheet is kept for each child, and parents are notified of the results of the examinations.

There is wide variation in the thoroughness of medical inspection in different parts of the empire. Thoroughly organized systems under state regulation exist only in Saxe-Meiningen and Hesse-Darmstadt, where every school, both public and private, in the country as well as in the city, is provided with a state-appointed doctor. In other states, the school doctors are appointed by and work under the municipal *Magistrat*, the local board of education, or the board of health. In 1908 some 400 towns and cities had systems of medical school inspection, employing about 1600 physicians. Three plans of employing and remunerating these school doctors are common. Under the first, the physician is employed on full time, and is paid a salary ranging from \$1750 to \$2750 per annum, and has the right to a pension. Under the second plan, a salary of from \$150 to \$250 a year is paid for part-time services, and the work is usually carried on in addition to other public health services, for which separate payment is made. The third plan is to pay on a per capita basis according to the number of children inspected, and the scale of payment ranges from six cents to fifteen cents per child per year, the average being about twelve cents. Payment is also sometimes made at the rate of sixty cents to one dollar for each class examined. As yet there are only a few school nurses in Germany, Charlottenburg and Stuttgart being the only cities which employ them. Other movements, however, closely allied to medical inspection, such as school feeding (*q v*) and the provision of special classes for exceptional children, have made notable progress. (See GERMANY, EDUCATION IN.)

*Great Britain* - The medical inspection of schools and scholars is carried on under the provision of the Education Act of 1907, which is mandatory in its nature and applies to the schools of England and Wales. In Scotland it is carried on under the Education Act of 1908, which went into force at the beginning of 1909, and conferred on school boards powers necessary for a universal system of medical inspection. In Ireland compulsory medical inspection does not exist. Such as is carried on, is mainly performed by the school inspectors of the National Board, who are not medical men. The object of medical inspection in Great Britain, as stated in the *Memorandum* of the Board

of Education, is "to secure for every child, normal or defective, conditions of health compatible with that full and effective development of its organic functions, its special senses, and its mental powers, which constitutes true education."

Although London began medical inspection in England by the appointment of a school physician in 1891, the movement was only sporadic in its development up to the passage of the act of 1907, making it universal and compulsory. The details of organization are in the main left in the hands of the local authorities, although some minimum requirements are laid down by the *Memorandum* of the Board of Education. These provisions include the physical examination of each child at the time of its entrance to a public elementary school, and at least three subsequent examinations. The first of these takes place during the third year of school life, or about the seventh year of age, the second during the sixth year of school life, or about the tenth year of age, and the third at the time the child is about to leave school and go to work.

School nurses were first employed in England, where their work in London dates back as far as 1887. The first school nurses, in the newer acceptance of the term, were appointed in 1901 by the London School Board, and their employment is now becoming general in other cities.

*Other Countries* - In Norway, the movement has progressed steadily since 1885, when some localities supported regular school physicians. Permissive regulations were passed in 1889, and two years later obligatory ones were adopted. Sweden is probably the country where the term "school physician" was first employed in its modern sense. As far back as 1868, medical officers were attached to the staff of each large school. Their duties and spheres of activity have been greatly extended, beginning first with the higher, and since 1895 including the primary schools. Denmark has no regular system of medical inspection, nor any legislation directly providing for it. There is, however, a certain amount of work carried on in the elementary and secondary schools of the larger towns and cities. Austria was the first country to enact effective legislation covering inspection in elementary schools. This was done through the ministerial decree of 1873, providing for the regular employment of school physicians. In Hungary, the act of 1885 established the office of school physician. In Switzerland, the medical examination of children is recommended by the Federal government, but not enforced. Nevertheless some thirteen cantons carry out the recommended inspection, and in some cities very thorough work is done by the school doctors. Russia has made provision for medical inspection since 1871, but with the exception of a few cases it has not extended

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beyond the secondary and higher schools. In Bulgaria organized work dates from 1904, while in Roumania adequate legislation has existed since 1899.

In Belgium, medical inspection is the rule in the more important municipalities, and Brussels is credited with establishing the first system of medical inspection, in the full modern sense of the term, in 1874, when school physicians were appointed who inspected each school three times a month. From its inception the system was remarkably successful, and was copied in other Belgian cities and served as a model for systems in Switzerland. Some of the earliest work of school dentists and oculists was done in Brussels.

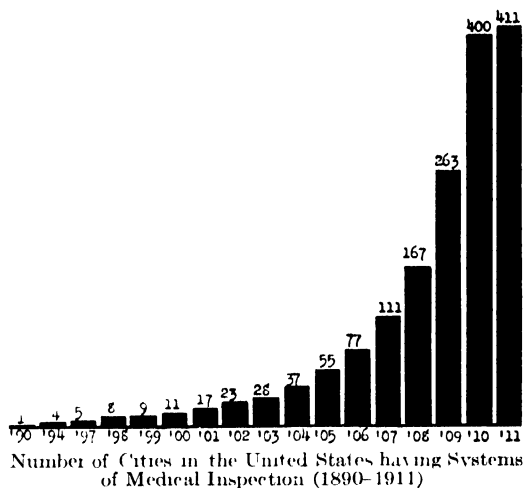
A number of countries in America, outside the United States, have more or less well developed systems of medical inspection. In Canada, Montreal began work in 1906, when fifty school physicians were appointed. This was followed by work undertaken in Halifax and Vancouver in 1907. Some work is being done in all of the provinces, and there is legislation providing for its existence in Ontario, Manitoba, and Alberta. Medical Inspection in Mexico dates from 1896, when the Department of Medical Inspection and School Hygiene was organized under the Director-General of Elementary Instruction, and a few doctors were appointed. Since that time there have been numerous reorganizations, and a constant extension of the system, until it is now very complete and notably efficient in the city of Mexico and its suburbs. The work has spread until it is fully organized in the state of Chihuahua, and partly so in Guanajuato and San Luis Potosí.

In South America, the Argentine Republic and Chile both began medical inspection of schools in 1888, and in both republics the systems are very thoroughly developed. The work in Australia, Tasmania, and New Zealand dates from 1906, and includes not only preventive measures, but much scientific study of the results of the examinations. This renders the reports from these states unusually valuable. In Japan, medical inspection has been compulsory and universal since 1898. Only small towns and country districts are exempted. In Cairo, Egypt, the first school physician was appointed in 1882, and the system has been continued ever since.

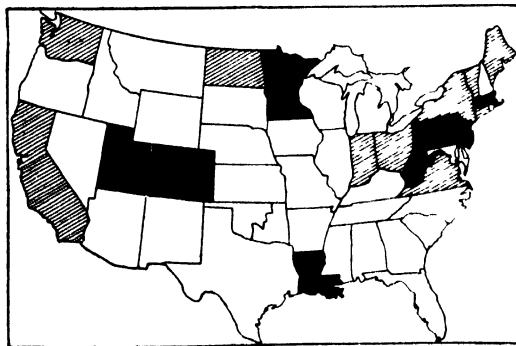
*United States* — Boston was the first city in the United States to establish a regular system of medical inspection. This was in the year 1894, and came as a result of a series of epidemics among the school children. New York City followed in 1897, when 134 school physicians were appointed. Chicago and Philadelphia began work in 1895 and 1898, respectively. In all of these instances medical inspection had in its inception the sole object of reducing the number of cases of contagious diseases among the pupils.

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From the greater cities, the movement rapidly spread to the smaller ones, the first step in most cases being taken by a local medical society offering to carry on volunteer work for a limited time to demonstrate its desirability.



During the school year 1910-1911 an extensive study undertaken by the Russell Sage Foundation, and covering 1038 cities, including nearly 90 per cent of the municipalities having regularly organized systems of public schools under superintendents, showed that in 443 cities there were systems of medical inspection in force. In other words, regularly organized systems of medical inspection constitute an



Medical Inspection Laws in 1911

States having mandatory laws, in black,  
Those having permissive laws, in cross hatch,  
Those having no laws, in outline

integral feature of the school systems in 43 per cent of the cities of the United States. The preceding chart represents graphically the number of cities having systems of medical inspection each year since 1894, and shows how the growth of the movement has been at first slow and gradual, and, in the last few years, increasingly rapid. It presents the facts for

the 411 cities, from which it was possible to secure information as to the date of beginning medical inspection

The tabulated returns of the study above referred to show that the adoption of medical inspection of schools has been more general in the cities of the North Atlantic and Western than in the Central and Southern states. In the North Atlantic states 58 per cent of the cities have systems of medical inspection, in the South Atlantic group 31 per cent, in the South Central states 35 per cent, in the North Central division only 29 per cent, and in the Western states 57 per cent. In compiling these data the states have been grouped by divisions according to the standard adopted by the Bureau of the United States Census.

Medical inspection as now carried on in American schools may be divided into three classes of work. The first is inspection for the detection of cases of contagious disease. The second consists of examinations conducted by the teachers themselves to detect defective vision and hearing. The third comprises complete physical examinations of the pupils to detect physical defects and organic diseases.

**Inspection for the Detection of Contagious Disease.** — Where there is any sort of medical inspection it is nearly invariably true that inspection for the detection of contagious diseases is included as one of the most important items. Indeed, there are many cities where this is the only work carried on. Its object is primarily the protection of the community, and because of this the work is often conducted by physicians of the board of health. In most cities the inspectors call daily at the schools to which they are assigned and examine such pupils as are referred to them by the teachers and principals. These pupils include all who have returned to school after being absent on account of illness or from unknown causes as well as those who are in school and suspected of suffering from some infectious or contagious ailment. In most cities examinations are made for the following diseases: Scarlet fever, diphtheria, measles, smallpox, chicken pox, tonsillitis, pediculosis, ringworm, impetigo contagiosa, trachoma, and other transmissible diseases of the skin, scalp, and eye. Tuberculosis, when thought to be far enough advanced to be a menace to public health, is generally reported to the chief medical inspector before excluding the pupil from school. (For further discussion, see *CONTAGIOUS DISEASES, INFECTIOUS DISEASES*.)

When children are excluded, brief but sufficient reason therefor is written on an exclusion card, which is sent to the parents. One copy is filed with the school authorities, and one with the board of health. School physicians are forbidden to make any suggestions as to treatment and management of the pupils who are sick. This rule is nearly universal, and is made imperative

*Vision and Hearing Tests.* The policy of legislators and school administrators in arranging to have tests for sight and hearing conducted by school teachers themselves rather than by specialists has occasioned many expressions of surprise and no little criticism. This policy, however, has reached its present wide development on the recommendations of specialists themselves who deem that such tests are wholly within the capacity of the teacher. It is their opinion that children are subjected to less nervous strain when tested by their teachers than when tested by strangers, and, therefore, exhibit themselves in a more natural way. It is always the intention, however, wherever this policy is followed, to have scientific examinations made by specialists in cases where defects are apparently revealed by the teachers' tests.

Work of this sort has greatly increased since the action of the state legislature of Massachusetts in 1906 in passing a medical inspection law containing mandatory provisions by which vision and hearing tests are conducted by the teachers. During the hearings on the Medical Inspection Bill a mass of evidence was presented by experts bearing upon the question of the feasibility of such tests. (For further discussion see *EAR*, section on Tests of Hearing, and *EYE*, section on Tests of Vision.)

**Physical Examinations.** — Municipal and educational authorities in America have very generally realized that the theory on which physical examinations are conducted rests on a different foundation from that underlying medical inspection for contagious diseases. Historically, physical examinations have usually followed, and almost never preceded, the inception of inspections for the detection of contagious disease. The latter is primarily a protective measure, and looks mainly to the present safeguarding of the community. The former aims at securing the physical soundness and strength of the individual, and looks far into the future. It has been brought into being by successive results of a long series of studies which have shown that there are many physical defects which are common among children and have an important bearing on their present health and future development, and may be easily remedied or modified, if they are discovered early enough. Moreover, these studies have demonstrated that without a system of medical inspection only a small minority of these defects are discovered by teachers or known to them, to the parents, or to the children themselves.

The following is a copy of the record card which is in use in New York City to record the results of the individual physical examinations of pupils. By referring to the headings under which the entries are made we may see what the defects are which the school physicians search for and record if discovered. The list for New York City is not very different from the list commonly employed in other parts of the country. It may be regarded as typical.

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### PHYSICAL RECORD NEW YORK CITY

Name \_\_\_\_\_  
 Born \_\_\_\_\_  
 Nationality of Father \_\_\_\_\_ Mother \_\_\_\_\_  
 Number in Family, Adults \_\_\_\_\_ Children \_\_\_\_\_  
 Number of Birth \_\_\_\_\_ History of Measles \_\_\_\_\_  
 Scarlet Fever \_\_\_\_\_ Diphtheria \_\_\_\_\_ Pertussis \_\_\_\_\_  
 Pneumonia \_\_\_\_\_ Grippe \_\_\_\_\_  
 Date of 1st Examination \_\_\_\_\_  
 in School \_\_\_\_\_

	1		2		3, etc	
	1	2	1	2	1	2
1 School year						
2 Term						
3 Class						
4 Revaccinations						
5 Diseases during term						
6 Date of physical examinations						
7 Defective vision						
8 Defective hearing						
9 Defective nasal breathing						
10 Hypertrophied tonsils						
11 Tubercular lymph nodes						
12 Pulmonary disease						
13 Cardiac disease						
14 Chorea						
15 Orthopedic defect						
16 Malnutrition						
17 Defective teeth						
18 Defective palate						
19 Height						
20 Weight						
21 Mentality						
22 Effort						
23 Proficiency						

The most extensive results yet secured in the United States as to the physical conditions of school children are those from the examinations conducted by the board of health in New York City. The results for the year 1908, as published in the *Report of the City Superintendent of Schools* for that year, are as follows —

	TOTAL	PERCENTAGE
Number of children examined	252,254	100
Found to have no defects	65,616	26
Found to be defective	186,638	74
Found to be suffering from		
Malnutrition	8,054	3.2
Chorea	821	.3
Tubercular lymph nodes	997	.4
Cardiac diseases	1,964	.8
Pulmonary diseases	673	.3
Skin diseases	4,115	1.6
Orthopedic defects	1,728	.7
Defect of vision	26,224	10.4
Defect of hearing	2,287	.9
Defect of nasal breathing	36,099	14.3
Defect of palate	897	.4
Defect of teeth	135,166	53.6
Hypertrophied tonsils	44,889	17.8
Defective mentality	691	.3

**The School Nurse.** — The school nurse is now considered to be one of the most necessary adjuncts of the better developed systems of

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medical inspection. The total number employed in American cities at the beginning of the year 1911 is 415, of which 375, or 90 per cent, are in the North Atlantic and North Central States.

The first regular employment of trained nurses in connection with the work of medical examination was begun in New York City in December, 1902, when a corps of nurses was established at a salary of seventy-five dollars per month each. Since that time experience has proved, especially in the largest cities, that the employment of competent school nurses is almost a necessity. The nurses are especially valuable in reducing the number of exclusions of children from school on account of minor illnesses. Many of these when properly treated by the nurse in school do not prevent the regular attendance of the child. The trained nurse greatly enhances the success of the work of the school physician in improving the health of the school children. She aids the school teacher in detecting the first signs of approaching illness. She sees to it that all excluded cases are placed under treatment as soon as may be, so that there is the least possible loss of time from school and interference with education. She treats those cases which would for various reasons receive no attention at their homes. She assists the school physician in the clerical work of recording the results of the physical examinations which he conducts.

In many cases it is also found feasible to employ the nurses during the summer months, when there is no school, in work directed to the lessening of the great mortality rate among infants from summer diarrhea, due mainly to improper care and feeding. Again, she aids materially in the anti-tuberculosis campaign. About a quarter of the cities having any sort of medical inspection employ school nurses, and the number is increasing rapidly. To sum up the case for the school nurse: she is the instructor of parents, pupils, teachers, and all members of the family in the principles and practices of hygiene. She is a most efficient link between the school and the home.

**Dental Inspection.** — Increasing attention is being given to the inspection of children's teeth in American schools, and the work is being more and more commonly carried on as a branch of medical inspection in a semi-independent way. (See *TEETH, CARE OF AMONG SCHOOL CHILDREN*.)

**Summary of Conditions in the United States.** — Reference has been made to the study of the status of medical inspection which included 90 per cent of the cities of the United States having school systems organized under superintendents of schools and which brought together the data as to the status of the movement in the spring of 1911. The following is a brief summary of conditions as revealed by that study.



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	NUMBER	PER CENT
Cities from which returns were secured	1038	100
Having systems of medical inspection	443	43
Having inspection for the detection of contagious diseases	405	39
Having vision and hearing tests by teachers	552	54
Having vision and hearing tests by physicians	258	25
Having complete physical examinations	214	21
Having dental inspection by dentists	69	7

	NUMBER
Systems administered by boards of education	337
Systems administered by boards of health	106
Number of school physicians employed	1415
Number of school nurses employed	415

*Administration* - There are two standard types of administration, that under the Board of Health and that under the Board of Education. In the early days of medical inspection practically all the systems were administered by local boards of health, but in recent years the tide has turned the other way, until at the present time about one quarter of the cities have systems under their boards of health, and in the remaining three quarters the board of education is the controlling body. According to the best American practice there should be one medical inspector and one nurse for each 2000 pupils in cities where the nurse and physician are employed on full time and the schools are so large and so close together as to reduce to a minimum the time spent in going from one building to another. These figures must be radically altered for rural districts.

*Salaries* - Professor William Osler is credited with saying with regard to the work of medical inspection in England, "If we are to have school inspection let us have good men to do the work, and let us pay them well. It will demand a special training and a careful technique." It is certainly to be regretted that this point of view has not been more generally taken in America. In this country the financial remuneration of school physicians and school nurses is almost invariably inadequate. The salaries paid range from nothing to \$4000 per annum. In many localities the local medical association conducts medical inspection for a year or two without cost to the city in order to demonstrate its value. This results in the tabulated returns showing that in a considerable number of cities the doctors and nurses receive no pay at all for their services. It may also be a factor in bringing about the extremely

## MEDICAL INSPECTION

low salaries that are received after regular payment is given. The following table is made up from the study of conditions in 1038 cities, and shows the number of localities in which the salaries of doctors and nurses fall within the salary limits named in each group. That is to say, the first line shows that there are seventy-five cities in which the doctors donate their services and twenty-one in which the school nurses do the same. The second line indicates that there are forty-seven cities in which the salaries paid to the doctors are between \$1 and \$100 per annum.

	NO. OF CITIES WHERE DOCTORS RECEIVE SALARY INDICATED	NO. OF CITIES WHERE NURSES RECEIVE SALARY INDICATED
No salary	75	21
\$1-100	47	—
101-200	50	—
201-300	44	2
301-400	25	—
401-500	24	1
501-600	18	21
601-700	2	17
701-800	12	24
801-900	6	15
901-1000	13	2
1001-1500	18	2
1501-2500	7	—
2500-4000	3	—
Fees according to service	19	1

The table shows that there are more cities paying their school physician at the rate of between \$100 and \$200 per year than there are paying salaries of any other amount. On the other hand, the average salary is somewhat higher than this. If computed on the basis of the table and without taking into account the number of doctors employed in each individual city, the average salary would fall within the group receiving from \$201 to \$300 per annum. In a similar way the second column of the table shows that there are more cities paying their school nurses from \$701 to \$800 per annum than there are paying any other salary, but the average salary would be about \$700 per year. Of course the sum of \$200 per annum is given in return for only a part of the school doctors' time. Nevertheless it has come to be regarded as a somewhat standard rate of remuneration for school physicians all over America. There are cases where so little work is required that this amount may be considered adequate, but undoubtedly in most cases it represents an undue degree of sacrifice on the part of the school physician.

*Cost and Time* - The per capita cost of medical inspection for salaries alone ranges from about one-half of one cent for vision and hearing examinations conducted by teachers to about \$1.25 for complete physical examinations in a few localities. These extremes,

## MEDICAL INSPECTION

however, do not at all represent average conditions. In general the per capita cost of medical inspection in America ranges from ten to fifty cents per annum. It seems to be a fair generalization to say that medical inspection for the detection of contagious diseases can be adequately performed at an annual cost of about fifteen cents per capita, while physical examinations similarly performed and including the inspection for the detection of communicable disease cost about fifty cents. Physical examinations for the detection of non-contagious physical defects can be made by an experienced school physician in about twelve to fifteen minutes per child. Vision and hearing tests alone demand from three to five minutes per child. Systems of medical inspection which include careful physical examinations of all children cost the most and are by far the most valuable. From a social and economic point of view they are by far the cheapest in the better sense of the word, as they are the most far-reaching, both in their immediate and indirect results. Permanent efficiency requires skilled workers, careful administration, and adequate remuneration.

*Legal Provisions in the United States* — The first state law providing for the medical inspection of school children appears to have been passed by Connecticut in 1899. It did not

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provide for the complete sort of inspection now carried on in many cities and states, but only for the testing of eyesight by teachers every three years. Complete medical inspection with examinations for the detection of physical defects was first provided for by state enactment in the permissive law of New Jersey passed in 1903. This was followed by the mandatory law of Massachusetts in 1906, which has been several times amended and has served as the basis for a majority of the bills which have since been presented in other state legislatures. At the present time (June, 1911) seven states have mandatory laws, ten have permissive ones, and in two states and the District of Columbia medical inspection is carried on under regulations promulgated by the boards of health and having the force of law. The map on page 184 shows graphically which states have mandatory laws, which permissive ones, and in which states there are no laws at all.

The past five years have furnished a large body of experience under varying conditions in widely separated localities. The lessons of this experience can be read in the substantial agreement of a majority of the laws in several salient features. This is graphically shown by the following tabular presentation of the principal features of the different laws and regulations

PRINCIPAL FEATURES OF STATE LAWS AND REGULATIONS PROVIDING FOR  
MEDICAL INSPECTION, 1911

No	STATE	DATE ADOPTED	PERMISSIVE OR MANDATORY	ADMINISTERED BY SCHOOL OR HEALTH AUTHORITIES	INSPECTION BY DOCTORS FOR CONTAGIOUS DISEASES	PHYSICAL EXAMINATIONS BY DOCTORS	INSPECTION OF TEACHERS, JANITORS AND BUILDINGS BY DOCTORS	SIGHT AND HEARING TESTS BY TEACHERS	NORMAL PUPILS TRAINED IN TESTS OF SIGHT AND HEARING	PROVISION FOR EMPLOYMENT OF NURSES	PENALTY FOR VIOLATION OF LAW	PARENTS COMPELLED TO REMEDY CONDITION DISCOVERED
1	California . . . . .	1909	P	S								
2	Colorado . . . . .	1909	M	S				*				
3	Connecticut . . . . .	1907	P	S	*	*	*					
4	District of Columbia	1907	M	H	*		*			*		
5	Indiana . . . . .	1911	P	S	*	*	*	*			*	
6	Louisiana . . . . .	1911	M	S								
7	Maine . . . . .	1909	P	S	*	*	*	*				
8	Massachusetts . . . . .	1906	M	S or H	*	*	*	*	*			
9	Minnesota . . . . .	1910	M	H	*	*	*	*	*			
10	New Jersey . . . . .	1909	M	S	*	*						*
11	New York . . . . .	1910	P	S		*						
12	North Dakota . . . . .	1911	P	S		*						
13	Ohio . . . . .	1910	P	S	*		*			*		
14	Pennsylvania . . . . .	1911	M	S	*	*	*			*		
15	Rhode Island . . . . .	1911	M	S	*	*	*			*		
16	Utah . . . . .	1911	M	S		*		*				
17	Vermont . . . . .	1910	P	S	*							
18	Virginia . . . . .	1910	P	S			*					
19	Washington . . . . .	1909	P	S	*		*					
20	West Virginia . . . . .	1911	M	S	*	*	*			*		

On four points there is substantial agreement. The first is that the administration of the provisions of the law is placed in the hands of the school authorities. The second, third, and

fourth are respectively the placing in the hands of school physicians the inspection of contagious diseases, the physical examinations, and the inspection of teachers, janitors, and build-

## MEDULLA

ings. In six cases the provision is made for testing of vision and hearing by the teachers

L P. A

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**MEDULLA** — See NERVOUS SYSTEM

**MEGALOMANIA** — This is a symptom in various mental diseases which is indicative of a feeling of well-being The individual believes he is capable of doing more than usual, and often more than he is capable of doing Associated with it there are usually delusions of great wealth and supernatural powers, sometimes of divinity, and occasionally this develops upon a basis of depression. The symptom is found in mania (*qv*), in paresis (*qv*), and in dementia precox (*qv*). It is typical of paranoia, but we now know that paranoia (*qv*) is the rarest of mental diseases This feeling of well-being is probably to be associated with the day dreaming and feeling of power and wealth of children, and these ideas of children very likely are based upon the same sort of mental processes as those of the insane

S. I F

See MANIA

**MEIEROTTO, JOHANN HEINRICH LUDWIG** (1742–1800) — German scholar and rector of the Joachimstal Gymnasium at Berlin He strongly supported the attitude of Frederick the Great (*qv*) on secondary education While he recognized the impossibility of teaching Latin as a spoken language, although Latin and Greek were still subjects studied by all pupils, he did not neglect German grammar and literature, history and geography. Some attention was paid to mathematics, but none to modern languages He became a member of the Academy, of the Supreme Council of Schools, and of the Consistory of Berlin He wrote many works on classical subjects, among them being *Manners and Customs*

## MELANCHOLIA

*of the Romans at different Periods of the Republic* (1778–1779), *De educatione et institutione quam M T Cicero in erudiendo filio Marco seculus est* (1784), *Grammatici est aliquid nescire* (1785), *De praeceptis Romanorum auctoribus ac primum de Taciti moribus* (1790), *De Sallustii moribus* (1792).

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**MEIKLEJOHN, JOHN MILLER DOW** (1830–1902) — Professor of Education at St Andrews University, Scotland He was the son of a private schoolmaster in Edinburgh, and after being educated by him he entered the University of Edinburgh. On graduating he taught for several years in schools near Manchester and London He contributed frequently to the press, and in 1864 was war correspondent in the Danish-German War In 1874 he was assistant commissioner on the Endowed School Commission, and in 1876 was appointed to one of the first chairs of education in Great Britain, founded simultaneously at Edinburgh and St Andrews under the Bell Educational Trust In this position Professor Meiklejohn showed a high conception of his duties and of the difficulties before him in view of the fact that there were scarcely any textbooks at all on the subject in England The problem of education he conceived to be “how to train a child to healthy activity, to self-help, to a harmonious development of its powers of body and mind” He was opposed to the dry mechanical methods which prevailed in the schools of his day, and one of his chief contributions was a series of school textbooks which laid emphasis on a rich content Among these may be mentioned *Brief History of the English Language and Literature*, *British Empire, its Geography, Resources, Landways and Waterways*, *New Geography on the Comparative Method*, *English Language, its Grammar, History, and Literature*, *English Readers*. He also translated Kant's *Kritik der reinen Vernunft*, and wrote a memoir on *An Old Educational Reformer, Dr. Andrew Bell* His conception of the function of a professor of education is well stated in his inaugural address in 1876 (see Barnard, *Am Jour of Ed*, Vol XXVIII, pp 220–224) and in the *Training of Teachers and the Chair of Education in the University of St Andrews* (1879).

**MELANCHOLIA** — A term used to indicate (1) a symptom corresponding with a feeling of sadness or depression, or (2) the association of a number of symptoms making a specific type of disease; (a) simple melancholia, in which there is the combination of depression, retardation, and a difficulty in thinking; (b) the agitated depression which is made up of depression with motor unrest and a difficulty in

thinking; and (c) involution melancholia, or a melancholia occurring late in life. The various forms of melancholia, which are found in a variety of diseases, are probably only exaggerations of the normal feelings of sadness and depression, exaggerated under abnormal conditions. Lack of initiative, apparent stupor, due to general slowing of movement, bizarre ideas, are among the symptoms. The individual constantly thinks of methods to escape the depression, often ending in suicide. Recovery is usually not accompanied by mental deterioration. The first attack usually comes before the age of twenty, and in childhood is not as severe as in later life. The appearance of any or of all the symptoms in a child should be looked on with suspicion; advice properly given at the time of the first attack may ward off others. The symptoms in simple melancholia are so similar to those occurring after prolonged work that they have been explained as fatigue or exhaustion phenomena. The treatment consists of enforced rest, a building up of the body, and sometimes restraint, are necessary. In some cases considerable watchfulness is required to prevent the patient from committing suicide.

In agitated depression there is an emotional condition accompanied by lack of inhibition of movement, *e.g.* constant moving, picking at the face, wringing of the hands, tearing the hair, etc. This is typical of the cases of depression which are of sufficient intensity to need hospital treatment and restraint. Involution melancholia comes late in life, and has no educational interest. No symptom is so common in mental diseases as is depression, and it is not infrequent in physical diseases. This symptom should be the first to attract attention, and should cause the teacher to summon "first aid" assistance from the proper authorities in charge of the school health. S. I. F.

See CIRCULAR INSANITY; MANIA; OBSESSIONS, STUPOR

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**MELANCHTHON (SCHWARTZERD), PHILIP** (1497–1560) — The great German reformer and humanist, the *Præceptor Germanæ*, was born at Bretten, the son of an armorer. He received a careful education at home, and his ability attracted the interest of his uncle Reuchlin. Before proceeding to the University of Heidelberg he attended the Latin school at Pforzheim. At the university the humanist movement was not yet firmly established, but Melanchthon, in addition to official courses, devoted himself to the new studies. Graduating in 1511, he proceeded to the University of

Tübingen, where he remained for six years, taking his M.A. in 1514. Here he studied not only the classics, but mathematics, astronomy (or better, astrology), physics, medicine, and Roman law. In his own hall or bursa he lectured on Vergil and Terence, and also gave lectures on eloquence and history. In 1518 he was called to the University of Wittenberg as teacher of Greek, and almost from the first began to exercise that influence which was to mold German education for more than a century. His inaugural address, *De corrigendis adolescentium studiis*, was a defense of humanism against its opponents, giving in brief a history of culture and an attack on scholasticism. Melanchthon urges the proper organization of studies based on grammar, dialectic, and rhetoric, and including mathematics, poetry, and oratory. The classical languages themselves are of importance as opening the sources of wisdom. In his address at the opening of the Nuremberg school he gives a more complete definition of his educational ideas. It is the divine purpose that children be trained to piety and virtue, and only through the sciences can religion and good laws be maintained, the sciences are a gift of God, hence impiety and ignorance go together. A similar statement was made by Melanchthon in connection with the school at Soest. At Wittenberg Melanchthon in 1519 became Bachelor of Theology. In addition to his public lectures, which in a very short time attracted students from all sides of Europe, he maintained a private preparatory school in his home, and thus had an opportunity of closely studying the requirements of a secondary school.

Melanchthon's influence lay in five directions. (1) as one of the most popular university teachers in Germany he trained a large number of young scholars who were spread over the country as teachers, (2) in visitation articles and whenever he made a visitation, he made direct suggestions for the erection of schools, beginning with the modest requirements of Latin, religion, and music, (3) as an organizer of schools, *e.g.* Eisleben, Magdeburg, Nuremberg, and Soest, he established a tradition which was followed elsewhere, (4) in the same way his influence was exercised on the German universities, *e.g.* Marburg, Königsberg, Jena, Frankfurt-a.-O., Leipzig, Rostock, Heidelberg, some of these he helped to found, some he reorganized, some copied almost verbatim the organization of Wittenberg made in 1536, (5) almost as important as the other sources of his influence was Melanchthon's remarkable activity as an author of textbooks and editions of classical and theological works. As early as 1516 he edited the plays of Terence, but his first important work was the *Institutiones Græcæ Grammaticæ*, dealing with accidence, syntax, and etymology. In 1519 appeared his first work on rhetoric, *De Rhetorica Libri tres*, issued in 1520 as *Institutiones Rhe-*

*torica*, in 1531 as *Elementorum Rhetorices, Libri duo*, and again in 1542 under the last title with additions. The *Loci Communes*, 1521, was the first work on evangelical doctrine based on the Epistles of St Paul. His Latin grammar, which appeared in 1522, attained great popularity and went through numerous editions. In 1523 appeared his plea for humanistic studies, including history, oratory, poetry, prose, verse, composition, and language, under the title *Encomium Eloquentiae*. The *Enchiridion Elementorum Puerilium* (1524) was a handbook for beginners giving the alphabet, a number of prayers, and extracts from the Bible. A similar work for beginners of Greek was the *Institutio puerilis Litterarum Graecarum* (1525). In 1530 he published a commentary on certain of Aristotle's political writings, followed in 1532 by a commentary on Aristotle. He also collaborated in a textbook on simple mathematics (1535). He had already expressed his interest in history by editing the *Chronicles* of Carion in 1532 and 1558-1560. In 1538 he published *Philosophiae moralis Epitome*, an outline of his ethics, and in 1549 the *Initia Doctrinae physicae*. His collected works are contained in the *Corpus Reformatorum* by Bretschneider and Bindseil. His influence as a theologian cannot be better expressed than by stating that he was the author of the *Augsburg Confession* (1530), the *Brandenburg Reformation* (1539), and the *Wittenberg Reformation* (1545). How great a reputation was attained by Melancthon is attested by the invitations not only to other German universities, but to France and England. But in spite of opponents the Preceptor of Germany remained at Wittenberg, devoted to the task of building up German Protestantism on a solid foundation of humanistic studies.

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**MELBOURNE, UNIVERSITY OF, AUSTRALIA** — An institution endowed and incorporated by the Legislative Council of Victoria, Australia, in 1853 "to hold forth to all classes and denominations encouragement for pursuing a regular and liberal course of

education." Work was begun in 1855 with three professors and sixteen students and an annual government endowment of £9000, raised in 1904 to £11,000. From 1883 onwards there has also been added to the annual endowment a fluctuating sum granted by annual vote. The government of the university is in the hands of a council of twenty members elected by the senate, which consists of all male doctors or masters of the university. The council elects the chancellor and vice-chancellor of the university. A professional board considers all questions relating to studies and discipline. There are now the following faculties: law, medicine, engineering, arts, science, agriculture, veterinary science, and dentistry. There are further a department of education and a university conservatory of music. The following colleges are affiliated with the University: Trinity College (Anglican), Ormond College (Presbyterian), Queen's College (Methodist), and Australian College of Dentistry. In connection with the Training College of the Victoria Education Department, courses are given in education and lead to a university diploma. Evening courses are given leading to the following diplomas: education, agriculture, mining and metallurgy, and architecture. A department of university extension under the charge of a university extension board is also maintained. The enrollment of students in the university in 1910 was 1136 (345 arts and education, 34 science, 121 law, 60 engineering, 360 medicine, 65 dentistry, 23 agriculture; 92 music; 36 veterinary).

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**MELISH, JOHN** (1770-1822) — Author of school geographies. He was educated in Scotland, but came to America in 1809. He published *Universal School Geography and Atlas* (1816), and books of travel on Great Britain, Canada, and the United States. W. S. M.

**MELODY** — See **MUSICAL TERMS**.

**MEMORIAL COLLEGE, MASON CITY, IA** — A coeducational and military institution, founded by the Sons of Veterans, U. S. A., in 1900, and maintaining a college, preparatory school, military academy, normal college, commercial college, school of oratory, college of music, and correspondence school. The entrance requirements are fifteen units. The A.B. and B.S. degrees are conferred.

**MEMORY** — Memory may be defined as the return to consciousness of some experience, together with the awareness that it has been present earlier at a definite time and place. Four parts of the memory process need to be

distinguished in the discussion. These are learning, retention, recall or revival, and recognition. The organic basis of memory is some change induced in the nervous system in learning that is retained in the organism as a disposition toward revival and is rearoused when a suitable incentive presents itself. The essentials of the memory process are the same as those involved in the formation of associations (*q v*).

**Memory Types** — All memory may be conveniently divided into rote and logical memory. In rote memory the work must be done from the beginning, while in logical learning the new material is connected with the earlier acquired knowledge to constitute a well-ordered whole. Recent investigation has been devoted for the most part to determining the laws that control rote learning and the retention of materials learned by rote. To make sure that there has been no earlier partial learning and to get rid of all trace of logical learning, the experiments are ordinarily made with nonsense syllables made up of two consonants and an intervening vowel. These syllables are presented in series of twelve or sixteen by some mechanical device that insures that they shall be separated by regular intervals and exposed for a constant time. The adequacy of the learning is tested both by the number of repetitions required for the original learning and by the number of repetitions required for relearning after an interval. The accuracy of learning and retention may also be tested by determining the number of mistakes made in supplying the second member of a pair of syllables when the first of the pair is given, and also by measuring the time required to supply the second member. The first method is known as the method of relearning, or the saving method, the second as the method of successes. Both apply to the tests of retention rather than of the original learning.

**Laws of Learning** — The results of these investigations may be briefly summarized in laws of learning and of forgetting. The laws of learning are (1) Learning is a direct function of the number of repetitions. Each repetition increases the liability to retention by the same amount, whether the repetition be the first or the fiftieth. The repetitions after the series has been learned to the point where it can be said through without mistake are just as effective as the earlier ones. (2) Capacity for learning and for immediate retention increases with age up to the attainment of maturity, and then persists unchanged until the onset of senile degeneration. The only justification for the opposed popular belief is that it is probable that things once learned in youth will be retained more completely in later life. (3) Rhythm is an essential aid to learning. One cannot avoid some rhythm, and the more pleasant and easy the rhythm the easier and quicker is the learning. Syllables that belong to the same rhythmic unit are more closely

connected than syllables that are contiguous in the series but belong to different groups. (4) When a series is learned, associations are formed not merely between contiguous memories, but between the noncontiguous memories of the series. The strength of the association is directly proportionate to the nearness of the members. (5) It is easier and quicker to learn a series by dividing the repetitions over several days than to make all the repetitions on one day. The more the repetitions are divided, the greater the saving. Any selection must be learned and forgotten several times, if it is to be permanently retained. The explanation is probably that the older associates are stronger, or more effective for reinstatement than the newer. In the interval between repetitions the connection between nervous elements grows stronger and thus does the work of added repetitions. (6) When a selection of any material is to be learned, it is more economical to learn it by reading through from beginning to end each time than to learn it by parts and then join the parts together. When learned stanza by stanza, for example, the first stanza will be repeated more often than is necessary before the latter parts are learned. Then, too, unnecessary associations are made between the end of each stanza and its beginning. These associates not merely waste time, but interfere with the correct associates at the moment of recall. The one disadvantage of the method is that one is likely to get discouraged after the reading has been repeated several times and to read more slowly, so that what is gained in the number of repetitions may be lost in time. To avoid this it is suggested that pauses should be made now and again at natural divisions, and then go on again from that point. This rests the learner without the disadvantages of learning by parts.

**Retention** — The laws of retention have also been investigated by these methods. The associations once formed tend to disappear more or less gradually, and it is important to know the course of their disappearance. The laws that have been determined for the disappearance of associations and the processes that aid and retard the process may be stated in brief form. (1) Forgetting goes on rapidly at first, and then very slowly. Meumann found that 30 per cent was forgotten the first hour, 32 per cent in twenty-four hours, 50 per cent in six days, 80 per cent in 30 days, and 97 per cent in 120 days. Forgetting is much slower for sense material than for nonsense syllables. Ebbinghaus found that with poetry 7 per cent was retained after twenty-two years. (2) Associations persist longer if no other work is done for five or six minutes after learning is completed. Other activity seems to interfere with the "setting" of the associations that was referred to above. (3) If a syllable has been learned in one connection, it is more difficult to learn it in another connection than it

it had not been learned before. One associative connection seems to check the formation of others. (4) If two associates have been formed with the same syllable, it is more difficult to reinstate either than if that were the only one. Both of these last laws hold only for associations that are only partially formed. If the first association is fully formed, it may help in the formation of the second.

In logical memory learning is quicker and forgetting is slower than in rote learning. Here the main thing is to understand, and when a statement is understood it is connected with general principles or meanings that have been developed earlier and have become so fixed through frequent repetition that they are never forgotten. Whenever a new fact is connected with one of these, it takes on much of the permanence of the meaning itself. It is learned at once, and will be remembered for an indefinite time. The course of forgetting is much slower than for the material learned by rote.

**Recall** — The laws of recall are the laws of association. What shall be recalled at any moment depends upon the cue provided by the environment or the train of thought, the connections that cue has made earlier, and the attitude that dominates at the moment. It should be said that recall is very seldom of the particular images that were earlier experienced, ordinarily one recalls meanings. One remembers that certain events happened and remembers the fact on the basis of very schematic imagery. Memory is not a mere reinstatement of an earlier process, but is a representation of the event in some other terms. This fact that meaning and image may be altogether unrelated is very evident from the difference in mental imagery. One person may remember everything visually, another in auditory or motor terms, and yet both may remember the same event with equal completeness.

Recognition, the assurance that the event recalled or the object seen has been appreciated before at a definite time or place, depends upon the associations and movements that it arouses when it presents itself. Other events that were associated with it are aroused, and these finally give it a setting in a definite time and place. The times and places that stand out prominently in the past, which serve as points of reference for the other events, are fixed through the frequency with which they have been recalled.

**Mnemonics** — One problem much discussed in connection with memory is the advantage of artificial devices for improving the memory. One of the oldest is to connect anything to be recalled with some more familiar material. Thus dates may be represented by words by having certain consonants represent digits and then combining the letters into words and the words into sentences that can be readily remembered. Other systems make meaningless associations between two things to be re-

called together. It must be said of all of these devices that they require more time than the simpler methods ordinarily used. The best mnemonic system is the system of knowledge as developed in the sciences. There everything is arranged in an order determined by long use and the best intellects. It is a logical system, and for bits of knowledge that fall within it no better system can be devised. Mnemonic systems are of value only for irrational matter, such as the number of days in the months.

W B P

See MNEMONICS

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**MEMORY MAPS** — Map drawing by the pupils, as an active mode of developing power to read maps, takes two forms. (1) map copying and (2) drawing maps from memory. The drawing of memory maps as an exercise following the first stages of map reading and map copying is intended to give motive for additional map study. Inasmuch as it tests the knowledge of the child in an actual expressive test, the child returns to his study with a definite sense of defect which guides him to the facts he most needs to acquire. The inaccuracy of all memory drawing, if unaccompanied and unchecked by much map study and copying, would of course lead to the fixing of false notions and relations. For this reason, memoriter map reproduction by the pupils has often been vigorously opposed. Its weakness is apparent. Its value lies in its employment as a method of testing knowledge, preliminary to further careful study.

H S.

See GEOGRAPHY, TEACHING OF

**MEN IN EDUCATION** — See TEACHERS, SEX OF

**MEN TEACHERS** — See TEACHERS, SEX OF

**MENÆCHMUS** — See CONICS

**MENCIUS, MENGTSSE, or MUNGTSSE** (371-287 B.C.). — Chinese philosopher named Chao Ch'i, or Second Holy One, and called by Martin the St. Paul of Confucianism. He studied under a grandson of Confucius and began to teach at forty. Although he had opportunities of holding important state positions, he preferred to travel and expound Confucianism. He seems to have been more outspoken and fearless than Confucius. The last years of his life he spent in retirement and formulated the philosophical work which is known by his name. Among the most notable of his tenets were the beliefs that human nature is originally good but deteriorates through evil environments; that humanity and righteousness are inherent in man's nature, that government is divine, but is intended for the people's good.

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**MENDEL'S LAW or MENDELIANISM.** —

See HEREDITY, also ATAVISM, CHARACTERISTICS, ACQUIRED.

**MENDOTA COLLEGE, MENDOTA CITY, ILL.** — A coeducational institution, founded in 1893 and maintaining preparatory, collegiate, theological, commercial, musical, and correspondence courses. Admission requirements are fourteen units. The degrees of A.B., B.S., and D.B. are conferred. The enrollment in the collegiate department in 1910-1911 was only thirteen. The teaching staff consists of eleven members.

**MENELAUS.** — See GEOMETRY

**MENINGITIS** — The brain and spinal cord are inclosed by three membranes, or meninges, the pia, the arachnoid, and the dura. Meningitis is an inflammation of any one of these membranes, though the arachnoid is not subject to inflammation independently of the other membranes, while inflammation of the dura alone, external meningitis, or pachymeningitis, is only rarely encountered, so that meningitis is practically always an inflammation of the pia, whether of the brain (cerebral meningitis), or of the cord (spinal meningitis), or of both.

Internal meningitis, or leptomeningitis, inflammation of the pia, may take on diverse forms, may arise from diverse causes, and may present diverse symptoms. The two forms of chief interest are tubercular meningitis and epidemic cerebrospinal meningitis.

The cause of tubercular meningitis is the tubercle bacillus, and the affection is probably always secondary to a primary tuberculous

process elsewhere in the body. The disease is favored by a tuberculous or scrofulous diathesis, by bad hygienic conditions, and is sometimes a sequel of whooping cough or measles. The premonitory symptoms are headache, listlessness, insomnia, and constipation. The disease then breaks forth with symptoms of fever, vomiting, and a very severe headache, which occasions a peculiar and characteristic scream or cry. On account of the nature of the disturbance in the brain the disease has sometimes been called "basilar meningitis," and formerly "acute hydrocephalus" or "water on the brain." The prognosis is very unfavorable, and death usually occurs within three weeks. Though so fatal when once developed, its appearance may often be warded off, when suspected, by a regimen of wholesome food, warm clothing, and rest.

The several forms of non-tubercular and non-infectious meningitis, or simple acute meningitis, exhibit similar symptoms, without the prodromal stage. They may arise from an extension of other inflammations, e.g. otitis, brain abscess, or as complications of pneumonia, typhoid, scarlatina, and other fevers, possibly also from exposure to extreme heat or cold. The onset of the disease is sudden, its course rapid, and its termination usually fatal.

Epidemic cerebrospinal meningitis, also known as cerebrospinal fever, and popularly as "spotted fever," was first recognized early in the nineteenth century, when epidemics appeared in both Europe and America. There have been several severe epidemics since then, notably in Maryland in 1892, at Boston in 1896-1897, at New York City in 1905, and in Scotland and Ireland in 1907-1908. The epidemics are commoner in winter and spring. As to the mode of transmission of the disease we are not entirely clear. It is infectious, but not directly contagious, and appears to follow bad sanitary conditions, especially damp, sunless housing. Its cause is a microorganism, probably the *diplococcus intracellularis* of Weichselbaum, which invades the body through the mouth or nose. Epidemics could be prevented by prompt quarantine, maintained stringently during at least the first two weeks. All discharges from the mouth, nose, and ears should be disinfected. Children or teachers in the same house as the patient should not attend school until the case is terminated. The victims are mostly children and young adults, and the mortality ranges in different epidemics from 25 to 75 per cent, or even higher. According to Osler, the mortality in children under one year is 87.6 per cent. The onset of the disease is sudden, with vomiting, agonizing headache, chills, a rise in temperature, stiffening of the neck, with characteristic retraction of the head, and delirium, followed later by paresis, disturbances of various reflexes, stupor, and remitting fever. Rashes which appear about the fourth day have led to the name



## MENSTRUATION

"spotted fever" Pneumonia is a frequent accompaniment. Death usually occurs between the fifth and the eighth day. For those who recover, serious sequelæ are to be feared, particularly deafness, blindness, chronic headache, and affections of the joints. This disease has challenged the experts of two continents. The several serums elaborated in Europe proved ineffectual, but experiments at the Rockefeller Medical Institute led to the production of a serum from the immunized horse, which, when applied intraspinally by direct injection, has yielded remarkable results. This Flexner-Jobling serum was first tried on human beings in January, 1907. Up to 1909, tests with about 600 cases showed a reduction of the rate of mortality to about 25 per cent, while now there appears a further prediction that this serum will in the future render this dread disease less than one tenth as dangerous as heretofore. Of peculiar value is the fact that those who recover with the aid of the injections recover completely, there having been but eight instances of physical or mental impairment following 295 recoveries. G M W

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**MENSTRUATION** — A periodic activity of the genital organs of the human female, characterized by a discharge from the uterus and Fallopian tubes, the menses, or catamenia. The theory of menstruation most commonly accepted considers this process as the second in a cycle of activities — constructive, destructive, reparative, and quiescent — which runs its course in the uterus and tubes.

The date of appearance of the first menstruation may range from the tenth to even the twenty-fifth year, but the years thirteen to sixteen embrace the large majority of cases, with the fourteenth the most common year, — 137 years being a probable average for American girls. There are on record, however, a few extraordinary cases of menstruation in infancy. Cessation of the menses, the menopause, is a similarly variable phenomenon, having been recorded at all ages from thirty to eighty, but commonly falling between the ages of forty-five and fifty-two. Both the establishment and the cessation of this function are gradual and characterized by irregularities.

In general, the irregularities of menstruation may be classed in three types. The flow may be deficient or suppressed (amenorrhea); there may be excess or flooding (metrorrhagia), or there may be undue pain (dysmenorrhea). The first may arise from pathological conditions of the genitals, or from chlorosis, anemia, strong emotion, worry, or bad regimen, the

## MENTAL ARITHMETIC

second may arise from local mechanical causes or often from abdominal compression, the third may be congenital, local, or of nervous origin.

This variability of function makes sweeping generalization concerning the relation of school work and menstruation unwise. It is certainly true that some girls, blessed with sound physique and careful home care, can carry on their regular tasks without interruption. It is equally true that girls who suffer from painful periods, or who display pronounced irritability and emotional excitement, must during menstruation be treated as invalids, and be placed under a special regimen, with freedom from worry and from either physical or mental exertion. The publication in 1873 of Clarke's *Sex in Education* occasioned widespread discussion of the need of periodic remission of school work for girls. Despite the criticism of his book, few schoolmen to-day deny the desirability of safeguarding menstruating girls from overpressure, while most physicians have regarded the disabilities attendant on menstruation as sufficient argument against construction or even against coeducation. G M W

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**MENTAL ABILITY** — See ABILITY, GENERAL AND SPECIAL

**MENTAL ADAPTATION** — See ADAPTATION

**MENTAL ARITHMETIC** — The question as to the merits of the terms "mental arithmetic" and "oral arithmetic" is an old one. It is true that written arithmetic is quite as mental as any other kind, and that the opposite to written is oral. As between the two adjectives there is little choice, however. The words "mental" and "oral" have so long been used interchangeably to apply to that phase of arithmetic that it is not dependent upon written help that they have acquired a rather definite meaning, and seem likely to endure. Historically, the mental long preceded the written, but only in very simple problems, chiefly involving counting and easy addition. As soon as the writing of numbers was introduced, written arithmetic, or else the arithmetic of some form of the abacus, became practically universal. In Japan to-day a native shopkeeper will multiply two by six upon the soroban (see ABACUS); and such mechanical aids were not discarded in western Europe until the sixteenth century, and they are still universal in Russia. About the beginning of the last century mental arithmetic underwent a great re-

vival, largely through the influence of Pestalozzi in Europe and Warren Colburn in this country, in each case as a protest against the intellectual sluggishness, lack of reasoning, and slowness of operation of the old written arithmetic. For a long time the oral form was emphasized, in America doubtless unduly so; and this was naturally followed by such a reaction that it lost practically all of its standing. The question is being revived at present as to what are the fair claims of these two phases of the subject upon the time and energy of the pupil and teacher.

There are two points of view in the matter, — the practical and the educational or psychological, — and fortunately they seem to lead to the same conclusion. Practically a person of fair intelligence should not need a pencil and paper to find the cost of six articles at two cents each, or of five and three fourths yards at sixteen cents a yard. The ordinary purchase of household supplies requires a practical ability in the mental arithmetic of daily life, and this ability comes to the mind only through repeated exercise. As will be seen later, it is a fair inference from statistical investigations that a person may be rapid and accurate in written work, but slow and uncertain in oral solutions. Therefore, it will not do, from the practical standpoint, to drill children only in written arithmetic if we expect them to be reasonably proficient in purely mental work. On psychological grounds, too, the neglect of mental arithmetic is unwise. It is a familiar law that the memory is stronger with respect to a fact that is known in several ways (a convenient phrase, if not scientific) than for a fact that is known in only one way. A man who knows a foreign word only through the eye may forget it rather easily, but if his tongue has been taught to pronounce it, even though he be deaf, he can the more readily recall it. If, in addition to this, his ear has often heard it, he is the more strongly fortified, and if he has also often written it, by pen or by typewriter, there is this further chain that holds it to the memory. In other words, the greater the number of stimuli that we can bring to bear, the more certain the reaction. Arithmetic furnishes merely a special case of this general law. If a child could simply see  $9 \times 8 = 72$  often enough, he would come to be able to write it in due time, even if he did not know the meaning. If in addition to this he knows the meaning of these symbols and recalls having taken nine bundles of eight sticks each and finding that he had seventy-two sticks, then the impression on the brain is the more lasting. If, furthermore, he has been trained to say "nine times eight are seventy-two" repeatedly, the impression is still stronger, and if he has repeatedly heard this statement (and here is one of the advantages of class recitation), he has a still further mental grip upon the fact. In other words, mental arithmetic in the form of rapid oral work, with both indi-

vidual and class recitation, is a valuable aid psychologically, to the retention of number facts.

There is, however, a danger to be recognized. A child tires more quickly of abstract work than of genuine concrete problems, problems, that is, that are not manifestly "made up," but that represent some of his actual quantitative experiences. It therefore follows that if five minutes of mental work produce a certain efficiency, thirty minutes will not produce six times that efficiency. If this mental work is valuable, how much time and energy should be allotted to it? It seems to be the experience of teachers generally that a little mental work, rapid, spirited, perhaps with some healthy, generous rivalry to add spice to the exercise, should form part of every recitation throughout the course in arithmetic. There will often be exceptions, but in general it is a pretty good rule to devote from three to five minutes daily, and sometimes much more time, to this kind of work. In this way a child never gets out of practice, save during the summer holidays, and the practical and psychological benefits can hardly be overestimated.

On the applied side there is no better test for the teacher's ability to adapt herself to her environment, educationally, than this, for the nature of the mental work varies with the school year, the locality, the related subjects in the course, and with many other factors. In general, however, it may be said that mental arithmetic offers the best means for correlating the subject with the pupil's other work, both within and without the school. To limit it to this field, however, would be an evident mistake, the work with abstract number demanding the major part of the time assigned to this feature. To acquire perfect mechanical reaction to a given stimulus much exercise is required, and for a child to think seventy-two when stimulated by the ideas  $9 \times 8$  and  $8 \times 9$  demands repeated practice, not merely in relatively few applications, but in a multitude of questions involving abstract numbers. Nor is this practice any more irksome than is the solution of the ordinary applied problems of the textbook, as any teacher knows. It was almost exclusively by this abstract work that Pestalozzi developed calculators of such ability with concrete problems as astonished those who visited his school.

There are two lines of work in mental arithmetic. (1) the concrete, in which the teacher has an excellent opportunity for correlation, for local color, and for stimulating the interest in the uses of arithmetic; (2) the abstract, in which the textbook may be trusted to furnish a considerable part of the material. Each must be cultivated, and ability in one does not necessarily mean a corresponding standard of ability in the other, although a failure in the abstract line must lead to a failure in the concrete. One leads to the acquisition of number

facts, the other to the ability to rationally use these facts in applied problems D E S  
See ARITHMETIC, PROBLEMS

**MENTAL DEFECTS.** — See MIND, DISEASES OF.

**MENTAL DEVELOPMENT** — Strictly speaking, this term covers those changes in individual consciousness which occur in the course of experience. Infancy (*q.v.*) shows very little mental power beyond the few instinctive tendencies (see INSTINCT) which are inherited and the emotions (*q.v.*) which grow out of the instincts. From this point on (see CHILD PSYCHOLOGY and PSYCHOLOGY, GENETIC) characteristic changes appear in habit (*q.v.*), perception (*q.v.*), and all the other mental processes.

Wundt has summarized the principles of mental development in three general laws. The first law is that of mental growth, and sets forth the fact that in the course of development the individual creates new forms of experience. The second law sets forth the fact that the end of mental processes is continually progressing with the growth of experience. The third law states that there is a tendency for the mind to oscillate in its development between extremes.

The full discussion of the facts and principles of mental development involves all of the problems of education. C H J

See PSYCHOLOGY, GENETIC, also ADOLESCENCE and the various topics on PSYCHOLOGY as given in the topical outline.

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**MENTAL DIFFERENCES** — See INDIVIDUAL DIFFERENCES, TESTS, MENTAL, also ABILITY, GENERAL AND SPECIAL

**MENTAL DISCIPLINE** — See FORMAL DISCIPLINE

**MENTAL DISEASES** — See MIND, DISEASES OF, PSYCHIATRY

**MENTAL GROWTH** — See GROWTH

**MENTAL HYGIENE** — See HYGIENE, SCHOOL

**MENTAL IMAGERY** — See IMAGERY

**MENTAL MEASUREMENT** — It is usual, in experimental psychology, to distinguish between *direct* and *indirect* mental measurement.

**Direct Mental Measurement** — To make a measurement is, in strictness, to compare a given magnitude with a conventional unit of

the same kind, and to determine how many times the unit is contained in the magnitude; the numerical result is the measure of the magnitude in question. The prototype of measurement, in all departments of natural science, is thus linear measurement in space. Here we have as datum a certain finite magnitude, a given length or distance, we have our conventional unit, mile or meter; and the homogeneity of space assures us that the given magnitude and the unit of measurement are of precisely the same kind. The procedure of measurement consists in the laying off of unit distances  $0-1$ , over and over again, upon the given distance,  $0-x$ , until the limiting point  $x$  is reached. To say, *e.g.*, that a mountain is 5000 feet high means that the unit of one foot may be laid off, 5000 times over, upon the vertical line extending from sea level to the summit of the mountain.

There can be no doubt that measurement of this elementary and direct kind is possible in psychology. Indeed, the history of astronomy furnishes an excellent instance of mental measurement that antedates by nearly two thousand years the establishment of the first psychological laboratory. The Greek astronomer Hipparchus (*c.* 130 B.C.), and after him the Alexandrian Ptolemy (*c.* 150 A.D.), classified over one thousand of the fixed stars in terms of their luster or brightness. The brightest stars form class 1, those just visible to the naked eye form class 6, the stars of intermediate luster are grouped in the intermediate classes 2, 3, 4, 5. And these six classes are sensibly equidistant, so that the interval of luster, the difference of brightness, between stars of classes 1 and 2 is equal for sensation to the interval or distance between stars of classes 3 and 4, or 5 and 6. In other words the ancient astronomers had before them a certain mental magnitude, the range of luster from bright to dim, from the brightest star in their sky to the star that could but just be made out against its background, and they measured this range or distance by dividing it into five equal unit distances. The given magnitude  $0-x$  is changed, by measurement, into the series  $6-1$ , it contains the unit of measurement, the conventional class difference or class interval, five times over. The arrangement into six classes was dictated, we may suppose, by superstitious reasons, the arrangement itself is an essay in mental measurement.

So far, however, we have no means of giving an objective expression to these estimates of mental interval, for that we must await the advent of stellar photometry. Physical measurements of the luminosity of the fixed stars show that the light intensities of the six classes form, in ascending order, a rough approximation to a geometrical series, with an exponent of 2.5. This result tells us two things: first that the mental measurement was fairly accurate, the unit of brightness-difference, though not

exact, is approximately the same at all parts of the five-unit scale, and secondly, that brightness-differences which are absolutely equal in sensation correspond to differences of physical light intensity that are themselves not absolutely but relatively equal. (See WEBER'S LAW.) These points may be further illustrated by reference to experiments made by Ebbinghaus in 1887; the problem was to pick out a series of eight equidistant brightnesses from a set of fifty papers that had been washed over with various amounts of Indian ink, and the quotients of the successive pairs of (photometrically measured) stimulus values were.—

2.3, 2.1, 2.1, 1.8, 1.7, 1.7, 2.0.

Here, again, is an approximate constancy of physical result, a constancy as great as could be expected from the limited material of observation, and here, too, is confirmation of the validity of a mental measurement.

It is clear from these examples that a direct mental measurement is possible in all cases in which the subject matter of psychology takes the form of a homogeneous continuum. This state of affairs is realized, certainly, for various departments and for sundry attributes of sensation; for the intensity, and perhaps for the quality of simple feeling, and, probably, for degree of attention. No more can, at present, be said. Simple as the principle of mental measurement is, the actual measuring is exceedingly difficult. The investigator must, first, set up a workable and as it were objective unit of measurement, and must then follow a rigorous method and eliminate many sources of error in his attempt to lay off this unit upon the magnitude to be measured, the whole object of measurement is, after all, to carry accuracy into spheres of scientific research in which unaided observation, bare estimation, is inaccurate. So far, therefore, direct mental measurements, despite their importance for the theory and system of psychology, have been made only in a comparatively narrow field.

A question which the author has often been asked, and which it may be worth while to answer here, is this: What is the difference between, say, the Ptolemaic classification of the stars and the sorting into groups of a number of examination papers in history, on the basis of equal differences in percentage of "marks"? The difference is that the classification of stars rests on sensed equality of brightness interval, whereas the grouping by marks assumes that the writer of a paper marked ninety excels in ability the writer of a paper marked eighty just precisely in the same degree that the writer who is marked sixty excels the writer marked fifty. There is evidently no warrant for this assumption, the marks could be used as indexes of mental measurement only if we had already established, by some other means, an unit difference of ability in history. It may be added that, so far as we can now see, the establishment of such an unit must be a matter of indirect, not of direct, mental measurement.

**Indirect Mental Measurement** — The great majority of the numerical results found in textbooks of experimental psychology repre-

sent what is called "indirect" mental measurement. They are numerical expressions for the physical antecedents or consequents of consciousness, that is to say, for stimuli or organic movements, they state the physical intensity of a light or sound, the length or direction of a line in objective space, the force or extent of a voluntary movement, the objective duration of a mental event, the number of stimuli simultaneously presented to an observer, and so forth. They fall under our present heading because their interest and relevance are always and wholly psychological, they are determined for psychological reasons, and have no value beyond psychology. In many cases they are necessary to the completeness of a direct measurement. Thus, we have seen that a certain range of luster or brightness, that of the fixed stars visible to the naked eye, has been divided by astronomers into five equal intervals or distances. If, however, we wish to measure directly the whole extent of sensible brightness, from its absolute minimum to its absolute maximum, we must find out, under the most favorable experimental conditions, what duller and what brighter lustres can still be distinguished, we must determine, photometrically, the light values of the liminal and terminal brightnesses, the end points of our sensible scale, and we must then apply our chosen unit of measurement over the entire range. The fixation, in terms of stimulus, of the extreme points or positions of the sensory scale is a necessary preliminary to a complete direct measurement.

The scope and value of indirect measurement can, perhaps, be shown best by illustration; there is, in fact, no department of psychology that has not benefited by it. Thus, in the field of visual sensation, it is important to obtain color matches or color equations both for color-blind and normal eyes, and also for the normal eye at various stages of adaptation. These equations are recorded in terms of photometric intensity and wave length. The influence of visual contrast may be measured as follows: a stimulus *a*, which shows the effect of contrast, is equal to a stimulus *b*, which is exempt from contrast; *a* is then removed from its surroundings, and the difference between the free *b* and the free *a*, expressed in physical terms, measures the change which *a* suffered under the conditions in which contrast was operative. The same principle is employed in the measurement of optical illusion, that is, of the apparent change in the direction or extent of lines that form part of certain geometrical figures, a perfect square, for instance, seems to be higher than it is broad. The degree of blending of simultaneous tones is measured by the percentage of cases in which the auditory perception fails of analysis, *i.e.* in which two tonal stimuli are apprehended as a single tone. The temporal limits of the perception of rhythm, *i.e.* the slowest and fastest rates at which

rhythm is perceived, and the limit of complexity of the rhythmical unit, may all be established by reference to the rate and number of the recurrent stimuli. The range of attention is measured by the number of separate stimuli whose perceptions are clear and focal in consciousness at one and the same time, the duration of attention by the length of time during which a perception can maintain its focal position. A great deal of quantitative work has been done upon the function of memory — thus, the number of readings of a given material, necessary under various conditions for faultless recitation, indicates the most economical method of memorizing; the number of new readings required for recitation, after different intervals of time, gives an inverse measure of the decay of memory, and variations in the nature of the material itself, in the emphasis which different parts of it receive, in the rate of its assimilation, in the amount presented at a single sitting, in the temporal distribution of these sittings, — variations of this kind yield each one its own numerical results, which further our understanding and control of memory at large. The reaction experiment (*q v*), in which we measure the time elapsing between the exhibition of a stimulus and the performance of a responsive movement, serves a number of psychological purposes, in the simple reaction, variation of the modality, the quality, the intensity of the stimulus brings about characteristic differences in the length of the reaction time, and in the more complex forms of the experiment we obtain a temporal measure of discrimination, association, choice, even of the act of thought itself. Indeed, in this sense of indirect measurement there is no type of psychological experiment that may not be given a quantitative form — the growth and tenacity of habit, the onset, course, and degree of mental fatigue, the acuity of sense perception, the degree and constancy of emotive arousal, the laws of retention, association, and reproduction, the delicacy and regularity of voluntary movements, these and a hundred other things of like character may now be expressed in numerical terms. And it is plain that indirect measurement, while it has not the theoretical importance that attaches to a direct measurement of mind, is yet of very great practical importance. Studies of the speed and extent of eye movement, coupled with studies of relative legibility as dependent on letter form, spacing, etc., not only give us a psychology of reading, but also suggest rules for the make-up of our books and newspapers, the study of the movements of writing leads to similar practical results; the precepts of school hygiene are largely based upon norms furnished by psychological experiment; and the exact psychological study of attention, retention, and association supplies us with tests of the drawing power of an advertisement, of a man's special aptitude for some form of skilled labor,

of the reliability of a witness, even of the criminality of an accused person. It is true that these tests cannot be applied indiscriminately, it is true, also, that many, perhaps most, of them have not yet been perfected; applications of psychology are still in their infancy. Nevertheless, the widespread interest now taken in questions of practical application proves that experimental psychology has done well to multiply and refine its methods of indirect measurement.

In conclusion, mention must be made of the measurement of correlation, a line of work which dates from the beginning of the present century, and which has steadily gained in favor. Correlation may be defined as a tendency toward concomitant variation on the part of two or more mental traits or mental abilities within a group of individuals. Provided that the group is well defined and its environment uniform, the result of a measurement of this tendency may be transferred from the group to the individual, and may then be regarded as measuring the closeness of connection of the traits or abilities in the particular case. An observed correspondence may be due either to an actual interrelation of the characters under investigation, or to the influence of the common environment. Both cases are of psychological import, as throwing light on the constitution of mind, on the relative influence of heredity and education, on the Mendelian doctrine of the unit character, etc., and both have an evident bearing upon educational problems. E B T

See PSYCHOPHYSICS; REACTION EXPERIMENTS, STATISTICAL METHODS, TESTS, PSYCHOPHYSICAL.

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**MENTAL PATHOLOGY** — See PSYCHOLOGY, PATHOLOGICAL

**MENTAL PHILOSOPHY**. — See PSYCHOLOGY.

**MENTAL TESTS**. — See MENTAL MEASUREMENT; TESTS; TESTS, PSYCHOPHYSICAL

**MENTAL TRAINING**. — See FORMAL DISCIPLINE.

**MENTALLY DEFICIENT**. — See BACKWARD PUPILS, DEFECTIVES; DEFECTIVES, SCHOOLS FOR, EXCEPTIONAL CHILDREN; GRADING AND PROMOTION, RETARDATION AND ELIMINATION, SPECIAL CLASSES

**MERCER UNIVERSITY, MACON, GA**

-- Established in 1829 as a classical and theological school for prospective ministers only, combining agricultural labor with study. In 1832 other students were admitted. The university charter was obtained in 1837. Until 1871 work was carried on at Penfield, Ga. The following schools are maintained, arts, law, pharmacy, and summer. The entrance requirements are fourteen units. The degrees of A B, A M, LL B (on a two years' course), Bachelor of Pharmacy (two years), and Master of Pharmacy (Ph B, and Ph M) are conferred. The enrollment in 1910-1911 was 368. The faculty consists of thirty-one members.

**MERCHANT TAYLORS' SCHOOL, LONDON, ENGLAND**

— One of the nine Public Schools of England. It was founded in 1560-1561 by the Merchant Taylors Company of London "for the better education and bringing up of children in good manners and literature." The school was located in the parish of St. Lawrence Poulteney. The statutes were framed on the model of those of St. Paul's School. The number of scholars was limited to 250, and there were to be appointed a high master, chief usher, and assistant usher. Richard Mulcaster (*qv*) was the first headmaster, and the school, when opened in September, 1561, at once sprang into popular favor. Unlike most other public schools, Merchant Taylors' School was and has always remained a day school. Through the munificence of Sir Thomas White, a member of the Court of the Company, thirty-seven fellowships at St. John's College, Oxford, founded by himself in 1557, were established for Merchant Taylor scholars, thus linking the school with a college in the same way as Eton and Winchester had their respective affiliations at Cambridge and Oxford. The school under Mulcaster was highly successful, one of the most illustrious of the alumni was Edmund Spenser; in addition to the general classical and religious curriculum, he encouraged music and acting, and companies of the boys performed plays and masques before the Queen (1573, 1575, and 1583). With this feature of school life Merchant Taylors' was long associated, particularly in the eighteenth century. The salary of the headmaster, however, was and for long continued to be so small and the restriction on numbers so rigidly adhered to that Mulcaster resigned in 1586. With the development of the school may be traced the rise of the examination system in England, the first visitation of the diocesan being made in 1562 (see EXAMINATIONS). During the Civil War the school appears to have been royalist, and many of the alumni, risen in not a few cases from "poor scholars" to bishoprics, were strong defenders of the Anglican Church. The Great Fire of 1666 practically destroyed the school, but fortunately the library, which was maintained by gifts of books from the members of the Com-

pany, was saved. A new building was erected in 1675. The curriculum of the school continued to be classical until the beginning of the nineteenth century. In 1828 mathematics began to be taught regularly; in 1845 French was introduced as an extra and as a regular subject in the following year, modern history was added in the same year (1846), and in 1856 drawing appeared. The school has always encouraged the study of Hebrew, and is one of the few places where it is still retained. In 1861 an opportunity of moving to more spacious quarters was afforded by the purchase of the Charterhouse buildings. The change was not effected until 1875, and the increased accommodation permitted a doubling of the numbers. The school is divided into classical, modern, and special (mathematical and science) sides, and facilities are offered for the study of chemistry, physics, and biology, so that pupils taking these subjects may shorten the normal medical course by six months. The school is mainly a day school, boarders being received only by special arrangement. The number of boys in the school is 500.

See GRAMMAR SCHOOL; PUBLIC SCHOOLS, ENGLAND, EDUCATION IN; GILDS AND EDUCATION.

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**MEREDITH, GEORGE (1828-1909) —**

The English novelist was born in Hampshire, England, and up to fifteen years of age was at school at Neuwied in Germany. He began, but soon abandoned, law, and took to journalism, and in 1866 acted as correspondent to the *Morning Post* during the war between Italy and Austria. In 1867 he acted in place of John Morley as editor of the *Fortnightly Review*, and became literary adviser to Messrs. Chapman and Hall. Meredith published *Poems* in 1851, and throughout his life continued to write poetry which placed him in the first rank, but it is in his novels that he presents the most strongly marked relations to the interests of theoretical and practical education. In 1856 *The Shaving of Shagpat* appeared, cast in the form of an Oriental allegory. The story traces the educative power of circumstances and the disciplinary effect of the world's "thwacks." In 1859 Meredith published *The Ordeal of Richard Feverel*, in which he insists that the parent as educator must arouse and help the directions of activity of the child's own mind, must encourage the development of the child's independent individuality; and this he urges as graphically as any specialist educator. In-

stead of writing a disquisition, like Rousseau, to show the virtue of judiciously leaving the boy alone, Meredith traces dramatically the consequence of interfering with a soul, even by a father with his son's. The work becomes the scene of a great educational experiment, from which springs up the conviction of the necessity of freedom from system and spontaneity of development in all true education. In *Evan Harrington* (1860) and *Rhoda Fleming* (1865) are further studies of boy and girl training respectively, and in the *Egoist* (1879) is developed the tragedy of the attempt to dominate the personality of the lover, as Sir Austin Feverel had attempted in the case of his son. In 1894 came *Lord Ormont and his Aminta*, which may be called Meredith's schoolmasters' novel, in which he places Matthew Weyburn's ideal school, under the joint direction of himself and his wife, by the side of a Swiss lake, where swimming and physical exercises of the Swiss mountains and valleys are as natural as meals. Boys of all nationalities are welcomed, and cosmopolitanism becomes at once an aim and a method of education. Coeducation of the sexes receives the impress of the natural environment of Switzerland, and education appears as the entry into a large-hearted, large-minded, healthy, vigorous life, with infinite riches of various personalities. F W

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**MERIT SYSTEM** — See PUBLIC SERVICE, TRAINING FOR

**MERTON, WALTER DE** (d. 1277). — English divine and statesman, at one time chancellor under Henry III, and Bishop of Rochester. Educationally Merton is of note as the founder of the first college at Oxford, which became the model for all future colleges at Oxford and Cambridge. In 1264 he formally assigned two manors, at Farleigh and Maldon in Surrey, to be held for the establishment of a "House of the Scholars of Merton at Maldon" with power to maintain twenty scholars at "Oxford or elsewhere where a university may happen to flourish." In 1270 Merton College was definitely and permanently moved to Oxford, and new statutes were issued in 1274 by the founder, who also provided, if necessary, for the primary education in rudiments of orphans of his kin up to the number of thirteen.

See OXFORD, UNIVERSITY OF; COLLEGE, UNIVERSITIES; FAGGING

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**MESMERISM** — A theory propounded by Mesmer (1734-1815), the practices which he popularized, and the interpretation of the phenomena presented. The name given by Mesmer to his doctrine was "Animal Magnetism." He assumed the existence of a "universally diffused subtle fluid," affecting the animal economy by insinuating itself into the nerves. It has properties like the magnet, may be transmitted, and "will cure nervous diseases directly and others indirectly by provoking salutary crises, thus bringing the art of healing to perfection." The theory was presented dogmatically, and fantastically affected his practice. He began by applying a magnet to the affected part, then in Paris (1778-1784) constructed the "baquet," or tub, filled with iron filings and other paraphernalia suggestive of some magnetic force, about which sat the patients, drawing from it and from Mesmer's passings and strokings the curative "force"; but in the end he announced that the "magnetism" was concentrated in his own person, and that he could impart its virtues to a glass of water or other inert substance. It is to this form of the theory, as a force emanating from peculiarly endowed individuals, that the term "Mesmerism" came to be attached.

Mesmer's practice was affected by the medical theory that diseases must run their course and reach a crisis, the manipulations and the "magnetic force" precipitated the crises, which, as they receded, left the patient cured. These crises, frequently taking the form of an hysterical attack, were the common symptoms at the exciting scenes enacted in the *salle des crises*, yet the accounts show that the strokings and passes and suggestions — not unlike the "touch" for the king's evil and the methods of exorcism and faith healing — drove away pains, paralyses, and invalid impediments. Mesmer doubtless induced alterations of consciousness and hypnotic suggestibility, but quite ignored their significance. It was the Marquis de Puységur, a disciple of Mesmer, who, in 1784, called attention to the altered psychological state of the subject, to the fact that the subject was responsive only to the verbal suggestion of the operator and recalled nothing of his experiences when awake. To this altered condition he gave the name of "artificial somnambulism," correctly recognizing its analogy to the sleep-walking state. Puységur discarded the "mesmeric" theory, and became the first hypnotist. It remained for James Braid in 1843 to demonstrate the physiological reality of the condition as an altered disposition of the nervous system depending upon some peculiar susceptibility of the subject; to this condition he gave the name of *hypnosis*. The rôle of suggestion was recognized, and made possible the scientific study of abnormal psychophysiological consciousness and control — or, more exactly, the

revival of it — in the latter decades of the nineteenth century. (See HYPNOSIS.)

Viewed historically, "mesmerism" becomes an antecedent of hypnotism; and the vicissitudes of its career form a complicated story, in which false and misleading views growing out of mysticism, of faulty observation, or of leaning toward occult or supernormal beliefs obscure issues and thwart profitable insight. Mesmer's obstinate controversies with investigating commissions, the one referring the observed phenomena to the action of a "fluid," and the other to imagination, Puységur's *somnambules*, quickly degenerating to second-sight diagnosticians and readers of sealed messages, Braid's entanglements with phrenology, — these and other phases left their impress alike upon the prejudices and the legitimate demands of the medical profession, and made the transition from "mesmerism" to "hypnotism" a difficult and circuitous process. The convincing data were, in the early stages, the anæsthetic state, permitting serious surgical operations to proceed without pain, and in the later stages, the orderly interpretation of psychological phenomena under the leadership of men like Charcot, of established scientific reputation. With the establishment of the genuineness of the hypnotic state and of its interpretation as due to the nervous susceptibility of the subject, the scientific attitude was secure, and the notions attached to "mesmerism" as an objective "force" were wholly relegated to an historical significance alone.

J J

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Most of the handbooks on *Hypnotism* give an account of Mesmer and his practices.

**MESSER, ASA** (1769–1836) — Third president of Brown University. Graduating from Brown in 1790, he was tutor and professor there from 1791 to 1802, and president of the institution from 1802 to 1826. W S M.

**MESSINA, UNIVERSITY OF** — See ITALY, EDUCATION IN.

**METAL WORK IN THE SCHOOLS.** — See MANUAL TRAINING

**METALLURGY.** — See TECHNICAL EDUCATION.

**METAPHYSICS.** — The name "metaphysics" as designating philosophy or some one of its branches arose from a misunderstanding of an accidental way of describing certain writings of Aristotle, namely, those coming after the physics. This was shortly taken to mean the

things that lie beyond the physical, that are above the natural — a conception which medieval thought identified with the supernatural. This long remained the popular signification, so that Shakespeare, for example, refers to ghosts as metaphysical.

Aristotle himself in the body of his treatise supplied some grounds for identifying his discussions with theology. His formal designation is first philosophy, and this he says has for its object a descriptive definition of being as being, or existence as existence. Each branch of science considers the traits of some set or class of existences, but no science considers the traits that all existences alike possess. Hence they leave room for and indeed require a more general and formal science to take up the matter they leave untouched. So far there is no ground for referring first philosophy, or metaphysics, to anything transcending the subject matter of the sciences. But in the course of his discussions, Aristotle is led to discriminate grades of being and to conclude that only pure actuality, or God, is completely real, or can be said to *Be* without qualification. Hence metaphysics appears as a science of the highest and more real mode of Being.

Throughout the eighteenth and earlier nineteenth centuries "metaphysics" was loosely used to denote inquiries concerned with mind, what would now generally be called psychology, and also to denote any inquiry of an ultimate sort. In the later sense it was generally divided into ontology, or inquiry into Being, and epistemology, or inquiry into the nature and limits of knowing. At present, there is a tendency to revert to the more limited Aristotelian sense, though the term is still widely used as a generic name to cover all sorts of inquiries that do not seem to fall within the scope of any of the positive or mathematical sciences.

J D

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**METEOROLOGY** — The scientific study of the phenomena of the atmosphere. See GEOGRAPHY, GEOLOGY.

**METHOD** — The topic of method represents one of the three typical phases of educational practice, the subject matter of study and the institutional agencies of education being the other two. As in the case of subject matter (see COURSE OF STUDY, THEORY OF), there are important practical matters at issue and also general philosophical considerations. The former is the field of methods (in the plural number), the ways of teaching special subjects in accordance with principles that successful experience has vindicated — often called "Special Methods." The latter centers about the problem of the relation of mental attitude and operation to subject matter. For



reasons that will appear in the sequel, this problem passes into that of the relation of the individual self to the objects of the world and social life. Intermediate between the field of specific practices and the one of general theory is the logical question of an underlying uniformity of method in the application of mind to various subjects whether pure mathematics, the natural sciences, or history, literature, and language. This intermediate question usually goes by the name of "general method." The present article is confined to the distinctively philosophic aspect of method, extending the survey, however, to take in those phases of general method that are closely connected.

In a general way method is the obverse and correlative of subject matter. The proper interpretation of the connection and distinction between the two is, however, by no means evident, especially since it has been complicated and to some extent perverted by the pervasive influence of a dualistic philosophy. (See DUALISM.) Mind has been severed from the world; the individual from society and its growth. The two have not only been divorced, but the separation between them has been intensified to the point of complete antithesis. (See HUMANISM AND NATURALISM, and IDEALISM.) All effective knowing and acting involve, moreover, both the mind in the world and individual agency in social conditions and for social aims. Hence, the more the separation is emphasized, the more urgent becomes the question of the possibility of interaction and reciprocal influence. While the distinction of subject matter and method was never sharpened into such extreme opposition as that just indicated, the dualistic antithesis of mind and the world affected men's ideas of these educational subjects. The problem of method was conceived as the problem of the adaptation of an individual mind to a foreign subject matter, as an affair of bringing together two things that naturally and intrinsically have nothing to do with each other. This background influenced the conceptions of discipline, culture, and interest (*qq v.*) Even where the extreme dualism of mind and the world, self and social institutions, has been professedly surrendered, it is not uncommon to see questions of method of teaching, study, and moral training discussed as if they were essentially matters of adaptation of one thing to another unlike thing. How may the study in question be presented to the mind so as to appeal to it? How may the mind be aroused so as to apply itself to this topic, naturally alien? Such ways of conceiving, in the concrete, the relations of subject matter and method indicate the intellectual atmosphere in which the discussion of mental operation and application has been bathed.

An analysis of experience shows, however, that experience is not a combination of subject matter and method, or an interaction of two independent factors, one of which supplies

content and the other form. The distinction between these two matters is developed within experience itself, and arises for the sake of greater control of the course of experience. As indicated in the article on experience (*q v.*), experience has a dynamic and a static aspect, one of transition and one of cumulation, of retention. Experience, that is, is always changing, and yet it is not a mere flux. There is always a somewhat that changes, and its transition is not a mere passing away, but is a transformation. Here we have the root of the distinction between content and form, subject matter and method, object and subject. It centers in the distinction of the *what* and the *how* of experience. *What* we experience varies in quality, in value, significance. The transition from one state to another is, therefore, measured by the content it ushers in, while the presence and appreciation of this or that object depends upon the factor of transition. In order to secure the objects that are of positive or greater value and to avoid the objects that are of negative or lesser value, we must control the processes of change by which one content of experience gives way to another and grows into it. Whatever in experience, accordingly, aids in control of its development so as to attain what is desired and exclude what is not wanted, is method, way, form of experience. The objects and subject matters that are influenced by this control constitute the material, the structure of experience.

In the course of an infant's restless activity, light is felt and enjoyed. The light, however, is more or less submerged in the qualities that attend the moving of the head, the arms and hands, and certain intraorganic processes. It is, therefore, a vague and confused object, lacking distinctness. In subsequent experience, it is found by accident (that is, without deliberate effort or conscious intention) that the enjoyment of the light quality — such as it is — coheres with changes of the head, eyes, and position of the body, these qualities not having the value attaching to them that the light quality has. As soon as this connection is apparent, the light acquires the status of an *object*, of material or content, while the qualities of the movements of organs of the body in losing their primary values are reduced to the status of means or agencies for getting the object. Thus occurs the gradual differentiation of object and subject, matter and method. The subject matter does not, however, always present itself as an end to be secured, movement in the desired direction may be impeded by certain contents. These resisting factors then stand out conspicuously as obstacles, hindrances. They also become objects, part of the subject matter of experience, for it depends upon the way they are worked upon whether the desired end is ushered in or not. It should be noted that the distinction between matter and method, material and way of treating it,

is not a rigid one. What is subject matter at one time may be a part of method at another, and *vice versa*, according as it functions in a concrete situation. In concrete experience it may happen that the sound quality is the significantly desirable thing and that the light or color quality is of import only as clew or stimulus to the presence of the sound as end. Then the seeing reduces itself to the status of means, agency, method. It falls on the side of the subject, no longer on that of the object.

Two things then characterize the concept of method. Methods with respect to their origin mark the gradual differentiation of certain elements of experience, and, with respect to their function, represent any attitudes and operations that are employed to give the course or sequence of experience a direction that is desirable. Method at bottom is but the way of doing things followed in any given case. Its psychological counterpart is the habits and habitual attitudes that determine the course of experience. It follows that methods are at first formed by a semi-instinctive process of trial, error, and success, and that they operate very largely unconsciously. That is to say, attention is given primarily to the ends and obstacles involved, and the habits respond more or less spontaneously to the idea and perception of these objects.

At this point a serious error is often made in the conception of educational method. Just because these primary ways of doing things which represent method at its primary and deepest level have been formed in relatively accidental fashion and also prior to the period of conscious school instruction, because, moreover, they often mark relatively ineffective and blundering ways of accomplishing ends, there is a tendency to ignore them or to deny that they are methods at all. Method is then conceived as a purely logical matter, in a sense that identifies the logical with a consciously formed and followed enterprise. Such methods are embodied in symbols, and need not be embodied in working attitudes and habits at all. They are formulæ for ways in which things consciously ought to be done, not descriptions of the ways in which they *actually* are done. Thus a complete split is introduced between what are called psychological methods (but which might better be termed vital, concrete, or practical methods) and the so-called logical methods — which might better be termed formal and symbolic. The result is that new habits which are largely verbal are grafted on to the older working habits — generally to the detriment of their efficacy; or else, in reaction from the futility of mere formulations of logical abstractions, the spontaneous, habitual attitudes are relied upon, without securing the readjustment and reconstruction needed for higher and more complex ends — for securing a better type of control.

The fundamental question of method in edu-

cation thus concerns the right coöperation of the unconscious and the reflective factors in the direction of the course of experience. Method, the way of going at a thing, depends at first upon the relation between instinct and desire, on one side, and an end, on the other. The end stands out more or less in consciousness and supplies the basis of conscious guidance. What is educationally important is, therefore, that on one side the proper type of desire be aroused and the proper type of end be conceived on the other. These points are not matters of conscious formulation, but of providing environing conditions that will call out and fix desirable attitudes of response. Only as these attitudes become sufficiently habitual to be effective is there any basis for conscious reflection so as to formulate methods for further conscious employment. When, as is too frequently the case in such subjects as arithmetic and grammar, teachers insist that pupils shall consciously follow certain forms of statement and "analysis" before they have become thoroughly habituated to dealing practically with the situations in which numerical and grammatical values occur, the result is that the formulæ come between the pupils and their appreciation of the nature of the situation. They do not respond any longer to the results of the experienced situation, but only to the verbally acquired formulæ. The very means that are supposed to render the pupils' operations more intelligent, more logical, result in making them mechanical.

Logical method, in short, as a conscious procedure always implies reflection upon the means which have already been instinctively and hence unconsciously used in reaching ends that make an appeal on their own account. Formulated logical operations are thus the possession of an expert in a subject, one who has already worked through the subject, and who has, therefore, command of the materials to be formulated. They represent the standpoint of a matured, a developed, experience. The commonest school fallacy is that the methods which represent the control of a subject matter gained through long practical experience can be conveyed directly to those who are just beginning to occupy themselves with a topic, so that the procedure of the latter may be made more reasonable and intelligent. Many methods that are condemned as "deductive" are really not deductive at all, but simply represent the attempt to hand over directly to the inexperienced and immature the intellectual technique appropriate to those who have gone through a subject, and who are therefore in a condition to review and systematize the procedures that have proved effective.

The currency of the wrong conception of logical method leads to a reaction almost equally harmful. Considerations of order, sequence, definiteness, of fit adaptation of means to ends, the importance of thoughtful surveys and re-

## METHOD

views of ground traversed, together with the need of formulating the practices that have been found helpful, are ignored. Behavior is left on the instinctive or "spontaneous" plane with no care to see that the attitudes that are evoked are those most adequate to their direct end, and also such as to stimulate later reflection. The true difference is not between the merely psychological—the illogical—but between the unconscious logic of effective adaptation to ends and the conscious logic of formulating the methods that have been successfully employed, so that subsequent procedure may be easier and more fruitful. And this transition, through reflection upon that which has been already accomplished, from the blunder and more instinctive into the more intelligently controlled, should be a constant factor of all growth; it is, indeed, indispensable, if growth is to be truly educative (See EDUCATION)

From this conception of method there follow certain considerations applicable to the topic of general method. Strictly speaking, method is thoroughly individual. Each person has his own instinctive way of going at a thing, the attitude and the mode of approach and attack are individual. To ignore this individuality of approach, to try to substitute for it, under the name of "general method," a uniform scheme of procedure, is simply to cripple the only effective agencies of operation, and to overlay them with a mechanical formalism that produces only a routine conventionality of mental quality. Certain features may be found, however, which are involved in the transition from unconscious effort to a more consciously guided process. These features may be abstracted and generalized. While the outcome will not put individuals in possession of a sure key to intellectual efficiency, it will indicate to a teacher the main steps that have to be taken, and suggest the crucial points where conditions of growth have to be carefully maintained and fostered.

The primary factor in general method, so construed, is the existence of a situation which appeals to an individual as his own concern or interest, that is to say, as presenting an end to be achieved, because arousing desire and effort. The second point is that the conditions be such as to stimulate observation and memory in locating the means, the obstacles and resources that must be reckoned with in dealing with the situation. The third point is the formation of a plan of procedure, a theory or hypothesis about the best way of proceeding. The fourth is putting the plan into operation. The fifth and last is the comparison of the result reached with what was intended, and a consequent estimate of the worth of the method followed, a more critical discernment of its weak and its strong points. These five steps may be reduced to three more generic ones. The first and fundamental condition of right method is the existence of some concrete situation involv-

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ing an end that interests the individual, and that requires active and thoughtful effort in order to be reached. The second is consideration of the nature of the problem, the difficulty or perplexity involved in reaching the end set, so as to form a suggestion or conjecture as to the best way of proceeding to solve the difficulty. The third is the overt effort in which the thought of the plan is applied and thereby tested. Scientific method will be found to involve exactly the same steps, save that a scientific mode of approach implies a large body of prior empirical and tentative procedures which have finally been sifted so as to develop a technique consciously formulated and adapted to the given type of problem.

J D

See SCIENCE

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**METHOD READERS** — In teaching beginners to read two methods are employed. One group of teachers makes no systematic attempt to deal with phonetic and spelling difficulties, but emphasizes the thought. Their units of treatment are the word, phrase, and sentence. The materials used are therefore selected from the child's spontaneous usage, children's classics (such as Mother Goose), and the best suitable English literature. Artificial content and form are omitted from the beginning. Another group of instructors contend that the main function in teaching beginners to read is to give them a mastery of the mechanics of pronunciation and spelling. Hence these emphasize the phonetic difficulties in translating visual symbols into sound. They stress units smaller than the word — the letter, diphthong, syllable, and phonogram. Their reading material is consequently selected with reference to the systematic control and graded presentation of phonetic elements. The primers and readers used by them have a systematic plan or method, hence such reading books are called "method readers" to distinguish them from the so-called "thought readers," which emphasize interesting content rather than phonic elements. H S.

See READING, TEACHING OF

**METHOD WHOLE.** — So much of the subject matter of any school subject as is sufficiently related to be treated as a teaching unit. A method unit or whole is usually treated in a series of lessons. It is exceptional for a method whole to coincide with the limits of a single lesson period. H. S.

See RECITATION, METHOD OF; STEPS, FIVE FORMAL

**METHODIST EPISCOPAL CHURCH, BOARD OF EDUCATION OF** — See COLLEGE BOARDS IN EDUCATION, DENOMINATIONAL.

**METHODIST EPISCOPAL CHURCH, SOUTH, BOARD OF EDUCATION OF.** — See COLLEGE BOARDS IN EDUCATION, DENOMINATIONAL.

**METRIC SYSTEM** — A system of measures invented by the French at the close of the eighteenth century, although suggested in part as early as 1670 by Mouton, a priest of Lyons. It is based upon the theoretical average distance from the equator to the north pole. The measurements upon which this average was based have since been shown faulty, so that the standard of length, the meter, is not exactly one ten millionth of this distance, as was contemplated. This has no effect upon the validity of the system, however, since the standards were deposited in the archives at Paris and serve us as a basis for making copies. From the meter came the unit of capacity, the liter, which is a cube that is 1 meter on an edge. From this came the unit of weight, the weight of .001 liter of water at the temperature of greatest density.

The advantages of the metric system over the English and other earlier ones lies in the fact that it is constructed on a decimal scale, like that of United States money. The tables are given in most arithmetics, together with information showing the relation of the metric to our common system, and hence they need not be repeated in this article.

The system was not immediately adopted in France, and, indeed, was not made compulsory until 1837. Even to-day the pound (livre) is still used in small commercial transactions, but it is now taken to be one half of a kilogram. Thus in the home of the system the adoption was slowly made, and the usages of the people have remained to a certain extent. A large number of other countries adopted the system during the latter half of the nineteenth century, so that to-day it is the only international one. The English-speaking countries have, however, declined to look upon it with favor. This may be because of the lack of a centralized power to impose it upon the people, or it may be due to a general feeling of independence on the part of the Anglo-Saxon, but at any rate the movement has been very slow among the people as a whole. Among scientists, however, it has been well received, and between 1875 and 1900 it replaced the old system in the scientific laboratories of the colleges and secondary schools of the United States, and became looked upon as the international scientific system.

Educationally the question arises as to its status in the school curriculum. It is easily taught, and could be put into any grade. The

direct need for it does not arise, however, until the pupil studies some branch of science in which it is used. The time, therefore, depends upon the course of study. If elementary physics is taken up in the eighth school year, this is an appropriate place for the system.

There is the larger question as to the prospects of the use of the system by our people. There are two factors to be considered: (1) the simplicity of the tables, (2) the demands of foreign trade. It is impossible to say what the effect of these two factors will be. It is certain that we have, in the United States, greatly reduced our old system in a generation past. Compound numbers are now practically used to only two denominations, the decimal divisions of the mile, acre, and so on, having replaced them. We are therefore decimalizing our units, and this removes to a certain extent the need for the metric system. The question of foreign relations is more serious, because the United States has come to make a strong bid for foreign trade, and is manufacturing for that trade. How much effect this will have upon the introduction of the metric system no one can foresee. It does not seem the business of the school to attempt to influence the development further than to show the advantages of the system, and to prepare the pupil for the work in physics. When the need arises for learning it, any one can acquire it in a short time.

D E S.

**MEXICO, EDUCATION IN** — Mexico. Federal republic consisting of twenty-seven states, three territories, and the Federal District, area 767,323 square miles, population (census of 1910), 1,506,327.

**Historical** — The history of public education in Mexico is distinguished from that of the other Latin-American countries by the fact that the Spanish conquerors of Mexico gave evidence of a real appreciation of the importance of public instruction for the masses of the people. In the countries of South America, especially in the Argentine, Chile, and Peru, such attention as was given to public instruction was concentrated on secondary and higher instruction. In these countries, under the leadership of the Church, university instruction reached a relatively high degree of development, whereas primary education was neglected.

This early zeal of the Spanish conquerors for primary education in Mexico did not last long. The enlightened policy which characterized the early period soon gave way to the same indifference to public education which characterized Spanish policy in the other countries of the American continent. As early as 1532 the Spanish authorities had made provision for elementary instruction for one thousand pupils in Mexico City. Unfortunately, trustworthy figures as to the size of Mexico City at that time are not available. If we bear in mind, however, that the Spanish authorities had to deal with a

distrustful and even antagonistic native population, we can appreciate the difficulties involved in bringing one thousand children under the influence of the Spanish schools

Coincident with the opening of the University of Mexico in 1553, there is evidence of a marked decline in the interest in and zeal for elementary instruction. The attention of the government, as well as the funds available for public education, were diverted from primary to higher education. Soon after the middle of the sixteenth century Spanish policy in Mexico begins to conform to the traditional policy of Spain, namely, the neglect of primary education, combined with a relatively advanced development of university instruction. The result of this change was the total neglect of the real needs of the native population, inasmuch as the university courses in theology, civil law, canon law, and medicine were intended exclusively for the sons of Spanish residents. It is true that in the newly founded university a number of courses in the native languages were given, but these were intended to prepare Spanish priests for missionary work among the native Indian tribes.

The records of the development of public education during the colonial period are so incomplete that it is difficult to form an accurate estimate of the facilities offered by private agencies. It is evident, however, that after the first and rather extraordinary development of primary education during the early period, the system of elementary instruction was permitted to decline to such a degree that its facilities were extended to but a small fraction of the school population. The university developed with extraordinary rapidity, and remained an important factor in the intellectual life of Mexico during the entire colonial period.

With the Declaration of Independence, new influences began to make themselves felt. The determination of the government to improve the condition of the masses of the people becomes clearly apparent, and this desire expresses itself in a series of attempts to develop a system of primary education. The long period of civil war which followed soon after the Declaration of Independence, and which kept Mexico in a state of agitation and upheaval during the first six decades of the nineteenth century, made it impossible to carry out any of the plans for the development of primary instruction. During this period of anarchy the university also failed to receive adequate support, and when in the early sixties the struggle between Church and State became acute, the university organization was abolished.

**Elementary Schools** — The adoption of the Constitution of 1853 marks an epoch in the history of elementary instruction in Mexico. The adoption of this constitution was accompanied by a wave of popular enthusiasm for republican institutions and a revival of interest in popular education.

With the inauguration of President Juarez in 1858 the government undertook the formulation of a systematic plan for the development of primary education. Unfortunately, the provisions of the Constitution of 1853 did not give to the federal government the powers necessary to develop a national system of education. The framers of the instrument in determining the distribution of powers between the federal and the state governments followed, in the main, the provisions of the Constitution of the United States, but in so doing failed to realize that the states forming part of the federal system did not possess either the financial resources or the enlightened public opinion necessary to insure the growth of a vigorous system of public instruction. It was taken for granted that inasmuch as under the political system of the United States primary education had reached a high degree of development under the direction of the individual states, the same results would be secured in Mexico. The period that has elapsed since the adoption of the Constitution of 1853 has served to demonstrate the erroneousness of this view. The limited income of most of the states has made it impossible for them to appropriate for public education even a small percentage of the sum necessary to overcome the alarming illiteracy prevailing throughout the republic.

There is but little doubt that had the federal government been able to secure complete control of public education the system would have made far greater advances during the last half century. This is due primarily to the fact that the revenues and credit of the central government are far in advance of those of the individual states. Furthermore, the fact that the states have failed to develop a distinctive and vigorous political life and that their administrative system is not thoroughly organized makes it difficult for them to secure the expert direction necessary for the growth of a vigorous system of public education. The magnitude of the problem confronting the country can best be seen from an examination of the data relating to illiteracy. Significant as they are, it is likely that they underestimate rather than exaggerate the degree of illiteracy that prevails.

STATISTICS OF ILLITERACY IN MEXICO

	MALE	FEMALE	TOTAL
Persons 12 years or over, who can neither read nor write	3,119,944	3,664,680	6,784,624
Persons less than 12 years of age who can neither read nor write	2,118,843	2,010,299	4,129,142
Persons concerning whom no information could be obtained	76,438	89,564	166,002
Persons who can read and write	1,273,325	906,263	2,179,588
Persons who can read but cannot write	163,568	184,335	347,903

In the central group of states, with 6,239,038 inhabitants, but 1,002,692, or about 15 per cent of the total population, can read and write. In the northern group of states, with a population of 1,174,341, but 287,777 can read and write. In the five Gulf states, with a population of 1,756,006, but 280,087 can read and write, and in the states and territories of the Pacific coast of a total population of 4,437,874, but 609,032 can read and write. These figures are taken from the census of 1900. Unfortunately, no trustworthy statistics as to illiteracy are available, which would enable us to measure the advance that has been made during the last ten years.

Although the federal government exercises no direct control over public education within the states of the union, there exists throughout the republic practical uniformity in organization.

Primary instruction includes five years of elementary grades and two years of advanced grades. The course of study in these schools has been carefully worked out, but the greatest obstacle in the way of efficient service is the failure to pay anything approaching adequate compensation to teachers. Even in the Federal District, where salaries are much higher than in the states, the principals of primary schools receive but \$730 per annum. The compensation of teachers ranges from \$328.50 to \$547.50 per annum, depending upon the degree of preparation and term of service. It is evident that with such low salaries, teaching as a profession does not offer much to allure young men and women, and it is not surprising that the government should find great difficulty in securing competent candidates for the available positions.

*The Training of Teachers* — The inadequacy of the facilities for the training of teachers is a matter which has been dwelt upon by every writer on the educational system of Mexico. During the last few years a strong effort has been made in all the states, but especially in the Federal District, to improve this branch of the educational system. The improvement has been due in large part to the influence of the national Department of Public Education, and to the example set by the two excellent normal schools of the Federal District. The new building which has been erected for the men's normal school is thoroughly equipped and modern in every respect. In order to induce young men to enter the teaching profession the government has provided liberally for scholarships and stipends. The Normal School for Women in the Federal District occupies an old building which is not adapted to its purposes. In spite of the inadequate accommodations, however, the school is doing excellent work, and compares favorably with most of the normal schools in the United States.

The course of study in the normal schools covers a period of five years, and includes the following subjects —

*First Year* — Language, Arithmetic, Botany Elements of Zoology, Composition, Drawing, Manual Training, Singing, Physical Training, and (for the men) Military Drill.

*Second Year* — Language, Algebra, Geometry, Elements of Physics, Elements of Physiology and Anatomy, Principles of Hygiene, Drawing, Manual Training, Physical Education, Harmony.

*Third Year* — Language, Elements of Chemistry; Mineralogy, Elements of Psychology, Geography, Drawing, Manual Training, Harmony, Physical Education, Observation in the School of Practice.

*Fourth Year* — Spanish Literature, Logic, Geography, History of Mexico, Pedagogy, Physical Education, Observation and Instruction in the School of Practice.

*Fifth Year* — Literature, Ethics; Civics, General History, Civic Instruction, All the Natural and Physical Sciences, Pedagogical Organization, Discipline and Administration, History of Pedagogy, School Hygiene, Physical Education.

*Manual, Technical, and Vocational Training* — In a country like Mexico, in which the native Indian population was for so many years kept in a condition of social subjection bordering on serfdom, without any attempt to develop economic efficiency, the need of the present day is a well-developed system of vocational and industrial training. During the colonial period, and in fact during the greater part of the nineteenth century, little or no attention was given to this phase of education. To-day the statesmen and educators of Mexico realize that national effort must now be concentrated on the problem of making the native Mexican a more efficient worker.

During the last ten years the movement for the introduction of manual training into primary schools, both in the Federal District and in the states, has acquired considerable force. Those who are directing the educational policy of the country fully realize that the fundamental need of the great mass of the Indian population is the kind of training that would turn the attention of the younger men to the mechanical arts. Mexico lacks a native artisan class. The overcrowding of the legal and medical professions has become a serious problem in all the Latin-American countries, and is traceable to the continuance of the old Spanish prejudice against trade and commerce. This tendency has been strengthened by the purely dialectic character of the curriculum of the secondary schools, which are molded after the French system. The introduction of manual training, therefore, into the normal schools of the Federal District with a view to preparing the teachers for this type of instruction possesses a significance in Mexico far greater than in many other countries.

In the matter of vocational training, a beginning has been made in the Federal District, and also in some of the states, notably Chihuahua, but it is true that this movement is still in its infancy. In the Federal District there is an excellent trade school for boys and another for girls.

The school for boys prepares for the following trades: carpentering; woodworking; iron

work; decorative painting and sculpture; electrical and industrial mechanics. For each of these, special courses are prescribed.

The School of Industrial Arts for Girls includes the following courses: typewriting, bookkeeping; stenography, sewing, dress-making, hat making; artificial flower making, embroidery, lace making; wig making, hair dressing, domestic science. In addition a number of courses is taken by all pupils in natural history, physics, and chemistry. In this school over a thousand pupils are registered. It is the purpose of the federal authorities to increase the number of these schools as rapidly as the resources of the government will permit.

**Commercial Education** — The introduction of commercial education, especially in its higher grades, is another of the recent changes in the system of public education. The first step in this direction was taken through the introduction of commercial courses in the higher grades of the primary schools of the Federal District. The next step was the establishment of a commercial section in the national secondary school, and the final step in this movement was the establishment of a commercial high school in the national capital. In the states but little has been done in this respect. Through the influence of the former governor of Chihuahua a commercial school was established in the capital of that city.

**Secondary Instruction** — The instruction corresponding more or less closely to the high schools of our American system is given in the so-called *Escuelas Preparatorias*, or preparatory schools. The organization, as well as the curriculum of these schools, is patterned after the French *Lycée*, and is designed to prepare students for the professional schools of the university. The system of secondary instruction is well organized in the Federal District, but constitutes the weakest link in the chain of education in most of the states. The most serious criticism to be made is the undue emphasis laid on examinations and the failure to keep in close touch with the work of the pupil during the course of the scholastic year. In every subject a series of printed questions is furnished the pupil, and in most cases his preparation consists in an attempt to memorize the answers to a disconnected series of questions, rather than to secure a broad grasp of any of the subjects.

A serious attempt is now being made to reduce the number of subjects taught, and to require a more thorough training in a few fundamental courses. If this change is made, it will constitute a marked improvement over the present system. The course of study covers a period of five years, and includes the following subjects: —

*First Year* — Algebra; mathematics, geometry, Spanish, French, drawing, manual training.

*Second Year* — Advanced mathematics, Spanish; French, English, drawing, manual training.

*Third Year* — Mechanics, physics, Spanish, English, drawing, manual training.

*Fourth Year* — Chemistry, mineralogy, botany, geography, English literature, Spanish literature.

*Fifth Year* — Zoology, elements of anatomy and physiology, psychology, logic, general history, Mexican history, ethics, Spanish literature.

**Higher Education** — The movement for the establishment of a university in Mexico was initiated by Charles V, in 1551, but no courses were offered until 1553. From that time until the final abolition of this institution by the Juarez government in 1867, the only university organization existing in Mexico was under the direct control of the Catholic Church. As the demand for higher education, and especially for professional training, became more insistent, the government established a series of independent professional institutions. The medical school, the law school, and the engineering school grew up independently, each with its own director responsible to the Minister of Public Instruction. This form of organization proved unsatisfactory for many reasons, but especially because it prevented the development of any unity of purpose in higher education and was a permanent obstacle to the growth of that university spirit which exerts so marked an influence on the life and thought of the student body.

The necessity for closer coordination of university instruction became so pressing that the government finally decided to correlate the work of the several independent faculties. The centennial anniversary of Mexican independence was made the occasion for the inauguration of this plan. Under the law of May 26, 1910, the existing schools of law, medicine, engineering, and architecture were made integral parts of the new National University of Mexico. To this a graduate school was added, intended for the conduct of special research in every field of science. The National Preparatory School in the city of Mexico was also made an integral part of the new university organization.

The university is placed under the control of a president, designated as the Rector, and a university council, composed of the president of the university, the deans of the professional schools and the director-general of primary instruction. In addition, four members are designated by the Minister of Public Instruction, and two representatives from each of the professional schools are elected by the respective faculties. The student body is also represented on the university council by a provision which gives to the students in each of the professional schools the right to elect one of their number as their representative on the council. The council is given wide powers over university organization and administration, but the final authority in all important questions is vested in the Minister of Public Instruc-

tion The official inauguration of the university took place on the 22d of September, 1910. It is, of course, too early to express any opinion on the operation of the new system. The results thus far attained, however, are sufficient to indicate the importance of the step that has been taken. A spirit of solidarity among the students, as well as in the teaching staff, is rapidly developing. The cooperation that has been established between the various faculties is improving not only the content of the courses, but also the spirit of university instruction.

**Present Needs of the Educational System** — The experience of the last twenty-five years points clearly to the necessity of increasing the authority of the federal government in all matters relating to public education. With the nationalization of education Mexico will be able to meet two most pressing needs, namely, the extension of the system of manual and vocational training and the introduction of a well-organized system of agricultural instruction. Mexico is at present, and will for a long time continue to be, an agricultural country. Her greatest social as well as economic need is a small land-owning class. Recognizing this fact, the government has devised a plan for the allotment of small holdings, which involves the purchase of great estates and their subdivision into small farms. It is not likely, however, that this plan will be successful until agricultural education has become an integral part of the system of public instruction. This will mean that the curriculum of the rural schools will have to be changed in order to introduce those subjects which will attract the attention of the younger men of the country to agricultural pursuits. The Minister of Public Instruction has devised a plan with this end in view. A modest beginning has been made, but it is likely that the next few years will witness a marked development in this direction.

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**MIALL, EDWARD** (1809-1881) — English politician and Nonconformist minister, born at Portsmouth and educated at St Saviour's

Grammar School, London. After serving as usher in private schools, he was trained for the independent ministry. Receiving a call to Leicester, he was brought into intimate touch with the working classes. In 1840 he began to interest himself in politics and was strongly opposed to the established church and the Tory government. Adopting the *laissez-faire* principle, he was opposed to compulsion of all kinds, and in 1847 he delivered a lecture at Crosby Hall for the Congregational Board of Education, *On the Non-Interference of the Government with Popular Education*. In this address he strongly upheld the advantages of voluntarism. "The will of man to do good is usually most lusty and vigorous when compelled by circumstances . . . to 'rough it'."

When all is smooth and mechanical the spirits flag." Authorized education would kill spontaneity and intelligent and disinterested care. In a scheme of state education there was the danger also that a man might be taxed to spread opinions which he did not himself hold. Miall sat in the House of Commons from 1852 to 1857 and from 1869 to 1874. In 1870 his views on compulsory state education had changed, for he supported the Forster bill, and only criticised it because he regarded it as too favorable to the established church. Miall's chief service in English politics was to weld together and secure Parliamentary representation for a party strongly opposed to the established church, whose organ, the *Non-conformist*, he had founded in 1841.

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#### MIAMI UNIVERSITY, OXFORD, OHIO

— A coeducational institution founded by act of legislature in 1809, although as early as 1789 a proposal had been made for the grant of land for an academy or college. Instruction was begun in a log building, maintained as a "grammar school" until 1818, when a brick structure was erected. The school was raised to collegiate rank in 1824, and the first class was graduated in 1826. The institution made rapid progress under the first president, Robert H. Bishop. Annual state appropriations were not made until 1885. In 1902 the Ohio State Normal College was established in connection with the university, and gives two-year courses for grade teachers, manual training, art, music, domestic science, and rural industrial education. A summer course is also maintained in this department. Admission to the College of Liberal Arts is by certificate from accredited schools or by examination, the entrance requirements being fifteen units. Studies are arranged in a system of groups and free electives, and lead at the end of four years to the A B degree. The enrollment in 1911-1912 was 333 students in the college, 173 in the



normal college, and 548 in the summer term. The permanent staff consists of fifty-six members.

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**MICHELET, JULES** (1798–1874) — The French historian was teacher of history at the Collège Sainte-Barbe and at the Ecole Normale, investigator in the Record Office, assistant professor at the Sorbonne under Guizot, and professor of history at the Collège de France (1838). Deprived of his government positions through the political overturn of 1851, he was thenceforth compelled to make his way by his pen. His most famous work is his *Histoire de France*, in eighteen volumes (1833–1867). Among his other works are: *Précis d'Histoire moderne* (1828), *Histoire de la République romaine* (1831), *Introduction à l'Histoire universelle* (1831), *Origines du Droit français* (1837), *L'Oiseau* (1856), *L'Amour* (1859), *La Soucière* (1862); and *Nos Fils* (1869), this last being his chief educational writing. F. E. F.

**MICHIGAN AGRICULTURAL COLLEGE, EAST LANSING, MICH** — A state institution established by legislature in 1855 through the influence of the Michigan State Agricultural Society. This was the first state institution in the United States offering instruction in scientific and practical agriculture. It is under the control of the State Board of Agriculture. The entrance requirements are fifteen units. Five-year courses are offered to those candidates who have not completed a high school course. The following courses are offered: agriculture, engineering, forestry, home economics, leading to B.S., and the veterinary, leading to the D.V.S. Special short courses in agriculture and courses for teachers of agriculture are also given. The enrollment in all departments in 1911–1912 was 1702. The faculty consists of 140 members.

**MICHIGAN COLLEGE OF MINES, HOUGHTON, MICH** — Established by act of legislature in 1885 under the government of a board of control appointed by the governor. The institution is located in the heart of the great copper mining region of Lake Superior. Students are admitted by examination or diploma. The degrees of B.S. and Engineer of Mines are conferred on completion of the appropriate requirements. The enrollment in 1911–1912 was 222. The teaching staff consists of thirty members.

**MICHIGAN, STATE OF.** — A part of the Northwest Territory, organized as a separate territory in 1805, and admitted as the twenty-sixth state in 1837. It is located in the North

Central Division, and has a land area of 57,430 square miles. In size it is about as large as the six New England states, or England and Wales combined. The state consists of two peninsulas, which for administrative purposes are divided into eighty-three counties, and these in turn into townships or school districts. In 1910 Michigan had a population of 2,810,173, and a density of population of 48.9 per square mile.

**Educational History** — The early history of education in Michigan is largely the history of education in and about Detroit, a number of private and church schools of an elementary nature having been organized there before the organization of Michigan as a territory, the earliest date mentioned being 1755. In 1809 the first school act was passed, but was not even printed, and doubtless was a dead letter from the very first. It directed that populated territory should be laid off into school districts, a school census taken, and a tax levied, the proceeds to be apportioned to the districts in proportion to the amount spent the preceding year for schools. No further attempt to enact a general school law was made until 1827. In 1817, an act was passed creating the "Catholic-episcopalian, or University of Michigania," which provided not only for a single institution of high rank, but the faculty was also empowered "to establish colleges, academies, schools, libraries, museums, botanic gardens, laboratories, and other useful literary and scientific institutions," and to appoint teachers and other school officers in all the counties, towns, and cities of the territory. The central territorial government was to defray the expenses of all education. In 1818 a Lancasterian elementary school was opened in Detroit as a part of the scheme. In 1821 the 1817 law was revised, the University of Michigan established, and a board of trustees created to manage all the schools forming part of it. In 1837 the institution was organized, and in 1841 it opened its doors to men students for the first time. Women were not admitted until 1870.

In 1827 a new school law, which provided for a system of common schools throughout the territory and independent of the university, was enacted. The new law was modeled after the early school law of Massachusetts. Every township containing fifty families was required to support a primary school for six months; townships of one hundred families, a primary school for twelve months; townships of one hundred and fifty families, a primary school for six months and an advanced school for twelve months, and townships of two hundred families must, in addition, employ a grammar school master. The system was a township system, with a proviso, however, that the voters of a township might order the division of the township into districts and elect district boards of three trustees annually. By a two-thirds vote of the electors the law could be

nullified in any township. The schools were to be sustained by the rents from the school lands, and a tax on the property of residents. In 1829 the property of nonresidents was also included. A little later the township tax was abolished, except for indigents and school-houses, and the "rate bill" system was substituted for taxation. A superintendent of common schools was appointed to look after the school lands, and in 1836 this official evolved into a Superintendent of Public Instruction.

The constitution of 1835, adopted in preparation for entrance into the Union, made detailed provision for a state school system, and contained a definite mandate to provide a system of common schools whereby a school should be kept up and supported for three months each year in each school district of the state. The school laws of 1837, enacted in response to the mandate of the constitution, provided for a system of schools to be maintained in part by state appropriations, in part by local taxes, and in part by the rate bill. The law of 1837 drawn up by John D. Pierce, called the father of the Michigan school system, forms the foundation of the present system. Some progress was made in the better settled communities, but very little elsewhere. Detroit organized a graded school system under a board of education, in 1842, and provided free schools for its children, and in 1846 union district graded schools were permitted in the state for the first time. By 1850 seven such graded schools had been formed; by 1860, eighty-five, and after 1860 the progress was rapid, there being 248 by 1870, 389 by 1880, 513 by 1890, and 711 by 1900. A state institution for the deaf, dumb, and blind was established in 1848, and a separate institution for the blind was established in 1880. The state normal school at Ypsilanti was established in 1849, and an *ex officio* State Board of Education was created to manage the school.

In 1850 a new constitution was adopted which made much more detailed provision for a system of public education. An elected, instead of an appointed, Superintendent of Public Instruction was provided for; the school land fund was safeguarded; the legislature was ordered, within five years, to provide free primary schools, although it did not do so for nineteen years; a three months' school was ordered in every district, the method of election and functions of the board of regents for the university were specified, an elected instead of an *ex officio* State Board of Education, to manage the state normal school, was provided for; and township libraries were ordered to be established.

The first teachers' institute was held in 1846; in 1855 they were first authorized by law, and in 1877 county institute funds were created by requiring teachers to pay fees for examinations and certificates. In 1855 the State Agricultural College was established. Until 1861

this was under the control of the State Board of Education, but in that year it was transferred to the State Board of Agriculture. In 1855 an industrial school for boys was established, and in 1879 one was also established for girls. In 1871 a state institution for dependent children was established, and in 1880 a separate institution was established for the blind. In 1859 districts were permitted to organize high school departments, and in 1871 the University of Michigan began the accrediting system (*q.v.*) for entrance to the university. In 1869 the "rate bill" was abolished, and the schools finally were made free.

In 1867 a law was enacted creating county superintendents for each county, and establishing a form of the county system of school administration. The certification of teachers, which since 1837 had been in the hands of the township school inspectors, was now given to the county superintendent. In 1875 this law was repealed, township superintendents were created, and the certification was given to them. As this did not prove satisfactory, a board of three examiners for each county was created in 1881, and certification was given to them. In 1887 the law was revised so as to reduce the number of examiners from three to two, and the two were required to elect a secretary, who examined all teachers and acted as the executive officer of the board. In 1891 the secretary was changed into a county commissioner of schools, to be elected by the people. In 1879 the State Board of Education was directed to prepare questions for county teachers' examinations, and in 1887 their use by county examiners was required. From 1867 to 1875 the State Superintendent was empowered to grant state teachers' certificates, but in 1879 this power was given to the State Board of Education.

In 1871 the first "act to compel children to attend school," was passed, and in 1885 the first "act regulating the employment of children" was enacted. In 1885 the city of Saginaw was permitted to provide free textbooks, and in 1889 a general free textbook law was enacted for the state. In 1891 school boards were authorized to establish kindergartens, and the power to issue certificates to certain of its graduates was granted to the University of Michigan. In 1895 the Mt. Pleasant normal school, established privately in 1891, was accepted by the state. In 1899 a third state normal school was established in the northern peninsula at Marquette, and in 1903 a fourth state normal school was authorized to be established in the western part of the state. The same year normal training classes were also authorized for any county not having a state normal school.

In 1908 a new state constitution was adopted. The State Superintendent was made *ex officio* a member of the State Board of Education, and of all other boards having control of public

instruction in any state institution, the State Board of Agriculture was made a constitutional body, and its duties defined, the election of the Superintendent, the State Board of Education, and the State Board of Agriculture was changed from the November to the April elections, the maintenance of the university, the college of mines, the agricultural college, and the state normal schools was made mandatory, boards of township inspectors were abolished, and the minimum school term was raised from three to five months. Otherwise there were only verbal changes from the constitution of 1850. The legislature of 1909 established an educational and professional standard for the offices of State Superintendent and county commissioners, required districts to pay high school tuition for their pupils, and also authorized transfers, required instruction as to communicable diseases, and provided for state aid to agricultural high schools. The legislature of 1911 empowered districts to establish trade, vocational, industrial, marine, and manual training schools.

**Present School System** — At the head of the school system of Michigan is a State Superintendent of Public Instruction, elected by the people at the April elections for two-year terms. He is paid \$4000 per year, must be a graduate of a university, college, or normal school, and have taught five years in Michigan. He is a member, *ex officio*, of all boards of an educational nature in the state, but without a vote. He has general supervision of public instruction in all of the public schools of the state and in all public institutions which are educational in character, may require cities and districts to provide proper educational facilities, and may bring suit to enforce the law, may inspect the books of any school unit, must prepare rules for the management of township and district libraries, must apportion the school money to the townships and cities, must authorize the establishment of new county training schools, may request the governor to remove any county commissioner, or examiner, and must prepare an annual report to the governor and legislature.

The State Board of Education consists of four citizens, two elected at each biennial spring election, and the State Superintendent of Public Instruction, *ex officio*. The board is a body politic and corporate, has control of the courses of instruction and the management of the four state normal schools, grants certificates to teach to graduates of these schools, examines candidates for life diplomas, may approve teachers' certificates and life diplomas from other states, may approve the pedagogical course in colleges and universities, other than the University of Michigan, for the teacher's certificate, adopts a textbook in physiology and hygiene for use in the schools, and makes an annual report to the governor. The board must meet at least twice each year, and the

members are paid \$3 per day and expenses for their services.

For each county the voters elect a county school commissioner, at the April elections, for a four-year term. The board of county supervisors fixes the compensation of the commissioner and his deputies, if he has any. On the recommendation of the State Superintendent he may be removed from office by the governor. To be eligible, each county commissioner must have had twelve months' experience as a teacher in the schools of Michigan, and must be a graduate either of a college or of a normal school, or hold a first-grade teacher's certificate. In counties having fifty or less teachers a second-grade teacher's certificate will answer. It is his duty to keep a record of all examinations held, sign all teachers' certificates, keep all records, collect the institute fees, furnish the township clerks with a list of authorized teachers, visit each school at least once each year, and make an annual report to the State Superintendent and act subject to his instructions. His powers and duties are rather limited, and his salary very small. The county supervisors appoint two county examiners, for two-year terms, and these, together with the county school commissioner, constitute the county board of examiners. The examiners must hold valid teachers' certificates. They give two examinations each year, and an extra examination in October, using questions prepared by the State Superintendent of Public Instruction.

Below the county school authorities are the township officials, and the townships may be still further divided into districts. In the northern peninsula the township organization has supplanted the district organization, and in the southern peninsula, the beginnings have been made. Where the township organization has been instituted, a township board of five trustees, elected at large, controls the schools of the township, outside of cities and graded school districts. This board reports to the township clerk and treasurer, and to the county commissioner. Elsewhere, where the district form of organization prevails, annual school meetings are held in July in each district, and each school is under the management of a board of three district school officers, elected for three-year terms, consisting of a moderator, director, and treasurer. This board is a body politic and politic, may build schoolhouses, estimate and vote money for maintenance, hire teachers, purchase books for indigents, make rules and regulations, admit and suspend pupils, and must take an annual school census and make an annual report to the district meeting in writing, and to the township clerk. The director usually has charge of the schoolhouses and grounds, makes purchases and repairs, acts as clerk of the district, and compiles the annual reports. The treasurer keeps all accounts, pays all bills, and reports to the

township treasurer. The township clerk reports to the county school commissioner.

An annual meeting of school officers of each county is held by the county school commissioner, and one member from each district or township board is expected to attend. He is allowed \$2 per day and expenses for so doing. Graded school districts may be formed in any district, or by two or more contiguous districts, by a majority vote at any annual school meeting. For such, a board of education of five is elected at large, and, if the district employs six teachers, it may also employ a superintendent. Such a district may also establish a high school. On petition of one third of the taxpayers of any township not having in it an incorporated city or village, the township board shall submit to a vote the question of forming a rural high school. If adopted by a majority, a board of three trustees is elected to manage the school and to raise taxes for it. The course of instruction is fixed by the State Superintendent. Very few such schools have so far been formed. Boards of trustees in districts not maintaining a high school may pay tuition and transportation of pupils in neighboring high schools. Any township, city, or district may maintain a school library, and any township may divide its library among the school districts. A librarian may be appointed, and any township may levy an annual township library tax. All county fines for breaches of the penal laws go to the county library fund, and the state also makes an annual grant. Such funds are apportioned to the different townships, cities, and districts maintaining libraries, on the basis of the number of school census children in each. A State Board of Library Commissioners, appointed by the governor, and consisting of four citizens and the state librarian, *ex officio*, advises with libraries as to their work, and all free libraries report to them through the county school commissioners. This board is allowed \$4800 per year for its work. Nearly all townships and districts report libraries, the township libraries averaging about 1000 volumes, and the district libraries about 600 volumes. Each township, city, or district selects its own textbooks and contracts directly with the publishers, and any district may vote at an annual meeting to provide free textbooks. About one sixth of the districts provide free textbooks. Any district may establish a day school for the oral instruction of deaf children, and the state will grant aid up to \$150 per year per pupil.

**School Support** — The state originally received 1,067,397 acres of land from Congress from the sixteenth-section grants made to the states for education, two townships of land (46,080 acres) for a seminary of higher learning, and 240,000 acres for a college of agriculture and mechanical arts. In 1850 Congress also gave to Michigan 5,838,775 acres of swamp land for schools. The two funds now amount to about

five and a quarter million of dollars. The state pays interest on the sixteenth-section fund at 7 per cent, and upon the swamp-land fund at 5 per cent, and the income is distributed to the schools on the basis of school census, being worth about forty-seven cents a child at present. The two college funds now amount to about a million and a half, and the income is about \$100,000 a year. There is also a normal school fund of \$68,822, which produced \$4168 for the normal school in 1910.

To the income from the sixteenth-section funds is added the surplus from specific state taxes (corporation taxes), which vary somewhat from year to year, but amount to about three quarters of a million dollars annually. The addition of the surplus taxes has caused the state apportionment to increase from forty cents to fifty cents per pupil, between which it varied up to 1880, to \$1.33 by 1890, \$2.15 by 1900, \$3.50 by 1905, and to about \$6 at present. The total sum is apportioned by the State Superintendent to the counties, and by the counties to the townships and districts, on the basis of school census. This pays a little more than one half of the cost of the school system. A township one-mill tax is levied, which is apportioned to the districts on the basis of the amount each pays. The remainder (about 40 per cent) comes from additional local taxation. The undesirability of the school census as a basis for the apportionment of school funds (see APPORTIONMENT OF SCHOOL FUNDS) is nowhere better illustrated than in Michigan, where some districts have a struggle for existence, while others possess accumulations sufficient to run the schools for many years. At the date of the last report, 861 school districts had enough teachers' wage money on hand at the end of the year to run the schools for at least two years, while some had enough to run the schools from ten to twenty-two years.

The total amount expended for the maintenance of schools for the last year for which reports are available was \$13,223,773, or a per capita of the total population expenditure of \$4.70. The average term provided is about eight and one half months. The percentage of attendance based on enrollment averages about 70 for the state, while in the city districts it averages a little over 95.

**Educational Conditions.** — The southern part of the state has a number of important manufacturing cities, but the northern part is sparsely settled. About 30 per cent of the total population live in these southern cities, about 10 per cent in small towns, and 60 per cent under rural conditions. The larger southern cities (Detroit, Grand Rapids) are very cosmopolitan, but the rural sections are largely of American and Canadian stock. The average for the state is about 75 per cent native. Only about  $\frac{1}{2}$  of 1 per cent of the total population is of the negro race, and separate schools on account

of race or color are prohibited by law. The percentage of illiteracy is comparatively low, being but 4.2 per cent and confined almost entirely to the foreign population in the cities.

The state has a good compulsory education law, with fairly effective means for its enforcement, all children seven to sixteen years of age being required to go to school the whole time the public schools are in session, unless excused for certain specific reasons. The employment of children under fourteen during school time is prohibited, but children from fourteen to sixteen may be allowed to work if they have completed the eighth grade, and if they have a work certificate from the school authorities. The sheriff of each county must appoint a county truant officer, who is allowed \$3 a day and expenses. Teachers must verify census lists, and report absences to the county commissioner. Deaf pupils must also go to the day schools for the deaf, or to the state school for the deaf. Blind children, with certain exceptions, must also go to school. Any school board may establish an ungraded school for truants. Disorderly or incorrigible boys under sixteen, and girls under seventeen, may be sent to the state industrial schools.

The state has good schoolhouses, the 8453 schoolhouses in the state averaging about \$4000 each in value. Many towns and cities, as well as many country districts, have schools of high grade. On the other hand, many village and town schools are inadequately financed, and are of low grade. This inevitably happens in a state using the census basis of apportionment as the sole basis. Agricultural instruction has been made a marked feature during recent years, and manual training and domestic science have been introduced in many places. The consolidation of schools has made some headway in the better settled portions of the state, and the township unit, which leads to similar results, is being urged for adoption generally in the southern peninsula, as it has been in the northern.

**Teachers and Training** — The state employed approximately 15,000 teachers in 1910, about one half of whom were employed in ungraded rural schools. About 17 per cent of the total number were men. Five grades of certificates are granted on examination. The first and second grades require previous teaching experience of nine and seven months, and are valid for four and three years respectively. The third grade "A," for primary work only, requires three years' previous experience, and is valid for three years. The third grade "B" and "C" are valid for one year only, "C" being limited to a particular district. Graduates of the state university and of the Southern Agricultural College receive certificates, on certain conditions, and the State Board of Education may accredit other colleges. Normal school graduates are also certificated on graduation, and normal school diplomas from other

states may also be endorsed by the State Board of Education. Cities employing a superintendent may certificate their own teachers, if they so desire.

The state maintains four state normal schools for the training of teachers, located at Ypsilanti (1852), Mt. Pleasant (1895), Marquette (1899), and Kalamazoo (1903). These maintain regular normal school courses, and each must also maintain one course preparatory for rural school work. A marked feature of the Michigan system for the training of teachers is the county training school. Since 1903, in any county not containing a state normal school, any district and the board of supervisors of the county may vote to unite in establishing a county training school (see **TEACHERS, TRAINING OF**) for the better preparation of teachers for the rural schools. The establishment of any school must be authorized by the State Superintendent of Public Instruction, and he, together with the county commissioner of the county and the superintendent of the schools of the district, constitutes the county training school board. They regulate admissions, establish a one year's course of study, and grant diplomas of graduation. Graduates may teach, for three years, in any school in the county not having over two teachers, and the board may renew the certificate on evidence of success. The state grants aid of \$500 for each training school teacher employed, up to two teachers, and the county grants aid up to one half of what the state gives. Before 1903 less than 2 per cent of the rural teachers of Michigan had had any professional training, while now over 30 per cent have had at least one year of professional preparation. About fifty such schools were in operation by 1910. Teachers' institutes are held in each county each year, and all male teachers are assessed \$1 and female teachers fifty cents each year to provide an institute fund.

**Secondary Education** — The high school system of the state is well organized, there being about 400 public and private high schools in the state, nearly all of which maintain a four-year course and close relations with the University of Michigan (see **ACCREDITED SCHOOLS**). In 1907 county schools of agriculture were authorized. Any county, or two or more adjacent counties, may vote to maintain such a school, which is placed under the management of a county board of education, consisting of the county school commissioner and four citizens appointed by the county supervisors. The schools must teach agriculture, domestic science, and manual training. The course of instruction is determined by the State Superintendent and the president of the agricultural college. Such schools must have ten acres of land. If the school has cost \$20,000 and has 100 acres of land, the state will grant aid up to two thirds the cost of maintenance, but not over \$4000.

**Higher and Special Education** — The state maintains the University of Michigan (*q.v.*) at Ann Arbor, opened in 1841, which is one of the largest and best of the American state universities, and one which has long rendered important service. The state also maintains the Michigan Agricultural College (*q.v.*) at East Lansing, opened in 1857, and the Michigan College of Mines (*q.v.*) at Houghton, opened in 1886. These stand as the culmination of the system of public instruction provided by the state. In addition to these, the following institutions within the state offer collegiate instruction. —

INSTITUTION	LOCATION	OPENED	CONTROL	FOR
Albion College	Albion	1843	M E	Both sexes
Hillsdale College	Hillsdale	1855	Nonsect	Both sexes
Kalamazoo College	Kalamazoo	1855 (?)	Bapt	Both sexes
Adrian College	Adrian	1839	Meth Prot	Both sexes
Olivet College	Olivet	1839	Cong	Both sexes
Hope College	Holland	1806	Refd	Both sexes
Detroit College	Detroit	1877	R C	Men
Alma College	Alma	1887	Presby	Both sexes

The state also maintains the Michigan School for the Blind, at Lansing, the Michigan Employment Institution for the Blind at West Saginaw, the Michigan School for the Deaf, at Flint, the Michigan State Public School for poor and dependent children, at Coldwater; the Michigan Home for Feeble-Minded and Epileptic Children, at Lapeer; the State Industrial Home for Girls (reformatory), at Adrian; and the Michigan Industrial School for Boys (reformatory), at Lansing. E P C

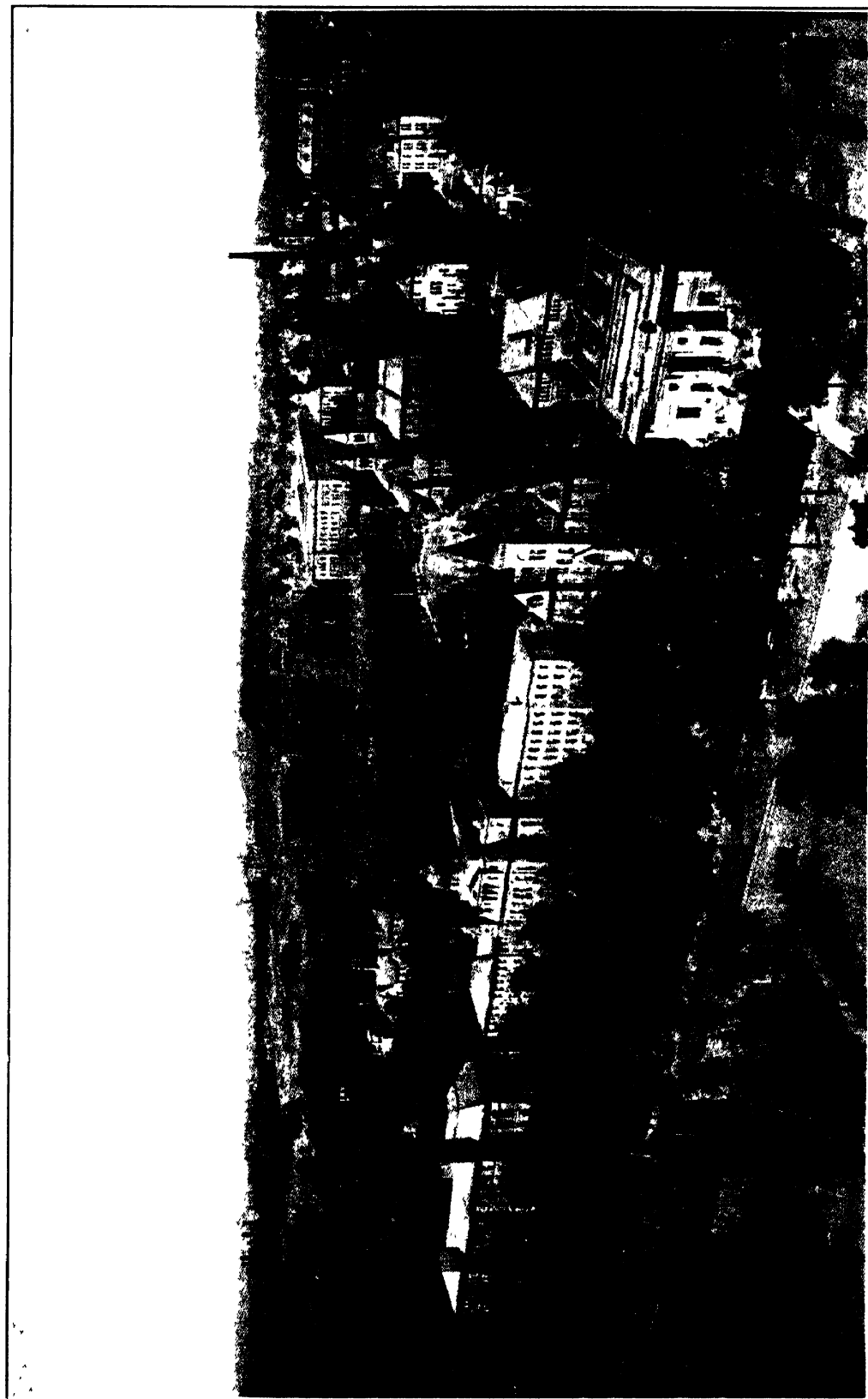
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**MICHIGAN, UNIVERSITY OF, ANN ARBOR, MICH** — The first of the state universities to take and hold a position of prominence and leadership among American universities. It was the first institution to utilize with some degree of wisdom the Congressional land grants, made from 1787 onwards, for the promotion of higher learning in the newly created states. The Constitution of 1835 under which Michigan came into

the Union made it obligatory upon the legislature to create from the sale of these lands a permanent endowment for a university and to provide a secure investment for the funds. The first legislature, acting under the advice of the State Superintendent of Public Instruction, John D. Pierce (*q.v.*), passed the enabling act of 1837 under which the Regents, eighteen in all, were to be named and the various departments provided for. Following the Prussian idea, the new institution was distinctly thought of as an integral and crowning part of a state system of public instruction, and it has come more and more to realize this ideal. Three departments were specified: (1) The Department of Literature, Science, and the Arts; (2) The Department of Law; (3) The Department of Medicine. There were also a number of so-called "branches" in different towns, which were fostered by the Regents as tributary to the University, but for lack of funds these had to be left to their own fate after a few years, and in their place sprang up the union or high schools which continued to supply the need. The University was opened for students in 1841, and the first class consisting of eleven members was graduated in 1845. Defects in organization soon became apparent, and the constitution of 1850 reconstituted the governing board, reducing the number to eight, and adding very materially to its powers. The Regents now became a constitutional body and were given absolute control of all moneys received from the interest fund and from fees, without any interference or direction from the state capitol. This feature of the fundamental law, which all subsequent revisions have left unchanged, was at that time unique and is generally believed to have been an important factor in the subsequent prosperity of the institution.

The new constitution directed the Regents to appoint a President who should preside at their meetings (but without a vote) and who should be the principal executive officer of the University. The choice fell upon Henry Philip Tappan, of New York, a graduate of Union College and of Auburn Theological Seminary, a man of wide experience as an educator, and a writer of repute on educational and philosophical subjects. This appointment may be considered the most important single event in the history of the University. During the eleven years of the Tappan administration (1852-1863) the institution was transformed. A nonclassical course was offered, and the degree of Bachelor of Science was first conferred in 1855; courses in engineering were established; the chemical laboratory was built; the astronomical observatory was opened, with Dr Francis Brunnow as director; graduate study was projected and a beginning made; a department of law was organized (1859). The attendance was quadrupled and became national in character. Names now



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appeared on the faculty rolls which were to shed lasting fame on the University — amongst others, Henry S Frieze, Corydon L Ford, Thomas M Cooley, and Andrew D White. President Haven (1863-1869) carried forward the policies of his predecessor. During this period the courses in engineering were developed under the direction of Professor De Volson Wood (*qv*), and the work in English and rhetoric received a marked impulse under Professor Moses Cort Tyler (*qv*). Then also Edward Olney began his memorable career at the University as a teacher of pure mathematics. From 1869 to 1871 Professor Henry S Frieze (*qv*) was acting president. These years are noteworthy for two changes which have exerted an important influence upon the educational history of this country: women were admitted to all departments on an equal footing with men (1870), and the so-called diploma or certificate system of admission from approved high schools was instituted.

In 1871 began the long administration of James Burrill Angell, extending over thirty-eight years. During this period the College of Dental Surgery was added, and the same year (1875) the Homœopathic Medical College. In 1876 the School of Pharmacy was organized as a separate department, and the Department of Engineering in 1895. In 1878 the elective system was greatly extended, and a closer relation was established between the University and the public high schools of the country. From this time the institution developed rapidly in many directions. The attendance multiplied, the income steadily increased, the faculties were enlarged, and long before his retirement the institution had taken on an international character. All this had been made possible by the attitude taken toward the University by the state legislature shortly before President Angell's advent. Hitherto the income of the University had been restricted to the interest on the land-grant fund (then yielding something less than forty thousand dollars) supplemented by student fees. The legislature now laid an annual tax of one twentieth of a mill on the taxable property of the State for the aid of the University. This rate has been increased from time to time till the annual income from this source is now something over eight hundred thousand dollars. The annual budget at present (1912) shows an expenditure of about a million and a quarter dollars. The attendance has reached a total of 5582, distributed in every state and territory of the Union and in thirty-three foreign countries.

On President Angell's retirement in 1909, he was succeeded by Harry Burns Hutchins, who had been Dean of the Department of Law since 1895. President Hutchins has been especially active in organizing more closely the alumni of the State, in establishing res-

idence halls for the women students, in securing fellowships for the encouragement of graduate studies and in advancing the standards of the professional schools. I. N. D.

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**MICROCEPHALOUS** — Having a small head. Individuals having a head with a circumference less than 42.5 centimeters (17 inches) are counted in this group. With this condition there is associated microcephalus, or diminished size of brain. Brain weights in microcephalics have been found to be from 200 to 800 grams (normal weight being from 1300 to 1500 grams). All individuals with microcephalus have only the rudiments of intelligence. S. I. F.

See CRANIOMETRY; CRETINISM, DEFECTIVES

**MIDDENDORF, WILHELM** (1793-1853) — German educator, friend and coworker of Froebel (*qv*), born in Brechten, Westphalia, and educated at the gymnasium at Dortmund and the University of Berlin, where he studied philosophy under Fichte and theology under Schleiermacher. In 1813 he joined the volunteer corps of Lutzow and took part in the War of Liberation. In 1817 he was called by Froebel to Keilhau (*qv*), where he remained until his death. He carried on the work of Froebel and did much for the general introduction of the kindergarten. F. M.

**MIDDLE AGES, EDUCATION DURING THE** — The educational activities, interests, and institutions of the Middle Ages are treated of under a variety of headings. The foundation elements of this period are considered in the articles on CHRISTIAN EDUCATION IN THE EARLY CHURCH, THEOLOGICAL EDUCATION, and the various articles on the individual Church Fathers. The articles on NEO-PLATONISM, MYSTICISM, and STOICISM treat of the philosophical elements entering as historic factors; the section under ROMAN EDUCATION on the late historic period is also of significance. The actual educational activities of the period, especially as they center around institutions, are presented in the articles on CHURCH SCHOOLS, ABBEY SCHOOLS; CLOISTER SCHOOLS; CONVENT SCHOOLS, and the articles on the various Monastic Orders and education.

See also the article on TEACHING ORDERS OF THE ROMAN CATHOLIC CHURCH. Supplementing these are the articles on COLLEGE; COLLEGIATE CHURCH SCHOOLS; GRAMMAR SCHOOLS; BISHOPS' SCHOOLS; CHANTRY SCHOOLS, HOSPITAL SCHOOLS; GILDS AND

**EDUCATION** See also the articles on **LATIN**, **GREEK**, **LOGIC**, etc. For the legal side see especially **CANON LAW**, **EDUCATIONAL PROVISIONS IN**. The most significant phase of education during the late Middle Ages is discussed under the origin and early work of the **UNIVERSITIES**. As preliminary to the movement, the article on **SCHOLASTICISM AND THE SCHOOLMEN** is also of vital importance. The curriculum is dealt with in the article on **LIBERAL ARTS**; see also the medieval section of the various articles on the subjects of study. Connected with this subject also are the articles on **MYSTICISM**, **NEO-PLATONISM**, and **REALISM**. These topics all deal with education as it is connected with the Christian Church.

There are two other additional phases of education during the Middle Ages of great if not of similar importance. One relates to secular education; that is, of nobles and the ruling classes. This phase of education is presented primarily under the captions **CHIVALRIC EDUCATION** and **GENTRY AND NOBLES, EDUCATION OF**. Related to these are numerous articles on the writers of works relating to this education, as Castiglioni, Peacham, etc. See also the articles on **MANNERS AND MORALS**, **EDUCATION IN**, and on **SOCIAL REALISM**. The third phase of education is that relating to the common people. Here there is little organized effort and few institutions. But the fundamental aspect of the education of the great masses is discussed under **APPRENTICESHIP AND EDUCATION**. Related to this are the discussions of the **POOR LAW AND EDUCATION**, and **GILDS AND EDUCATION**. The following discussion will relate only to the general conditions of the Middle Ages. In this connection read also the articles on the **RENAISSANCE**, **EDUCATION DURING THE**, and **REFORMATION AND EDUCATION**, for tendencies at the close of the Middle Ages.

**General Characteristics** — Both the matter and the manner of education in the Middle Ages have been commonly conceived as something *sui generis*, a product, and a not very important product, of the Middle Ages themselves. Medieval education has been represented as different alike in source, subject, and scope from the education of ancient times which preceded it and that of modern times which followed it. Medieval education has been supposed to be separated from that of ancient times by the deluges of the coming of Christianity and the barbarian invasions, and from that of modern times by the hiatus of humanism and the Reformation. In fact, education in the Middle Ages was carried on without a break from the heathen and ancient world and continued without a break into the humanistic and modern world. The educational institutions of the Middle Ages were the direct offspring of the educational institutions of Greece and Rome and the direct parents

of those of England, Germany, and America. The very stuff of which education was woven, a study of the language and literature of Rome, and at intervals of those of Greece, was practically identical from the days of Cicero, we may almost say of Demosthenes, to the days of Gregory the Great, and from the days of Gregory the Great to those of Thomas à Becket, of Luther and Cranmer, and since then to the days of the younger Pitt and Washington, of Bismarck and Gladstone. Or, looking not at the educated, but the educators, we find a continuous line from Chrysippus to Quintilian, from Quintilian to St. Augustine, from St. Augustine to William Waynflete and Thomas Wolsey, from them to Thomas Arnold (*qq v*). There has been indeed a greater change in the subjects of education since 1850 than there was during the whole period from 450 B C to A D 1850. But there is one important difference between the education given in the years from A D 450 to A D 1450 which marks that millennium off as a separate epoch in the history of education and distinguishes it emphatically from the periods which precede and follow it, and may almost be taken as defining the era of the Middle Ages itself. This difference lies not in the institutions, in the subject, nor in the method of education, but in its object. Till the middle of the fifth century the object of education was to fit a man to be a good citizen and a successful man of the world. From the middle of the fifteenth century the same object began to be put forward, and from the middle of the sixteenth century became the accepted object of education. But in the thousand years between education had a different object. The main object of education was no longer to prepare a man for this world, but for the next; no longer to make him a good citizen or to be successful in this life, but to be a good Christian and to attain successfully the world to come. For patriotism, was substituted religion, for the promotion of society, the saving of a man's own soul. The whole of education was dominated by the Day of Judgment and the dread of the world to come, and the necessity of the appeasement of the Judge by self-abasement and self-torture, by constant prayer and assiduous asceticism. The Stoic philosopher and the Essene met together and, reincarnated as monk, conquered the world. (See **MONASTIC EDUCATION** for related articles.)

**Fusion of Christian and Roman Education.** — It was not merely the coming of Christianity which produced this change. The early Christians (see **CHRISTIAN EDUCATION IN THE EARLY CHURCH**) took the schools as they found them. They used the public grammar schools and rhetoric schools as they had come down from the unendowed schools of Athens and Alexandria. Quintilian, c 91, marked a transition from the old to the new style, from the voluntary fee-paying school to the endowed

free school At the beginning of the third century after Christ, Alexander Severus had made endowed schools general; the Christian Emperor Constantine, in 321, extended the privileges of the masters and set an example for the medieval clerks by exempting them from military and municipal service; and the anti-Christian Emperor Julian, in 362, also anticipating the royal prerogative in the matter of clerical appointments, made the appointment of masters by municipalities subject to imperial confirmation (See GRAMMAR SCHOOL) The Christian Gratian in 376 settled a universal and high scale of salaries for the various masters of Latin and Greek grammar and of rhetoric It is noticeable that even then Greek was becoming a rarity in the schools of the West as the appointment of a Greek master at the then capital Trier or Treves was conditional "if a fit one can be gotten" It may be remembered that St Augustine, who was born in 354 and was therefore at school in the decade before Gratian's edict, was taught Greek, but hated it and never mastered it He himself kept a rhetoric school first at Carthage and then at Milan, when he became a Christian and then a bishop Sidonius Apollinaris, born in 431, was educated at Lyons Grammar School with Avitus, who rose to be for a short time Emperor, and himself, after being Prefect of Rome, became a bishop and a saint In 483 he wrote a poetical epistle to the rhetoric schoolmaster at Perigueux, and a letter to his son, when following him at the grammar school at Lyons, warns him much as a modern father might against loose talk, and encourages him to take an interest in his Vergil and Homer

In Italy the schools continued in spite of the barbarian conquests, for the Goths were Christians Theodoric's own grandson was sent to a grammar school and flogged in the usual way till the nobles (c 525) protested against his spirit being broken and demanded that he should be trained in the use of arms instead Gregory the Great (qv) is said to have learned grammar, rhetoric, and logic in the schools of Rome But his works contain small traces of classical culture, and he was perhaps the last man of enunence to be brought up in the old way In Gaul the public schools of grammar and rhetoric had meanwhile disappeared, though it is impossible to fix the exact moment of their disappearance, and so far as schools existed at all they were maintained by the bishops They had fallen like the municipalities which controlled them, under ecclesiastical control

**Monasticism and Learning and the Early Middle Ages.** — It is clear that the monastic spirit was gradually invading the Western church as it had already done the Eastern, and tending to displace the study of classical literature. The fifth century witnessed the rise of a school of Christian poets, who en-

deavored to substitute the Jewish and Christian mythology in literature for the pagan. The first attempt in this line seems to have been made by a lady, Proba Valeria Fullonia, wife of a proconsul in Gaul at the end of the fourth century with *Centones Vergilian*, which consisted of lines of Vergil wrested from their context and rearranged so as to make a patchwork life of Christ Earlier, Sedulius, about 450, master or past master of a rhetoric school in Italy, wrote a work in better taste, called *Carmen Paschale*, probably in parody of Horace's *Carmen Seculare*, in which the life and death of Christ is made the subject of a long poem in Latin hexameters on the Vergilian model He was followed by a whole school of authors, chief among whom was Aurelius Clement Prudentius (qv), a rhetoric master and lawyer at Rome, who has been called the Christian Pindar In a wonderful variety of meters, his daily hymns, *Liber Cathemerikon*, and his *Psychomachia*, or *Battle of the Soul* between virtues and vices, were published in 409 We have evidence that they were a favorite schoolbook in the fifth, the tenth, and the fifteenth centuries Juvenecus (qv), another rhetoric schoolmaster in his *Historia Evangelica*, turned the Gospels into Vergilian hexameters, and Dracontius, pupil of the grammar schoolmaster Felicianus "who restored letters to Carthage," wrote hexameters, *De Laudibus Dei*, between 484 and 496 All these poets write with a more or less conscious desire to supersede their classical but pagan models as schoolbooks, and Pope Gelasius, in 496, specially commended Sedulius for this purpose. Perhaps it was the use of the original Vergil instead of these new poets which drew down on the devoted head of Bishop Desiderius of Vienne in 597 the fierce rebuke of Gregory the Great "We cannot relate without shame that it has come to our household that your brotherhood teaches grammar . . . since the praise of Christ cannot lie in one mouth with the praise of Jupiter Consider yourself what a crime it is for bishops to recite what would be improper in a religiously minded layman" We cannot doubt that what Gregory had in his mind was the line in Vergil's *Eclogues*, always a favorite schoolbook, *Ab Jove principium, Muse, Jovis omnia plena*, and the loves of Corydon and Alexis We must remember that Gregory was the first monk to become Pope, and it shows how even in a nobleman of Rome, ex-prefect and imperial official though he was, the monastic spirit was tending to destroy culture and the classics We do not know whether Didier answered this missive, but he had an answer ready to his hand in Augustine "On Christian Teaching" (ii 39-42), who laid down that all branches of heathen learning, while containing much superstition, "contain also liberal instruction adapted to the use of the truth" and cites Lactantius, Cyprian, and other

Fathers who were "laden with the spirit of the heathen," while Moses himself was "learned in all the wisdom of the Egyptians." The reasoned defense of learning not only of grammar, but rhetoric and even logic, contained in this work of Augustine, written in 427, was one of the main influences which prevented the monastic furore, which attacked schools as it attacked marriage and other institutions, from converting the Dark Ages into absolute blackness. But it was into the hands of bishops and not of monks that the rule and government of cities and of schools had fallen. But Gregory of Tours (*qv*) shows that not all the bishops themselves had the learning of Didier of Vienne. He had learned to read at the age of eight, but he was taught by reading not the classics, but the Scriptures, and never learned grammar properly, though his teacher was Avitus, Bishop of Clermont. In later days at Tours, with the advent of Venantius Fortunatus perhaps, who had "sipped the ills of grammar and drunk the deep pools of rhetoric in Italy," he read, whether in an anthology or otherwise, Vergil, his quotations from which, dragged in and unassimilated, "he like lumps of marl upon a barren moor." The growing asceticism shows itself in the necessity under which Venantius, a litterateur born if ever there was one, found it necessary to write a labored *Life of St. Martin* in hexameters, and Gregory of Tours, a born historian, had to supplement his invaluable *History of the Franks* by the *Glory of Confessors* of the faith. M. Paul Roger has set himself to show that all the reputed educated men of the succeeding generations, 590 to 650, had received no more instruction than that of learning Latin in and by and for the sole purpose of understanding the Scriptures, and certain it is that the lives of the saints, which afford our sole knowledge of these schools, speak almost invariably of their being instructed in sacred letters (*sacris litteris*) or divine learning (*divinis disciplinis*). General education and, by consequence, general learning had died out in Gaul. In Spain, on the other hand, where the controversy between Arians and Catholics still prevailed, learning was kept alive. King Sigebert, to whom Isidore of Seville had dedicated his *De natura rerum*, which remained one of the great works of the Middle Ages, was himself partly learned, *scientia litterarum ex parte imbutus*. Isidore, brother of the Archbishop of Seville, was the most learned man of the age. He forbids, indeed, monks to cultivate learning. "A monk should eschew reading gentle works or the writings of heretics; for it is better to remain in ignorance of their pernicious teachings than by trying thus to run the risk of flying into the snare of error." But he does not apply his prohibition to the clergy who lived in the world and had to preach. "Ignorance is the mother of error and the nurse of vice." "Better grammar than heresy." His

*Etymologies*, the great encyclopedia of the Middle Ages in twenty books, is full of quotations from classical authors, and though there is some reason to think that it was intended to supersede the dangerous necessity of referring to the originals, it did, in fact, materially tend to prevent their being altogether barred. In science it proved to be a last flicker of the torch. It was, however, to England that the credit is due of preserving learning from complete extinction by a system of education. If Bede (*qv*), who, it is true, wrote a century after the event, is to be trusted, in 631 there were still grammar schools in Gaul and in Kent, which served as a model for the rest of England. Sigebert, king of the East Angles, was converted to Christianity when an exile in Gaul. Wishing to imitate what he had seen well done there, he set up a school in which boys should be taught letters (*litteris erudirentur*), and when this word is used without qualification it must be taken to mean, unless the context otherwise requires, grammar, that is, learning Latin by reading Latin authors, and probably classical authors. Sigebert did not, however, find it necessary to import his schoolmasters direct from Gaul, but with the assistance of Felix, a Burgundian, then living in Kent, whom he made bishop of his kingdom, he gave them masters and ushers after the fashion of Canterbury (or Kentish) custom. As the date is only thirty years after Augustine's settlement at Canterbury, it is to be inferred that both at Canterbury and later at Rochester, when a bishopric was created there, the first archbishop had instituted grammar schools. A generation later by a fortunate accident there came to England the Greek archbishop Theodore, who, though then a monk at Rome, had been born at Tarsus in Cilicia, and, presumably before he became monk, had been well instructed both in secular and divine letters, Greek as well as Latin. Accompanied by the African, Adrian (*qv*), who was in a monastery near Naples, and, therefore, also knew Greek as well as Latin, they went all over England, not only preaching, but teaching. The Romans of the day despised Greek. Gregory, though he was Papal nuncio in Constantinople for five years, never took the trouble to learn Greek; it is fair to say that he was a monk at the time. But the English, being still new alike to Christianity and to education, had no such views. To them Greek, like Latin, came with all the glamor of the ancient civilization, and there was no danger of their worshipping Zeus or Venus, because they read Homer or Ovid, as was the case with the lingering paganism of Italy or even Gaul. So Theodore and Adrian taught not only the way to read the Scriptures, but the art of meter and astronomy and profane (*secularibus*) literature. Hence it was that whether the grammar schools instituted by Augustine taught the

classics or not, the grammar schools as reformed by Theodore certainly did. Hence it came about that the monastery at Jarrow was redeemed from being a mere abode of English-speaking monks and became the home of Bede and of learning, that Winifred and Willibrod handed on to Germany and Holland, not merely Christianity, but schools in which a classical education was given, and that Alcuin gave back to France all and more than all that France and Italy had given to England through Augustine.

It was not that there was any mysterious virtue in the mere learning of Greek, as some writers on the Renaissance or on modern education appear to think. The knowledge of Greek did not prevent the Eastern Empire from sinking even lower than the Western. It was that the mere fact of bilingual study appears to have a sharpening effect on the intelligence as appears in the superior acuteness of the Welsh to the English schoolboy, and this mere fact of opening up another literature enlarged the horizon of thought and the breadth of mind. Though the study of Greek died down again in the third generation, after Bede, especially in the north, there is reason to think that it lingered on in Kent and Wessex till the Danish invasions began again after Athelstan. The outbreak of English culture, which followed Alfred's reconquest of the south, and the place given to English in Alfred's scheme of education may be largely due to the competition of the second learned language, which made him realize that all learning was not necessarily shut up within the walls of the Latin language, and that as the Greeks prayed and taught in their own tongue, so might the English. It is clear from Alcuin's account of the school at York as taught by Archbishop Albert and himself that the old distinction between the grammar school and the rhetoric school had disappeared. Not that rhetoric itself or logic ceased to be cultivated. But as in the days of Quintilian the grammar school, as he conceived it, limited to teaching grammar and expounding the poets, was trenching on the sphere of the rhetoric school by reading also the historians and teaching the elements of oratory; now that the school was not preparing citizens for the forum, but clerks for the church, rhetoric fell into a secondary place, and, though the art of speaking was still useful for a preacher, it became relegated to a comparatively unimportant position in the school, which, if given a single name, would have been the grammar school. In the same way a modicum of mathematics, only enough to fix the calendar and find the right time for Easter, was taught and a little law, whereas the law schools at Rome and Berytus had been great and separately endowed.

At a Synod in Bavaria in 774 it was ordered that every bishop should establish a school at his see with a learned master to

teach according to the tradition of the Romans. The Synod of Aachen in 789 under Alcuinian influences ordered that not only every bishop's see, but also every monastery, should have schools of readers as well as singers and of writers of correct MSS. But the monastic schools were closed again by the Synod of Aachen in 817. From that time education for others than the monks in the monasteries was exclusively a matter of concern to the secular clergy. Efforts were made from time to time to extend it to the laity, also. From Alcuin's words it would appear that every noble child could be educated in York School, and a letter of Alcuin's shows that Charlemagne tried to effect the same, while Alfred the Great (according to Asser, who, it must be remembered, is probably an eleventh-century compiler) made his earls, thanes, and bailiffs learn grammar, and Alfred himself, in his *Preface to Gregory's Pastoral Care*, definitely set up as his ideal that every English freeman should learn at least to read English, and those who wished should go on to Latin (See ALFRED, KING). The Council of Cloveshoo in 747 had indeed expressed a pious wish in this direction, also. But the last invasions of the Northmen in the tenth century, destroying churches and schools wholesale as well as the towns in which they were, wiped out any idea of lay education except in the highest classes and threw back the whole of North Germany, France, and England. The Alcuinian tradition was practically extinguished. Until the conquest of England was finally accomplished by William the Conqueror, learning was at a discount outside Italy.

**The Late Middle Ages** — In the seventh and eighth centuries Italy had sunk perhaps lower into ignorance, owing to the monastic and anti-classical influence of Gregory the Great and to the Lombard and other invasions in the North or West of Europe. Gregory had indeed instituted a song school at Rome to teach the Gregorian chant, which may or may not have been an advance on the Ambrosian chant, but was certainly merely ecclesiastical, and contributed not at all to learning except in so far as learning psalms and hymns implied some knowledge of reading, though not necessarily an understanding of Latin. Tested by charters, and it was almost exclusively for composition of legal and diplomatic documents that Latin was still kept up at all, the Latin of Italy was hopelessly barbarous, whereas English charters of the same date, though turgid and involved, are grammatical and fairly good legal Latin.

**The Song School** — One wonders whether the schoolmasters (*magistri scholarum*) who signed charters at Milan in 748 and 767 were as one who signed in 809 expressly described himself master, of the song school. It was perhaps from Gregory's song school that the crowds of scholars came, who are recorded as greeting Charlemagne on his triumphal entry

into Rome in 774. At all events, the first educational act noted of Charlemagne is the introduction of Roman song schoolmasters into the schools of Gaul, and in a subsequent quarrel between the foreign and the native singers in 787 he decided in favor of the Romans because Rome was the *fons et origo* of the art. It was only on his second journey to Rome that he is said to have brought back grammar masters, and that in the person of Alcuin the Englishman, not of a Roman. Song schools were recorded as having been established in England at York by Paulinus, in which the art as taught in Kent was practiced, an implication of previous establishment by Augustine at Canterbury, from whence Paulinus brought his song schoolmaster, James the Deacon. Gregory may therefore claim the educational merit, at all events, of establishing the song school as even a more necessary part of medieval education than the grammar school. In all the cathedrals and collegiate churches from the beginning of the seventh century, the song school stood as one of the essential parts of medieval education, not because it softened manners and did not allow them to be brutal, but on the purely utilitarian ground that it was necessary for the church services. Hence the song school extended itself to the parish churches. As it was essential for singing that the choristers should be able to read, the song schools became the elementary schools of the Middle Ages. In the inevitable tendency of the elementary schoolmaster to encroach on the domain of the higher education, we find in the thirteenth and succeeding centuries disputes between the song schoolmasters and the grammar schoolmasters, where both existed, as to whether and how far the song schoolmaster might teach the elements of grammar. It was generally, but not always, settled in favor of the song schoolmaster being allowed to teach the "Donat," or accidence. In some cases, especially after the Black Death in the fourteenth century, we find in some smaller places like Northallerton and Howden in Yorkshire the two schools rolled into one, and one master teaching both grammar and song. In the greater places and churches the two were always distinct and were under different officials of the chapter, the precentor being responsible for the song school and the chancellor for the grammar school. The song school was specially, though not necessarily, confined to churches. The grammar school was specially for clerks and laymen, though choristers were not excluded, and in some cases were made to attend. But their attendance was always a difficulty. So at Lincoln and Salisbury, where in the fourteenth and fifteenth centuries separate grammar schools were established for the choristers, growing gradually out of private tutors appointed to look after them, the grammar school was at first under the precentor, but was recognized as subsidiary

and subordinate to the old, the city or Cathedral Grammar School, under the Chancellor. At Lincoln, after a quarrel with the town council on the subject, it was definitely settled in 1406 that the choristers' grammar school should be allowed, but should not take in any other than choristers or relations of the canons living in their houses, and once a term all the scholars in it were to go down into the town and attend the ancient grammar school and sit there under the teaching and discipline of the grammar school master in token of its superiority. But the song school received separate treatment.

*Conditions in Italy.* — The Carolingian revival affected Italy as it had France. In 825 an important educational edict was published by the Emperor Lothaire assigning Pavia, Turin, Cremona, Piacenza, Florence, and four other places for central schools to which scholars from surrounding districts, mentioned in detail, were to resort. The exact meaning of this edict has been disputed between Protestant and Catholic historians. It begins by a statement that "as to teaching (*doctrina*), which through the carelessness and laziness of certain rulers is everywhere wholly extinct, it had been decreed that the greatest care shall be taken by those who are assigned by us to teach others in certain places named that their scholars shall become proficient." Giesebrecht and Roger argue that this only refers to religious teaching, to theology, and not to literary or classical instruction. Ozanam applies it to the latter. The unqualified words *doctrina* and *scolastica* point to the latter. Even if, however, the schools were only theological, they imply a preliminary grammar training for those who were to take the Scripture course. The next year, 826, saw the often-quoted conciliar decree of Eugenius II which, complaining that in some places neither masters nor a cure are found for the study of letters (or a grammar school), directs that, in all bishops' sees and in other places where necessary, masters and doctors should be established with schools of grammar and the liberal arts. This is surely merely translating into ecclesiastical law and explaining Lothaire's decree of the year before. It only lays down what was already the practice certainly north of the Alps, though it may have been new south of them. In 853 a constitution of Pope Leo IV says that even if teachers of the liberal arts are rarely found, nevertheless masters of theology and teachers of the ecclesiastical office shall by no means be wanting. In southern Italy, at Naples, Duke Sergius is said to have known both Greek and Latin and to have had his two sons, the elder intended for a soldier as *magister militum* and the younger Athanasius intended for a bishop, educated in both languages. As Bishop of Naples he is said to have founded schools both of grammar and song. The Bishop of Modena, in appointing an archpriest in 908, puts first

of his duties that of keeping a school and educating boys. It was in connection, however, chiefly with the two studies of medicine and law which, though largely, if not exclusively, practiced, at all events in the North, by clerks, in Italy appear to have remained or to have been largely practiced by laymen, and so did not wholly fall under the deadening influence of an exclusively "other-worldly" attitude, that a revival led by Italians began. At Salerno, which was in the Greek-speaking part of Italy, and long retained a connection with the Eastern Empire, the study of medical authors was kept up, and therewith was kept up a knowledge of Latin for other than religious purposes. (See UNIVERSITIES.)

*The Rise of Universities.* -- To Salerno is due the first known gathering of doctors or teachers which is entitled to be called a university, and the fame of which it can hardly be doubted was influential in aiding the establishment of similar gatherings at Bologna in law and at Paris in theology.

Similarly as regards law. In spite of the barbarian invasions, there seemed always to have been some tincture of Roman law in the cities of Italy. Gregory the Great was essentially a lawyer. Alcuin records that law was taught among the other items of the encyclopaedia in the school of York by his master, Archbishop Albert, in 736 (*Illos juridica curant cote polire*). After the Lombard invasions in Italy it almost disappeared save at Ravenna, where the connection with the Eastern Empire kept it up and whence it first spread on the revival. The term *scholasticus* for a teacher is probably due to Ravenna. In the days of Gregory the Great a *scholasticus* was not a teacher or a scholar, but a high imperial official, a lord high chancellor, if not a chief justice. But by the tenth century *scholasticus* is used at Ravenna as equivalent with *magister*, to mean what a little later was called a doctor of law, — not so much a teacher of law, but an expounder of it as an advocate, one who lays down the law, — and apparently, as in the case of Portia in the *Merchant of Venice*, the advocates were almost regarded and frequently consulted, if not as judges, at least as *amici curie*.

It was at Paris that Lanfranc (*q v*) was born. Lanfranc, like Anselm, coming from Italy, infused a much more secular and rhetorical spirit into the studies of France, and so contributed to the awakening which showed itself in Italy in the union of the Law Schools or University of Bologna and in France which became the University of Paris, at the end of the eleventh century. Both Lanfranc and Anselm, when they became monks and then archbishops, were potent instruments of reaction, and their influence largely contributed to the conversion of the nascent University of Paris from a school of free discussion and unfettered philosophy, into an almost entirely

theological seminary in which logic and philosophy were only studied as a preparation for theology. The free thinkers Berengarius, Roscelinus, Abélard, were crushed one after another. The brilliant anticipation of the Renaissance which produced such scholars and researchers as John of Salisbury, Walter Map, Giraldus Cambrensis, faded away.

The mental gymnastic of dialectic, better perhaps than any other for sharpening the intellect, remained and proved an immense gain to the medieval mind. Its practice at least showed that there were two sides to every question, and it cultivated the habit of argument and to some extent of investigation. It elevated the medieval schools into something more approaching the rhetoric schools of the ancient world. It must never be forgotten that what is spoken of with scorn by later writers as the scholastic system is really nothing more than the system of discussion and argument conducted with a view to and by way of *viva voce* debate, instead of as now on paper. Hence it was keener, closer, and at the same time produced greater heat than our modern discussions by newspapers, magazines, and books. It must be remembered that the same system which produced Anselm and Becket, produced also Wycliffe and Luther.

*Church Schools.* — The rise of the Universities produced an exhilarating effect on schools in general, if it had the effect of depressing others. There was now no question as in the Carolingian days of an Imperial edict being required to establish three public schools for the whole empire, or of a Papal bull to require every bishop to provide for schools in his episcopal city. In the tenth-century development collegiate churches had spread schools to all the towns considered of sufficient importance to have such institutions. In all the boroughs recorded as built by Edward the Elder, and Ethelfleda, or Athelstan, and which survived to post-Conquest times, there are found, when records begin, collegiate churches with grammar schools attached, such as Bedford, Beverley, Derby, Leicester, Oxford, Stafford, Warwick — it is inferred that they were constituted when the towns were castellated or fortified. Foreign examples confirm this. Not only were the collegiates of Nesles and Poitiers famous for their schools, but in Germany and France collegiate churches were multiplied in the same town, and each of them had its school. At Liège, besides the cathedral school of St. Lambert's, there was a school at the collegiate church of the Holy Cross, which proved a model as well as probably gave its name to Harold's foundation at Waltham Holy Cross, at St. Martin's, at St. John's, with which last, in about 1090, there was a fierce struggle for precedence between the rival schoolmasters, which the chapter of the cathedral was called in to settle. So at Cologne, besides the cathedral school there were in the

eleventh century the schools of the collegiate churches of St. Cumbert and St. Gereon. Before the end of the fifteenth century there were no less than eighteen grammar schools in the various collegiate churches and hospitals in that city. The fact that there was an independent collegiate church of St. Geneviève in Paris which had a right to keep a school independently of the license of the Chancellor of Notre Dame, had an important influence in the development of Paris University.

In England, whether through less populousness and wealth or for what other reason is not clear, there was no multiplication of collegiate church schools (*qv*) outside London. But in every town of any size there was a collegiate church, or a collegiate as in Hull and Northampton of the chantry priests attached to the various churches, and in York and some other places there were rival schools. In the smaller towns and country parishes the schools were supplied by chantry (*qv*) foundations, in which the priest, either by foundation or of his own will to earn money and obtain occupation, kept school. The guilds, too, set up or helped to endow the schools, as in the famous case of Stratford-on-Avon grammar school. The supply of schools indeed was ample and tended more and more as time went on even to outstrip the population. In the foundation of University colleges begun at Paris and imitated within a few years at Salisbury, Oxford, and Cambridge, Bologna, in the thirteenth century gave an enormous impetus to the foundation of collegiate churches, chantries, and hospitals. Every one who rose to rank or wealth in the church, especially in the civil service, felt almost bound to found or augment the church or hospital or chantry of his native place, and therewith his school. The latest phase of this development was when William of Wykeham founded a school as itself a collegiate church at Winchester and was imitated by Henry VI at Eton and a host of others.

**Transition to the Renaissance** — But as long as the monastic spirit prevailed, and extended to an enforced celibacy of the clergy, education and learning seemed doomed to sterility. There were always a few bold spirits who, like the biographer of Adalbert, Archbishop of Mainz, complained that though philosophy shone in his city and the school flourished, it would be more learned if the keeping of choir did not a hateful evil and the rigor of the church put impediments in the way of learning, for psalm singing and learning don't agree. But the prevailing view was that enforced by Bishop John Grandison of Exeter, in 1357, who complained that the schoolmasters in his diocese took the boys away from reading matins and the hours of the Virgin and, more like gentiles than Christians, hurried them to other schoolbooks, the poets and others. What more than anything else, however, retarded the progress of learning and the

world in general was the asceticism which in the twelfth century finally overcame the freedom of the clergy to marry. Multiply clerks as they might, their learning perished with them, and it was impossible for a learned or literary class to grow up when each successive generation had to start anew from the scions of the unlearned. Consequently there was little advance made until in the Renaissance the lay-folks, beginning with the aristocracy of Italy, followed not long behind by those of other nations, as the example of Henry VI (*qv*) shows, betook themselves to learning. Through them only do we get such a foundation deed as that of Bingham asking leave of Henry VI in 1439 to found a college to train grammar school masters; no longer, in the words of Wykeham, because grammar was the gate of science leading to the mistress of all learning, — theology, — but because it led to a knowledge of the laws and promoted intercourse between nations. When a parson and a scholar could plead for learning in these terms and for this object, the Middle Ages were over and the Renaissance and the modern era of education had begun.

A F L

#### References —

See the reference lists to the various articles to which cross reference is made in the text.

#### MIDDLE SCHOOLS — See MITTEL-SCHULE.

**MIDDLEBURY COLLEGE, MIDDLEBURY, VT** — A nonsectarian institution, chartered 1800. The incorporators were mostly Congregationalists of Yale antecedents, but the college has never had any formal ecclesiastical connection. Fellows are chosen for life, and elect their own successors without restrictions. The charter has never been amended. The first president was Rev. Jeremiah Atwater (Yale, 1793), who previously was principal of the Addison County Grammar School, founded on the advice of President Dwight as a forerunner to the college. The first class was graduated in 1802, at which time the first academic degrees conferred in Vermont were bestowed. For ten years the work of the college was done in a frame building, which it shared with the grammar school, but in 1810 Seth Storrs presented a campus, thirty acres on an eminence on the edge of the village. Here the first building was erected in 1815, and later named Painter Hall, in honor of Gamaliel Painter, a founder and benefactor. This building, which is still in use, is one of the best examples of early collegiate architecture. A large chapel and recitation building were erected in 1836, and Starr Hall, a dormitory, in 1861. The growth of the college was steady under Presidents Davis (1809–1817) and Bates (1818–1839), but was retarded during the able administration of Benjamin Labaree (1840–1866) by dissensions over the slavery question.



and various religious issues. The Civil War nearly emptied the college of students, and the institution was slow in recovering. President Cyrus Hamlin (1880-1885), founder of Robert College, proved a vigorous administrator. Under Ezra Bramerd (1885-1908) substantial endowments were received. In 1883 women were admitted, and since 1895 their number has approached that of the men. Since 1888 \$2400 a year has been received from the state for scholarships for thirty Vermont students. The centennial of the college was celebrated in 1900. In 1911 a fund of \$200,000, one half for endowment, which was initiated by a conditional offer of \$50,000 from the General Education Board (*qv*), was completed. The Vermont legislature of 1908 established a department of pedagogy for the training of high school teachers by an annual appropriation of \$6000, which was increased in 1910 to \$13,600. The income in 1911 was \$59,113.30. The resources are (1911) permanent funds, \$499,672.64, annuity funds, \$36,500, plant, \$335,987.37, reserved for buildings, \$45,961.51, total, \$917,154.56. The college offers classical, scientific, and pedagogical courses, and confers the degrees of A.B., B.S., and A.M. in course. The faculty (1911) numbers twenty-six, of whom nine are full professors. The present enrollment is 408, or, excluding the summer session, 305. The attendance doubled in the six years preceding 1911. The college was on the first list of accepted institutions of the Carnegie Foundation (*qv*). J. M. T.

#### Reference --

*A Record of the Centennial Anniversary of Middlebury College* (Middlebury, Vt., 1901)

#### MIDLAND COLLEGE, ATCHISON, KAN.

— A coeducational institution founded in 1887 by the General Synod of the Evangelical Lutheran Church. Academic, collegiate, and music departments are maintained. Fifteen units are required for regular entrance to college. Degrees (A.B., B.S., B.L.) are conferred on completion of the appropriate courses. The enrollment in 1911-1912 was 145. The faculty consists of fifteen members.

**MIÉGE, GUY** (1644-1718). — He was educated at Lausanne, and about 1658 became an "academist." He came to London in 1660. After traveling for a time in Europe, Miège again appears in London in 1678 as a teacher of French and geography. In 1678 Miège published his *New French Grammar, or a New Method for Learning of the French Tongue*, consisting of vocabularies and dialogues, mainly "discourses of cosmography" in French. This work he describes as a new method for learning French. The *Grounds of the French Tongue* (1687) covered the same field, but omitted the geographical discourse. The teacher of French (1) must speak true French; (2) should have good learning; (3) should have

good skill in the English language, "because without it it is impossible he can teach by the grammar"; (4) should be thoroughly acquainted with the textbook he uses. In 1677 was issued a *New Dictionary, French and English, with another, English and French*, in which he acknowledges his indebtedness to the *Dictionary Royall French and Latin* of the Jesuit Father, Pomey (See *INDICULUS UNIVERSALIS*). He introduces here derivatives in their alphabetical order, but with reference to the primitives. This work was followed in 1688 by a much larger one, the *Great French Dictionary*.

Miège names Cardinal Richelieu's establishment of an academy as a ground for the need of a new dictionary, for the Academy had driven from the French "excrecences" and "irregularities," and these remained in even the best of the current French-English dictionaries. He quotes Howell (*qv*) as saying that the English language is so made up of the French that he needs to study French if only to speak good English.

Other educational works of Miège were (1) for the teaching of French: *A Dictionary of Barbarous French* (taken from Cotgrave's Dictionary, 1679), *A Short Dictionary English-French and French-English* (London, 1685), *Nouvelle Méthode pour apprendre l'Anglais* (London, 1685), *Nouvelle Nomenclature Française et Anglaise* (London, 1685), (2) in Geography: *A New Cosmography or Survey of the Whole World* (London, 1682), and (3) for teaching English, a textbook *The English Grammar*, 1688, as to which Miège seems to have agreed to a division of labor, himself instructing French people in English, and Abel Bover instructing the English in French.

F. W.

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#### MILAN, ROYAL FACULTY OF LETTERS AND PHILOSOPHY, ITALY — See ITALY, EDUCATION IN

#### MILDE, VINCENZ EDUARD (1777-1853)

— One of the most prominent Austrian educators, was born at Brunn, Moravia, and received his early education at the gymnasium of his native city. In Vienna he studied theology, and, in 1800, he began his activity as a parish priest. From 1802 to 1804 he directed the religious instruction in several Vienna schools, in 1805 he was made court preacher, and in 1806 he received the chair of pedagogy in the university of Vienna. For the use of his students he published his *Lehrbuch der allgemeinen Erziehungskunde* (*Textbook of General Pedagogy*, 1811-1813), which was based chiefly on the principles of Kant and Pestalozzi. In 1823 he was made Bishop of Leitmeritz, and in 1831 Archbishop of Vienna. In

both positions he did much for the cause of popular education and for the training of priests and teachers. In his will he directed that the whole income of his estate be used for the support of poor priests and schoolmasters. F. M.

**MILITARY ACADEMY.** — See **MILITARY EDUCATION**

**MILITARY EDUCATION — Prussia** — In recent times the Prussians were the first to develop a comprehensive scheme of military education. Under the strong influence of their disasters in 1806 they went to work with brilliant leaders in a reform of the entire military system, which they developed in comparative quiet until the three wars which they fought between 1864 and 1870 showed their preeminent position as a military nation. Since then the world has become their willing pupil, and all great modern armies have taken their lead. Those who have not done so owe their neglect to political and other conditions which their military advisers do not cease to regret. The method followed by Germany is, therefore, a standard, and the others are either repetitions or more or less successful adaptations of that system.

In Prussia the control of so much of the military education as is not connected with service with troops is, with one exception, vested in a single officer, the Inspector-General of Military Education and Training. The exception is the War Academy, which, being a staff college, is under the supervision of the Chief of Staff of the army. The Inspector-General is assisted by two permanent boards, (a) the Board of Studies, in matters connected with the general system of instruction, and (b) the Supreme Examination Board, in regard to examinations and qualifications for commissions. The system of education is still further centralized by placing all cadet schools under command of a major-general, the war schools under a lieutenant-general, and the infantry schools under a major-general. At the same time each of the institutions has a board of studies, which is charged with the general control of the course of study and with the duty of making suggestions for its improvement. It is noticeable that a large proportion of the instruction is in the hands of civilians, who also have a certain proportion of places on those boards.

The entire system of military schools may be divided into four groups. (A) Schools for the preparation of candidates to reach the grade of officer. (B) Schools for the completion and improvement of the education of commissioned officers. (C) Schools for noncommissioned officers and men. (D) Schools in the duties of officers belonging to special services and other noncombatant arms.

A *The Schools for the Preparation of Candidates for the Officers' Commission* are of two kinds,

(a) Cadet schools (*Kadettenhäuser*) which prepare for the ensign examination. They are of two grades, senior and junior. The course of studies covers nine classes. The term is one year for each class. The course is assimilated to that of the royal schools and gymnasia, or public schools of the country, and graduation in the upper first class is a qualification for admission to a university. The cadets are under military instruction and discipline, but purely military subjects have no place in the curriculum.

The cadets are also divided into four classes called conduct classes. On entering they are assigned to the third class. They are promoted into the second class for good conduct and into the first class for exceptionally good conduct. The higher conduct classes enjoy special privileges and favors, especially in the matter of liberty. The fourth or lowest class is a disciplinary section. Cadets who pass into this section are under close supervision, and enjoy no privileges or liberty.

The junior cadet schools are eight in number, and are located at Goshin, Potsdam, Wahlstadt, Bensburg, Plon, Oranienstein, Karlsruhe, and Naumburg. The total capacity of these schools is about 1700 cadets. The members of the corps are largely sons of army and navy officers, and receive subsistence, clothing, and tuition either free or at a nominal charge. Although intended for military service, there is nothing compulsory about the institutions. Admission is subject to a qualifying examination in elementary subjects. Entrance may be obtained at the age of ten years. The average number of hours spent in classroom is twenty-eight hours per week.

The junior schools keep the cadets through the first five classes, and transfer them to the senior cadet school at Gross Lichterfelde, when they have successfully completed the course of the upper third class. Thus, under normal conditions, they would enter the senior cadet school at the age of fifteen years, and would finally graduate at nineteen years. There are 1000 cadets at Gross Lichterfelde, and they spend thirty hours per week in class.

*Service in the Ranks* — Normally the next stage in the progress of the cadet after passing through the cadet schools is to take the ensign's examination and to serve as a noncommissioned officer for six months with troops, but they may do this at an earlier period. At the close of the second year of the upper cadet school those cadets who have the requisite age and physical development are admitted to the ensign's examination, and, if successful, receive a conditional appointment as brevet ensigns (*Porte-épée-Fähnriche*), and enter at once on service in the ranks.

Likewise at the same period of the course in the cadet schools a "select" class of especially meritorious cadets is formed, which at once begins a course of preparation for the officers'

examination The course consists entirely of military subjects and languages, and is very much the same as that of the war schools. This class, which is small, receives officers' commissions directly, forming an exception to the rule that candidates must first pass through the brevet ensign grade in the ranks, and that they must be voted upon by the regimental officers.

The policy of making the cadet school a part of the military educational system has been much discussed. Its opponents urge that the character of the education is inferior to that of the civil schools, that the methods of discipline are so mild that the boys will get no idea of military life from the experience, that the boys so educated become unfit for the occupations of civil life, that it is an error to put boys into the military profession at an age when their taste or fitness for it has not been developed, that it tends to create a special military class, that favoritism is shown to the cadets over those who enter from civil life pure and simple. On the other hand, the friends of the system claim that by taking the boys at an early age, advantages are gained, which outweigh these objections. As a result of the discussion the decision seems to be in favor of increasing the number and capacity of the cadet schools rather than diminishing them. At present the cadet schools do not provide more than one third of the officers necessary for the army, and the balance is made up in other ways.

A young man who wishes to enter the army as an officer, without passing through the cadet schools, must first be nominated by the colonel of the regiment in which he desires to serve. He then serves as a private for six months, with certain privileges in recognition of the fact that he is a candidate for a commission, and he is called an "advantageur," or aspirant officer. During this time, usually at the beginning, he must pass an educational test. This may be satisfied by the production of a diploma either from a gymnasium or royal school (technical school) of the first class. The examination of those who do not possess evidence of having pursued a sufficiently high course of study embraces principally (1) a good knowledge of the German language, (2) a translating knowledge of a foreign modern language, (3) arithmetic, algebra, up to equations of the second degree; use of logarithms, plane geometry and trigonometry. The instructors are directed to arrange the course according to the ability of the pupils; they are forbidden to force them to take up lines for which they have no talent, memorizing is discouraged, and useless detail is eliminated. The aim of all education is to train the character as well as the mind, and to do this the above method is considered best.

After at least five months' uninterrupted service in the ranks, the candidate is passed upon by his company, battalion, and regimental

commanders, from whom a certificate is necessary, setting forth that judging from his physical, mental, and moral qualities, his deportment, zeal, and the degree of practical knowledge of the service he has acquired, they deem him worthy to continue in the service with a view to advancement.

(b) *War Schools (Kriegsschulen)* — The advantageurs and cadets not of the Selecta class gain their military instruction at a war school, after having fulfilled the necessary requirements of the ensign examination and service in ranks.

There are ten war schools in Prussia, situated at Anklam, Cassel, Dantzig, Engers, Glogau, Hanover, Hersfeld, Metz, Neisse, Potsdam. At these schools a corps of 172 officers is stationed, and the aggregate attendance of students is one thousand. Admission may take place as early as seventeen and a half years, and the term lasts ten months. The course of studies is strictly military, even languages and mathematics being excluded. It includes tactics, the science of arms, field fortifications, topography, regulations.

Those ensigns who successfully pass the war schools are reported to the "Superior Military Examination Committee," with a view to taking the officers' examination. The members of the Selecta, having followed a course exactly similar to that of the war schools, are also admitted to the officers' examination if deemed proficient. After the examination they return to their regiments for further service, generally several months.

An exception to the rule of attendance at war schools is made in favor of students who have attended a university, a technical high school, or a forestry academy for at least a year. Young men of this class, though required to undergo the practical test, the result of which is described in the certificate of their superior officers, may, upon the recommendation of the latter, be admitted to the officers' examination without previous attendance at a war school and without serving a full term of six months in the ranks. Still another exception is made in favor of officers of the reserve transferred to the active army. The aggregate number of those who enter under these exceptions is quite small.

The nomination to the sovereign of a person who has passed the officers' examination for appointment as second lieutenant must be accompanied, except in the case of the Selecta class of the cadet schools, by a statement of the officers of his regiment or independent battalion that they regard the nominee as fit to become their comrade, and that he possesses the practical knowledge of the service which is indispensable to an officer. If the majority of the officers refuse to join in such a statement, the next senior ensign is at once voted on, but if the election of a candidate be opposed by a minority only, the reasons of the latter for their dissenting view are submitted to the com-

manding general, who decides what weight, if any, is to be attached to them. In order that officers may have an opportunity to form an estimate of the mental and moral qualities of the ensigns, the latter, during a part of their service, are admitted to the officers' mess and are otherwise brought into frequent contact socially and officially with the officers.

*B Schools for Commissioned Officers* — The schools of this class partake of the character of postgraduate schools or schools of application.

(a) For cavalry there are two riding schools, one at Paderborn (*Offizier-Reitschule*) and one at Hanover (*Militär-Reit-Institut*). The school at Paderborn is for cavalry officers only, and has a staff of five officers and instructors and forty-one students. Attached to the school there is a detachment of ten noncommissioned officers, eighty-four men, eighty officers' horses, and fifty troop horses. The school at Hanover centralizes the methods of horsemanship throughout the empire. It is under the supervision of the Inspector General of Cavalry and of the Cavalry Board. The personnel consists of twenty-three officers as instructors and staff.

There are one hundred and thirty-three student lieutenants at the school, of whom ninety-one belong to the cavalry and forty-two to the field artillery. The course is usually one year, but the most proficient are retained for another year to practice a more extended course. Among the novel methods of the school is the hunting, with a government pack of hounds. Since 1888 all higher officers of cavalry go to Hanover each year to take a course of a few weeks in the chase and in jumping.

(b) For field artillery there is a firing school at Jüterbog, which trains officers from all field artillery regiments as instructors in gunnery. The personnel consists of twenty-four instructors, and there is an instruction regiment (*Lehr-Regiment*) with forty-four officers. The course lasts for five months, and the instruction is under the control of the Inspector General of Field Artillery. In 1910 it was proposed to send seventeen general officers for a short course at the school.

(c) The infantry schools are under a major general who is subordinate to the Inspector General of Military Instruction. Those infantry schools which are intended for officers are (1) The Military Gymnastic Institute at Berlin, which trains officers of cavalry, artillery, and infantry to act as athletic instructors and fencing masters. It has a staff of four officers. (2) The School of Musketry at Spandau, which has three courses. (a) The information course for field officers of cavalry and infantry, lasting ten days. It was attended by 118 officers in 1909. (b) The instruction course for captains and lieutenants of cavalry and infantry, lasting twenty days. It was attended by 452 officers in 1909. (c) The course for noncommissioned officers. It was attended by 540 noncommissioned officers

of cavalry and infantry in 1909. The object of the school is to instruct officers in target firing and in the use of small arms so that they may act as instructors when they return to their regiments, to hunt out discrepancies in the present firing regulations and in the methods of instruction in the different parts of the empire, and to suggest methods by which they may be removed, to watch the development of small arms and small arms practice in foreign armies, to answer any questions of the Minister of War on the subject, and to plan and examine sites for target ranges. Attached to the school are twenty-one officers, of whom six remain throughout the entire year, and the balance do duty with their regiments during the winter. It was proposed during 1910 to send eleven generals to the school for a short course. (3) There is a battalion of instruction at Potsdam, designed to coordinate the methods of instruction throughout the army. To it are attached about seventy-five officers and five hundred and sixty-four men.

(d) The Foot Artillery Firing School (*Fuss-artillerie-Schiess-schule*) is at Jüterbog. It is under control of the Inspector General of Foot Artillery, and has for its object the training of officers and noncommissioned officers of all foot artillery regiments as instructors in gunnery. It has twelve instructors, and is provided with an instruction battalion (*Lehr-bataillon*) of nineteen officers.

(e) The Technical Military Academy (*Militär-Technische Akademie*) at Berlin is under the supervision of the Inspector General of Military Education, and is commanded by a lieutenant general, with twenty-two officers as assistants. Its object is to complete the professional instruction of officers of foot artillery, engineers, pioneers, and communication troops. It also includes more extended courses in the higher scientific branches of armament and the engineer and communication services. There are three divisions of the course: (1) Armament (with eighty-seven lieutenants of artillery and infantry). (2) Engineering (with forty-seven lieutenants of engineers). (3) Communications (with twenty-two lieutenants of cavalry, artillery, infantry, train, and communication). The majority of the officers leave at the end of two years. The third and fourth years' course is followed by a small number of those who are most proficient.

(f) The War Academy (*Kriegs-Akademie*) at Berlin, founded in 1810, is the highest military school of the system. The general object of the institution is to raise the scientific spirit of the army; its special object is to give such an education to the most talented officers of all arms, after they have proved themselves possessed of the practical qualifications of good regimental officers, as will fit them not only for appointments on the staff, but for all responsible positions of high rank, for the command of regiments, for employment as instructors of military

schools, and for all duties which require scientific attainments, both in military and in general subjects, of a higher degree than those ordinarily possessed. The War Academy is located in Berlin, under the control of the Chief of the General Staff of the Army. The immediate command is vested in a general, who is assisted by a board of studies and a personnel of twenty-three officers as instructors and staff. There are 480 students. The course embraces three consecutive years.

An officer who takes the examination for the War Academy must have had at least three years' service as an officer, and must have satisfactory reports from his commanding officers as to his familiarity with the practical part of his duties, his health, strength, and character, conduct, and pecuniary affairs. The entrance examination is intended to ascertain whether the applicant is sufficiently advanced in general education and knowledge on special branches of learning to enable him to attend the lectures of the academy with profit. It is also designed to determine whether his powers of discrimination and judgment are such as to give promise of further satisfactory development. Accordingly the subjects for examination are so chosen as not merely to test the memory, but also to afford the applicant the opportunity to demonstrate his ability to express his thoughts in a clear, coherent, and effective manner. The examination embraces the military branches of tactics, applied tactics, the science of arms, permanent and field fortifications, study of ground, and topographical drawing, and the following branches of general science, — history, geography, mathematics, and French (optional).

Reference to previous papers shows that the candidate for the War Academy must make good use of his time in order to fit himself for this examination. There is no repetition of subjects covered in previous schools, but he is called on to draw upon the fund of information which he has acquired by service with troops.

The course of instruction continues on the general lines indicated by the entrance examination, with the option of mathematics or a language, which may be either English, French, Russian, or Japanese. At the close of the course the work of each officer is described with much care and particularity, but no class standing is announced.

*C Schools for Noncommissioned Officers and Men* — In Germany the ordinary noncommissioned officer rarely becomes an officer. Occupying an intermediate position between the officers and the troops, they form a corps by themselves. Much care is bestowed on them. For noncommissioned officers there are seven preparatory schools at Annaburg, with a commissioned staff of eight officers; Bartenstein, with a commissioned staff of eight officers; Griefenberg, with a commissioned staff of eight offi-

cers, Juleh, with a commissioned staff of eight officers; Neubrisach, with a commissioned staff of ten officers; Weiburg, with a commissioned staff of eight officers; Wohlaw, with a commissioned staff of eight officers.

Candidates may be admitted at the age of fifteen years. The course lasts two or three years, depending upon the previous education of the students. These preparatory schools have the same relation to the noncommissioned officers' schools that the cadet schools have to war schools. About one fourth of the noncommissioned officers are provided by schools which are located as follows: Biebrich, with a commissioned staff of eighteen officers; Ettlingen, with a commissioned staff of eighteen officers; Juleh, with a commissioned staff of twelve officers; Potsdam, with a commissioned staff of twenty-three officers; Treptow, with a commissioned staff of twenty-two officers; Weisenfels, with a commissioned staff of twenty-two officers; Marcnwerder, with a commissioned staff of eighteen officers. There are about 4000 men in these schools.

*D Schools for Auxiliary Services* — These may be enumerated as follows: King William Military Medical School (*Kaiser Wilhelm-Akademie für das Militärärztliche Bildungswesen*) at Berlin. Military Veterinary Academy (*Militär-Veterinar-Akademie*) at Berlin, with thirteen officers as instructors and staff. Military Horse Shoeing School at Berlin (*Militär-Lehrschmiede*) personnel of seven officers. Other schools are in Breslau, Frankfurt, Hanover, Karlsruhe, Königsberg. Military orphan schools at Potsdam and Pretzsch, with four officers. Cavalry Telegraph School (*Militär-Telegraphenschule*) at Berlin, with ten officers as staff. Wallmeisterschule at Strassburg, with three officers as staff. School of Fortress Construction (*Festungsbauschule*) at Charlottenburg, with four officers in charge. Artificers' School (*Ober-Feuerwerkerschule*) at Berlin, with eighteen officers detailed as staff and instructors. School for Sons of Soldiers (*Militär-Knaben-Erziehungsanstalt*) at Annaberg, with five officers assigned to it for duty.

The military schools of Saxony and Bavaria, except in minor particulars, are exact duplicates of those of Prussia, and thus complete the educational system of the German Empire.

*Remarks on Prussian System* — From the foregoing, the conditions of military education in Germany may be summarized as follows:

- (1) Proof of a fair general education is required either by the certificate of a public school or by passing the ensign's examination.
- (2) From five to six months' service in the ranks, as a minimum.
- (3) Ten months' professional instruction at a war school.
- (4) Proof of professional knowledge by passing an officers' examination.
- (5) Acceptance by the officers of the candidate's regiment. Thus there is a double examination and two probationary periods of service with troops.

In Germany the principle of deferring the strictly military part of a man's education until after a good grounding in general education is well established. No serious attempt is made to give a special military education at an early age. The junior cadet schools give a mild sort of discipline and some elementary military exercises, but not enough to partake of the character of military education. Up to the age of seventeen or eighteen the future officer receives the same kind of an education as a civilian, and in a great majority of cases gets it at the ordinary public schools of the country. The only exception is in the *Selecta* class of the cadet schools, which receives military instruction before actually joining the service, but in this case the special instruction does not commence until the age of seventeen. After the candidates have had service in the ranks, however, they receive most careful professional instruction in the war schools. The course of these schools is essentially of a practical character, comprising only strictly military subjects and excluding such studies as mathematics and even languages.

A notable point of contrast between the Prussian and the other systems is the absence of competition in the former. There is, in fact, universal objection to competitive methods because it is the desire to discourage everything like the schoolboy feeling among officers, partly from fear that it may lead to jealousy and ill feeling among them, and diminish the spirit of comradeship to which so much importance is attached in the German army. Other claims are that competition prevents individuals from devoting their talents to subjects for which they have a natural taste, that it encourages an abnormal attention to useless details, gives undue prominence to the man whose chief ability lies in the memory, and the greatest objection urged is that it is impossible to make an examination that will test all the qualities which go to form military capacity. All examinations are made of a qualifying nature, and in furtherance of the same general idea promotion is not made by selection, but by seniority. To form an estimate of the capacity and general character of all officers there is provided an elaborate system of inspections and reports. If an officer is passed by a junior in promotion, it is a sign that he is no longer considered competent and he must retire from the service. Usually they are given previous warning on this point. It is supposed that this system cultivates the mind, directs the attention to broad principles, and promotes good feeling.

In the German system it will be observed that mathematics does not hold a high place in the training of an officer. A knowledge of mathematics up to trigonometry is all that is required for admission to the army, but the subject is not taught in the war schools in connection with the examination for an officer's commis-

sion. In the scientific schools, it is true, some proficiency in mathematics is required, but it is not of a high standard. The principle seems to be that the higher branches of mathematics can only be studied with advantage by a few who have real talent in that line, and that it is a waste of time to force the study upon those who have not a taste for it.

More importance seems to be given to the moral and physical qualifications of an officer than to actual performance in classroom. A knowledge of at least one foreign language is a necessary condition for admission. No particular prominence or encouragement is given to the technical services and scientific corps. It is, in fact, rather a disadvantage for those who seek advancement through the General Staff to comply with the requirements of the technical schools and then prepare themselves for the War College course of three years. As promotion is based on seniority as a rule, there are only two ways by which a man can get ahead of his comrades of the same grade and age. (1) The *Selecta* classes of the cadet schools are able to get an advantage of about a year. (2) Officers who are appointed to the General Staff as captains have their commissions antedated three years, and this same advantage may be gained a second time, if, as majors, they are again selected on the General Staff. Apparently only a few of the General Staff come from the scientific corps. It is not considered that these cases are violations of the rule against competition. As stated before, selections are based on reports showing character and mental and physical qualities combined.

The most notable feature in the German system is the close connection of the schools with the army, whereby the information gathered in the school is constantly applied in the everyday work of the army.

**France** — Military education is controlled by a Central Executive Committee entitled "Permanent Instruction Board of Military Schools," at the head of which is a general of division. He is invested with the right to control the discipline of the schools, military education, and the general organization of instruction, and also the initiation of all measures relative to the material organization of the schools and the elaboration of programs of instruction and education.

*A Schools for the Preparation of Candidates for the Officer's Commission* — The junior cadet schools of the military class have been for the most part abandoned because of the conviction that it was not an advantage to begin a military education at an early age. The only survivor of this class is the Military Orphan School (*Prytanée Militaire*) at La Flèche, which continues to educate the sons of men who have done meritorious service. It has 500 students, of whom 300 have their expenses entirely paid and 120 partly paid by the government. En-

trance is at the age of ten years by a qualifying examination. Graduates receive the degree of Bachelor of Science, and are prepared to enter Saint-Cyr and the Polytechnic. Although under military discipline, with a military personnel of forty-five officers, and although intended to prepare young men for the military profession, there is no obligation of that kind. In the ninety-five years of its existence something more than half of its graduates have been officers of the army.

Preparation for the officers' commission may begin for those who enter from civil life in two schools, the Polytechnic (*L'École Polytechnique*) at Paris, and the Special Military School (*L'École Spéciale Militaire*) at Saint-Cyr, in both of which service of one year in a regiment is required. Since 1907 there is a strictly competitive examination, requiring graduation at a high school and also special work. The polytechnic school at Paris prepares cadets for artillery, engineers, and other technical services in the army and navy. The course lasts two years, beginning at the age of sixteen or seventeen. It gives a preparatory civil education, almost entirely of a mathematical character, and is a scientific school of high class under military discipline. Its graduates are commissioned as second lieutenants in the corps for which they have prepared. The military element is not prominent. During summer there are two drills per week only. In fact it is not a military school, although three fourths to two thirds of its pupils enter the army. It is a sort of mathematical university, a degree at which is a necessary condition of admission to certain departments of naval, military, and civil services. The staff and personnel consists of seventy officers and numerous civil instructors. There are 350 cadets, of whom 100 are at the expense of the State.

The Special Military School at Saint-Cyr is a companion institution to the Polytechnic, preparing cadets for the cavalry, infantry, and marines. The course is two years, beginning at the age of sixteen or seventeen years. The requirement of one year previous service in a regiment has resulted in the suppression of military exercises in ranks at the school. The rifle is rarely carried. Instruction is essentially practical, with the object of forming instructors and officers, and no longer almost exclusively soldiers. The one year's service with regiments is used in the case of cavalry cadets to develop in important proportions their general and military knowledge. They join the class of non-commissioned candidates for Saumur in the courses of history, geography, and topography, and are besides employed in the training of young horses. There are about 900 cadets, furnishing about one third the officers necessary. Its graduates predominate in the higher grades and at the Staff School. About half are pay cadets, the remainder free. The military and instruction staff is sixty-five officers.

The recruitment of the corps of officers is further provided for by three schools for non-commissioned officer candidates who are deemed worthy of advancement. In each of these the requirements of admission are two years' service and an educational requirement equal to that offered by the higher primary schools. It is expected that in this way the candidates will be able to enter the service with the same degree of preparation as their comrades from Saint-Cyr and the Polytechnic. The course in each is about one year. (1) The Cavalry School constitutes a section of the Cavalry School of Application at Saumur. (2) The Artillery and Engineer School (*L'École Militaire de l'artillerie et du génie*) at Versailles. It has a staff of twenty-two officers. (3) The Infantry School (*L'École militaire d'infanterie*) at Saint-Maixent, maintains a staff of thirty-one officers.

*B Schools for the Completion and Improvement of the Education of Officers* — (a) The Cavalry School (*L'École de Cavalerie*), at Saumur, has a number of courses, so that it combines the school of application with the preparatory school for officers and non-commissioned officers. The courses are (1) School of application for cavalry, consisting of forty-five officers, one from each brigade, preparing for the duties of instructors in equitation. (2) School of application for artillery and engineers, consisting of forty officers, preparing to act as instructors in equitation. (3) School of application for second lieutenants of cavalry on graduation from Saumur, consisting of eighty to ninety officers, completing their instruction in equitation.

The school has fifty-six instructors and permanent staff officers. The course is one year.

(b) The School of Application for Artillery and Engineers (*L'École d'application de l'artillerie et du génie*), at Fontainebleau, furnishes the advanced military and technical instruction needed in these arms. The school is under the command of a general officer with the assistance of forty-seven officers. The course is two years.

(c) School of Musketry (*L'École normale de tir*), at Châlons, has for its object, first the preparation of officers to act as instructors of musketry, and second, as a station for general experimental purposes in matters pertaining to musketry. It has several courses, varying from six weeks to three months and a half. The school is conducted by a personnel of sixteen officers.

Closely connected with the School of Musketry at Châlons are the schools of application for lieutenants of cavalry, infantry, and engineers, one at Camp Reichard and the other at Camp Valbonne, with courses of about six weeks, and a corps of instructors of about ten officers.

(d) School of Explosives and Mines (*L'École d'application des poudres et salpêtres*), at Paris,

is recruited entirely from graduates of the Polytechnic and is intended for an advanced study by engineer officers

(e) School of Gymnastics (*L'École normale de gymnastique*), at Joinville-le-Point, trains a limited number of officers and noncommissioned officers as instructors in gymnastics and fencing, in order to insure a uniform method of instruction in all that concerns these exercises throughout the army. The course lasts six months. There are eight officers permanently detailed.

(f) School of Aerial Navigation (*L'École d'aérostation*) gives technical instruction in the service to a certain number of detailed officers.

(g) Artillery Schools (*L'École d'artillerie*), one for each brigade of artillery, with the object of completing the instruction of the officers of this arm and of noncommissioned officers aspiring for promotion.

Annexed to the school of this class at Poitiers is a practical course for majors and captains of artillery, lasting from three to six months according to the rank of the officers. It includes the study of the changes in the construction and employment of field artillery at home and abroad.

(h) School of Field Fortification (*L'École des travaux de campagne*). This school is attached to the school for the first engineer regiment at Versailles. Its object is to train officers of infantry in the construction of field works in time of war. The course is four weeks.

(i) The War School (*L'École supérieur de guerre*), at Paris, has a two-year course, thirty-three instructors and directors, and 280 students. It is open to the best students of the Polytechnic and to competition by graduates of Saint-Cyr. Upon graduation the students serve two years with cavalry, two years with infantry, one year with artillery before they are eligible for staff appointment. The day's work begins at six or seven o'clock and continues until five p. m., with the exception of one and one half hours. Much of the time is taken up with outdoor work, and the evenings are free.

As an adjunct to the war school an additional class for higher officers is about to be started to study the duties of high command. The course will be six months, and the first class will consist of twenty majors and lieutenant-colonels.

*C Schools for Noncommissioned Officers and Privates* — Preparatory schools are provided for the sons of soldiers, pensioners, and deceased officers, where education and instruction is given at the public expense to train them as noncommissioned officers. The State assumes a guardianship in a way over these children (*enfants de troupe*), and gives them an allowance in money for the earliest age, and at the age of thirteen admits them into one of six military preparatory schools. The schools are located as follows: For cavalry at Autun; for artil-

lery and engineers at Billom, for infantry at Rambouillet, Montreuil-sur-Mer, Saint-Hippolyte-du-Fort, and Andelys. The aggregate number of students accommodated at these schools is 3000, with 34 officers in charge of instruction and discipline.

A school for soldiers' orphans (*Orphelinat Hériot*), established by private endowment, takes boys at ages from five to thirteen years, and serves as a preparatory school for the higher class. It is under military supervision and control.

Through out the army there are in every regiment schools for the soldiers (*écoles régimentaires*). The schools are of two kinds: (1) primary, for the illiterate, and (2) for noncommissioned officers who desire promotion. The cavalry school at Saumur provides several courses for noncommissioned officers and men, as follows: (1) School for noncommissioned officers preparing for officers' commission, consisting of over 100 men who have gained admission by competitive examination. (2) The school for saddlers, with 100 workmen. (3) The school for sixty to eighty apprentice farriers, detached from regiments, to which they return with a warrant as farrier sergeant. (4) School for cavalry telegraphers, consisting of two groups of 100 each, detached from regiments, to take the course each year. (5) The school of veterinary students who come to complete previous training before entering the army; there are twenty-six to thirty of them.

*D Schools for Auxiliary Services* — (a) The School of Administration (*L'École d'administration*) at Vincennes is intended to instruct specially qualified noncommissioned officers with a view to advancement to the grade of officers in the supply departments and sanitary service. (b) School of Sanitation Service (*L'École du service de santé*), at Lyons, supplements the medical course of students and gives them the necessary military training. The course is six months under a corps of nineteen instructors. (c) School of Application for the Sanitary Service (*L'École d'application du service de santé*), at Paris, receives the graduates of (b) and imparts theoretical and practical instruction.

*Austria-Hungary* — *A Preparatory Schools for Officers*. — Preparation for military life begins early. As in Germany, the young men go through a series of military preparatory schools, beginning at the age of ten years. The schools, called military technical schools, are similar to the corresponding public schools designed to lay a foundation for a scientific education. They are of two classes, named respectively Upper and Lower Schools. The Lower Schools (*Unter-Realschulen*) have a three-year course, and are located at Enns, Steiermark, Fishau, Moros Váshely, St. Polten, Kosneg. They have about 140 officers on duty and 900 students. The military orphan school at Hirtelberg is of this class.



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The Upper Schools receive the graduates of the former for a four-year course. They are situated at Kismarton and Mährisch Weisskirchen, with about 70 officers and 450 students.

The military academies receive the graduates of the Upper Schools for three years. Preparation for the academies may, however, be obtained elsewhere, in public schools or private educational establishments. The age of admission would be about seventeen years. The expenses are either borne by the State, which is the most common case, or they make full or half payments.

The Theresa Academy at Neustadt is the institution which educates officers for the cavalry and infantry. It has fifty officers and 450 students. The Technical Military Academy of Vienna prepares for artillery, engineers, and other special services. It has forty-six officers and 279 students. The graduates of the academies are commissioned directly into the army. The recruitment of the corps of officers is further provided by a large number of cadet schools, with a two-year course. There are fifteen of these for infantry, some of which are also open to the cavalry, with an aggregate of 345 officers and 2400 cadets. They are located at Vienna, Budapest, Prag, Komsgfeld, Pozsony, Innsbruck, Temesvár, Nagyzeben, Liebenau, Lobszów, Carlstadt, Marburg, Kamnitz, Lemburg, and Kassa.

The cavalry also has a special cadet school at Mährisch Weisskirchen, with 24 officers and 150 students.

The artillery school is at Traiskirchen, with 50 officers and 350 cadets.

The pioneers have a school at Hamburg, with 25 officers and 160 cadets.

After graduation at the cadet schools the cadet is assigned to a regiment as a cadet, with actual or honorary position as noncommissioned officer. As vacancies occur they may be appointed cadet officers' substitutes (*Cadet Officers Stellvertreter*) in which they exercise the function of officers, and associate with them without actually holding rank as officers. Having completed a probationary period in this position, they may be nominated for commissions, after having received the approving vote of the officers of their regiments.

*B Schools for Officers* — (1) The Special Technical School of Artillery, Engineers, Building Construction, and Civil Schools (*Technische Militärfachkurse*) at Vienna (2) School of Musketry (*Armenschuss-schule*) at Vienna (3) Artillery School of Fire (*Artillerie Schiess-schule*) at Vienna (4) Riding Masters' School (*Militär-Reitlehrerinstitut*) at Vienna (5) Fencing and Gymnastic Institutes' School (*Militär-Reit-und-Fahrlehrerinstitut*) at Schlosshoff bei Marchegg (6) School of Instruction in Riding and Driving (*Militär Fecht und Turnlehrerinstitut*) at Vienna (7) War School (*Kriegs-schule*) at Vienna, has a permanent staff of 26 officers and 136 students.

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*C Schools for Enlisted Men* — Schools for one-year volunteers are established in each regiment, and divisional schools in each division.

*D Schools for Auxiliary Services* — (1) The Military School of Administration (*Administrative Militärfachkurse*) at Onna (2) Military Medical School (*Militär ärztliche Applikations-schule*) at Vienna (3) Veterinary School (*Tierärztliche Hochschule*) at Vienna (4) Cavalry and Infantry Telegraph Schools (*Telegraphenkurs*) at Tulln.

*Italy.* — The military schools of Italy are under supervision of a Superintendent or Director of Military Education.

*A Schools for the Preparation of Candidates for the Officers' Commission* — Preparation is usually made at the junior cadet schools or the military colleges of Rome and Naples (*Collegi Militari*), both conducted under the same regulations and with the same entrance examinations. The earliest age at entrance is thirteen years. The course is about the same as for boys of corresponding age at certain of the public schools, and takes four years. Entrance is competitive.

The military colleges are preparatory for the senior cadet schools, of which there are two: the Military School (*Scuola Militare*) at Modena for cavalry and infantry cadets, and the Military Academy (*Accademia Militare*) at Turin for engineer and artillery cadets. Admission to these schools is competitive, as in the colleges, and they are also open to graduates of civil schools, and deserving soldiers. The course in the military school at Modena is two years. No mathematics is taken by the cadet, except what is included in the subjects of physical and natural sciences. On graduation a cadet receives his commission as an officer of cavalry or infantry. The course at the Military Academy of Turin is three years, and the sciences occupy a prominent part in the schedule. On graduation a cadet receives his commission as an officer of artillery or engineers, but antedated one year in order to adjust the rank. It will thus be seen that cadets who pursue the usual course will be officers at a minimum age of nineteen years. About one third of the vacancies go to meritorious non-commissioned officers, for whom a special course is provided at the school of Modena, with a term of two years.

*B Schools for the Completion and Improvement of the Education of Commissioned Officers* — Upon graduation from the military schools the candidates are commissioned and are sent to the schools of application for their branch of the service. The second lieutenants of cavalry go for a course of ten months to the Cavalry School of Application (*Scuola di Cavalleria*) at Pinerola, immediately after graduating at Modena. A second course provides for training of officers as riding instructors, and a third course is given to officers preparatory to passing their examination for promotion. The second

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lieutenants of heavy artillery and engineers go for two years longer to the School of Application for their arms (*Scuola d'Applicazione d'Artiglieria e Genio*) at Turin. The second lieutenants of field artillery enter the Artillery School of Fire (*Scuola Centrale di Tiro d'Artiglieria*) at Nettuno, in the infantry the lieutenants go to the School of Fire (*Scuola Centrale di Tiro di Fanteria*) at Parma. Several additional courses are provided —

(1) Course for preparing cavalry and infantry officers to enter the War School at Turin, — four months. (2) Course for preparing infantry officers for their promotion, — three months. (3) Course for students of the lowest class of the war schools, — forty days. (4) Course for noncommissioned officers who seek commissions in the accounting departments, — two years. The Royal School for Carbineer Officers (*Scuola Allievi Ufficiali Carabinieri Reali*), and the military fencing school (*Scuola Magistrale Militari di Scherma*) are at Rome. The War School (*Scuola di Guerra*) at Turin is the highest school, and is designed to qualify officers who have had three or four years' service for duty in the General Staff. Entrance is competitive for cavalry and infantry, but no examination is required for those who have graduated at the higher schools of application for artillery and engineers. The course takes three years, and is conducted by 44 officers with 165 students.

*C Schools for Noncommissioned Officers and Men* — The most important is the above-mentioned section of the Modena School, which prepares intelligent and deserving noncommissioned officers who aspire to the grade of officers for admission to the military schools.

*D Schools for Auxiliary Services* — The principal schools of these kinds are The Military Sanitary School of Application (*Scuola d'Applicazione di Sanità Militare*) at Florence. The Military Geographical Institute (*Istituto Geografico Militare*).

**Great Britain** — *A Schools for the Preparation of Candidates for an Officer's Commission* are to a large extent limited to two, — the Royal Military Academy at Woolwich, and the Royal Military College at Sandhurst. Entrance is at the age of seventeen or eighteen years. Admission is strictly competitive, except for a small number of King's cadets, who are subject to a qualifying examination only. Graduation from the sixth form in English secondary schools, which is equivalent to entrance to a university, qualifies for Sandhurst and Woolwich, but there are also numerous private schools which prepare for both.

The Royal Military Academy at Woolwich prepares cadets for artillery and engineers. It has a one-year course, and accommodates 200 cadets, with 40 officers. The cadets are organized and held under military discipline. The course of instruction is largely taken up with military subjects.

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The Royal Military College at Sandhurst is the preparatory school for the cavalry and infantry branches. The course is one year, mostly devoted to military matters. It contains 400 cadets and 36 officers. The amount paid by cadets depends upon ability to pay, and ranges from £150 per year to nothing. King's cadets receive a gratuity from the age of thirteen in order to prepare them for entrance examination. The weekly routine takes up forty hours per week or about five hours for class and study and three hours daily for drill. In a year there are about three months of vacation.

Among the novel disciplinary methods to be noted is the rule that cadets have an allowance of pocket money which, in amount, depends on cadet rank. It is taken away when under punishment. Cadets reduced to ranks are not graduated unless they are reinstated at least to the grade of corporal.

The characteristic features of the Woolwich and Sandhurst schools are the brief periods of instruction and the exacting competitive standards of admission. The ordinary arguments for and against these methods continue to be heard, with the general result that the tendency is to increase the length of the course.

Among the schools having a military character which serve as preparatory institutions are the Duke of York's Royal Military School at Gaston, the Royal Hibernian Military School at Dublin, and the Queen Victoria School at Dunblane.

In addition to the royal schools described, entrance to the regular corps of officers can be obtained (a) by nomination of recognized universities to candidates fulfilling the academic and military qualifications, (b) by competition to officers of auxiliary and colonial forces.

*B Schools for Commissioned Officers* — (a) The Ordnance College at Woolwich has four courses: (1) the ordnance course for officers of the army and marines, (2) the gunnery staff course for officers and noncommissioned officers, (3) the master gunner's course, (4) the artificer's course. The course lasts one year, with thirteen officers permanently assigned and twenty-six students.

(b) The Engineering School at Chatham has three courses: (1) for officers of the Royal Engineers, (2) for officers and enlisted men of the Royal Engineers, (3) for officers and noncommissioned officers and men of the line. The officers for instruction and administration number seventeen.

Other schools of this class are: (c) Cavalry School at Netheravon, takes thirty officers for six months. (d) School of Gunnery at Shoeburyness. (e) Mounted Infantry School at Longmoor. (f) School of Musketry at Hythe. (g) School of Gymnastics at Aldershot and Curragh. (h) Staff College at Camberley. The Staff College performs the ordinary mission of a college of its kind. The college maintains

a permanent personnel of sixteen officers and ninety-eight student officers

*C Schools for Noncommissioned Officers and Enlisted Men* are conducted in connection with a majority of the schools noted. In addition there are numerous garrison schools, which furnish certificates of three kinds. Promotion to the rank of corporal requires a third-class certificate, to the rank of sergeant a second-class certificate, and the other more important noncommissioned officers must have a first-class certificate. (a) The School of Cookery, Aldershot, has a course of three months for noncommissioned officers. (b) The Royal Military School of Music is at Kneller Hall for training of bandmen of all ranks. (c) For training of assistant instructors in riding there are establishments at Canterbury, Woolwich, and Aldershot. (d) A course for saddlers is provided at Woolwich dockyard. (e) A course of instruction for soldiers to qualify as chiropodists is formed. (f) A course for tailors is provided at the Royal Army Clothing Factory.

*D Schools for the Auxiliary Services* — (a) The Royal Army Medical College at Grosvenor Road, S W. (b) The Royal Medical Corps School at Aldershot. (c) The School of Signaling at Aldershot. (d) The Army Service Corps School at Aldershot. (e) The Army Veterinary School at Aldershot. (f) The Balloon School at South Farnborough has twelve officers for a seven weeks' course. (g) The School of Electric Lighting at Plymouth and Portsmouth for officers of engineers and heavy artillery. (h) The School of Economics provides a six months' course in commercial and business training.

There are a number of military schools and colleges in the colonies, as (a) The Indian Staff College, at Quetta, with forty-nine student officers. (b) The Indian Cavalry School at Saugor. (c) The School of Musketry at Bloemfontein, S A. (d) Schools of Musketry at Pachmarhi, Satara, Changla Gah, Mayengo, India. (e) The Royal Military Academy at Kingston, Canada.

Comparison of the system of military education in Great Britain with that of other countries shows less time devoted to study and less exacting qualifications for the grade of officer than in most countries.

**Switzerland** — This country presents many novel features in her military and educational system, because she is the only country in the world which has formed an efficient scheme of national defense based entirely on a militia system. The preparatory training of the Swiss youth for military service begins early. Between the ages of ten and twenty years a course of gymnastics and elementary drill is made obligatory at public schools and elsewhere. To this is added rifle firing for the older boys, so that much of the "rawness" of the recruit has disappeared before they present themselves for enrollment. The principle that every

able-bodied male citizen must help to defend the State applies to all between the ages of twenty and forty-eight years, who are not exempted by law. The first twelve years are passed in the active army, and the next eight years are put in with the first reserve, or *Landwehr*. Finally, the eight years up to the age of forty-eight are in the second reserve, or *Landsturm*. Thus the active army is divided into twelve classes, according to age. Each year the young men who reach the age of twenty years report for duty as recruits. At the same time the class of those who pass the thirty-second birthday go into the first reserve, while still another class finish their term of service in the first reserve at the age of forty years.

A date is fixed when the young men of the recruit class present themselves for enrollment. They are then examined, the unfit are excused, the fit are assigned to the most appropriate branch of the service. They are armed, equipped, clothed, and instructed in the school of the recruits for ninety days in the cavalry, seventy-five days in the artillery, and sixty-five days in the infantry. At these schools the skeleton regiments, battalions, or companies necessary to give the entire body of recruits a technical organization are first formed by calling upon the newly appointed officers and noncommissioned officers in sufficient numbers. This is then an important part of the training of others besides the recruits.

Immediately after finishing his recruit course the soldier takes his place in the active army as a member of a company located near his home. Subsequent service of instructed troops is as follows. For cavalry, privates, and corporals, eight annual trainings of eleven days each; for infantry, seven annual trainings of eleven days each; for artillery, seven annual trainings of fourteen days each. The artillery, infantry, and other troops of the first reserve, cavalry excepted, have one annual training of eleven days. Thus the total service as a private of cavalry is 178 days, 184 for artillery, and 153 for infantry. These days are in addition to the days of reporting and dismissal. When they are counted, the total will be from eighteen to twenty-seven days more. It is to be observed that a day is counted for a full eight hours of hard work, in which all the time is occupied in a manner that has been carefully studied and planned beforehand. Each special arm has a course of its own. The butchers, bakers, teamsters, and others so essential to a field army, are organized, drilled, and worked in the way they should go.

Volunteer shooting clubs are subsidized by the government when they use the military firearm according to military rules. They are an important feature of the military system, every soldier between the ages of twenty and forty must either fire a course at one of these meetings once a year or attend a three days' course of practice under military supervision.

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For officers and noncommissioned officers the course is extended to thirty days. This training is in addition to other military service, and of course greatly increases the aggregate time given to the state by each man. In 1905 there were 3694 of these shooting clubs in that small state, with a membership of 220,147. The United States, being thirty times more populous than Switzerland, would, at the same rate, have 100,000 such clubs with a membership of six million and a half members, at an annual cost of two million dollars. That six million and a half membership will also represent the proportional number of armed, trained, and organized soldiers, maintained at a cost of half that of our own military establishment.

Advancement in the army depends upon ability and the time given to learning the duties of a soldier. Promotion to the grade of corporal comes on the recommendation of superiors, after the candidate has satisfactorily passed his recruit course and followed the course of training prescribed for the new grade. The sergeants are taken from the corporals, so that, after four years, a man has not ordinarily been able to get his commission as an officer. The principal schools for noncommissioned officers last thirty-five days for cavalry and artillery and twenty days for infantry, with corresponding courses for other arms. After qualifying as noncommissioned officers, they at once act as instructors at the recruit schools of the next class, and then take their regular annual course with the active army, so that in the year when a man becomes a corporal of cavalry he has 136 days' service, 124 days in artillery and 106 days in infantry. This course was taken by 2095 men in 1906.

Noncommissioned officers, or soldiers who are declared qualified, enter a preparatory school for officers lasting eighty days for cavalry and infantry, 105 days for artillery, and corresponding periods for other services. They are appointed lieutenants if satisfactory, and immediately practice their functions as such at a recruit school, and again follow it up with the annual training with their regiments. So that the lieutenant, in the year when he qualifies, devotes 181 days to military service in cavalry, 194 in artillery, and 156 in infantry. Seniority rules in promotion to first lieutenant. Above and including the rank of captain, promotion is by selection among the best officers.

Numerous schools are provided for officers. After reaching the rank of lieutenant, officers must remain four years in each grade, at least, so that they cannot reach the grade of colonel in less than twenty years. Before becoming captains they must successfully pass through the thirty days' course for captains and command a company at a recruit school. Before being promoted major, they have a course of fifty days, and command a battalion of recruits. Lieutenant-colonels and colonels have tactical

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exercises without troops for eleven days every other year. Candidates for the general staff have a seventy days' course. The general staff is the branch upon which the higher duties of the military profession are placed; their special work lasts from two to three months at a time. Thus, in an average case, it will take about forty-five days each year devoted to military duties in order to get regular promotion, and it will take about eight years to a captaincy.

About 220 instructors of all kinds are required to give the necessary direction to the various branches of military training. They constitute about the only permanent establishment in the army, and are under pay at all times. A portion of the general staff may be included in this. Notwithstanding the apparently exacting nature of the calls for military service in a country where it is fulfilled at the same time that a man pursues his ordinary vocation, it has been calculated that working hours are reduced only 1 per cent thereby.

**Turkey** — Turkey has a good system of military education, commencing with the primary grades and continuing up to a complete war school course. It was introduced with other military reforms by the distinguished general, Von der Goltz, who succeeded in a very short time in giving the country a first-class army.

**A Preparatory Schools.** — There are twenty-eight junior schools of this class, of which six are situated at Constantinople and the others are distributed among the principal cities. The boys wear uniforms, but are not quartered in barracks, receive no military instruction, properly speaking, and are under no obligation to enter the army unless they are otherwise bound by the law. The program of instruction simply conforms to that of the ordinary primary school. The course of instruction lasts four years. The head or director of each school is a military officer who has a number of officers as assistants, but most of the teachers are civilians. The military colleges are seven in number, and may be classed as senior cadet schools. The course is three years, and its character is distinctly military, most of the teaching personnel being military, and considerable military instruction being imparted. These colleges are usually placed at the headquarters of the Army Corps districts. Although specially designed to prepare for the army, there is no obligation to serve.

Those cadets who are desirous of entering cavalry and infantry join the Cavalry and Infantry School (*Mekteb i harbié*) at Constantinople. On graduation the pupils are commissioned in the infantry and cavalry as second lieutenants, while the unsuccessful are sent to join a regiment with the rank of first sergeant.

The School of Artillery and Engineers (*Mu-hendis-Khané i berri i humayoun*) at Constantinople prepares officers for the artillery and

engineers of the line of the army, as well as for fortress artillery. It has a military and scientific course which lasts four years. On graduation successful cadets join the army as second lieutenants. Those specially recommended at the end of the course, not more than one tenth of the class, undergo a further technical course for three years, on the completion of which they are promoted to be captains.

*B Schools for Officers* — The best of the graduates of the Cavalry and Infantry School, as well as a few of the higher graduates of the Artillery and Engineers' School, are assigned to take the course of the Staff School (*Erkiam i harbié mektebi*). The course is three years, and graduates are assigned to the General Staff with the rank of captain. The curriculum compares favorably with the other war colleges in Europe.

*C Schools for Noncommissioned Officers* — As only a small proportion of the officers come from the military schools, the balance is furnished by the promotion of meritorious non-commissioned officers, for whom there are appropriate schools.

*D Schools for Auxiliary Services* — The Military School of Medicine (*Mekteb i funoun thabie i chahané*) at Constantinople has a six years' course. Graduates enter the Sanitary Corps with the rank of captain, and take an additional two years in a military hospital.

A veterinary section is attached to the Cavalry and Infantry School, and graduates receive the rank of captain veterinarian.

**China** — The plans for an imperial army were made in 1907, and contemplated the formation of thirty-six divisions of troops, two for each province, before 1912. The scheme has met with numerous delays in execution, but the progress made has been remarkable. At present the number of students of the officer class is about 10,500, distributed as follows: —

At twenty-nine junior cadet schools, 6000 students, at three senior cadet schools, 1550 students, at one school for nobles and members of the royal family, 200 students, at one school for the rapid instruction of officers, 1140 students; at six provincial schools for rapid instruction of officers, 810 students, at one school for instructors, 120 students, at one provincial war college, 120 students, total, 9940 students.

There are also 500 officers and military students in Japan and thirty in Europe. Two graduated at West Point recently.

There are as yet no schools of application, and it is found necessary to provide officers at an exceedingly rapid rate for the new divisions from schools of instruction, in which the course is necessarily abbreviated. It is expected that the great Central School for Officers will be ready in 1911 and that the War College will be opened in 1916. Under present plans the army will need annually about 1500 officers, which will be completely provided by the national schools. This will be done in

1912, when there will be nearly 13,000 students, distributed as follows: —

In junior cadet schools 6000 students, or 2000 per year, in senior cadet schools 3600 students, or 1800 per year, in war schools 3200 students, or 1600 per year.

The ordinary progress of the Chinese officer will be as follows: entrance at a cadet school at age of fifteen years, at junior cadet schools, three years, at senior cadet schools, two years, service in ranks, four months, at war schools, eighteen months, service in ranks, six months. Thus at the age of twenty-two years and four months he becomes an officer. After two years with his regiment he may enter the War College, if specially selected for the honor, and will graduate in two years more.

Here again we have the German system. In addition to the officers' schools there are everywhere schools for noncommissioned officers and men. The school in fact is one of the most important parts of the soldier's life, and the army is today the most important factor in the introduction of western thought and learning throughout the country. Thousands of young men are learning to be officers, and the battalion schools of the army of 250,000 men are devoting two hours of study each day along with six hours of drill. The military profession is now honored where formerly it was despised. It is sought by the most favored youth of the land. Everywhere a sentiment of national patriotism is taking the place of former indifference. If improvement continues at the same rapid rate, it will not be long before China will be one of the greatest military powers in the world.

**Japan** — In all military nations, and in Japan particularly, the army is a school of the highest quality in which the habits of discipline and self-respect are formed and the principles of honor and patriotism are taught. In the public schools there is a military color given to the conduct and to the sports of the students which prepares them for their military service. Bushido is taught, and Honor occupies the first place in the list of studies. (See JAPAN, EDUCATION IN.)

The military educational system is based on the German.

*A Schools for the Preparation of Candidates for the Grade of Officer* are of two kinds, (a) Cadet Schools (*Chuo Yonen Gakko*), which prepare for the ensign (*Shikwan Kohosei*) examination, and (b) the War School (*Shikwan Gakko*), which prepares for the officers' examination.

(a) Cadet Schools are of two grades, a senior and a junior grade. The junior cadet schools are six in number, and are located at Tokyo, Osaka, Sendai, Nagoya, Hiroshima, and Kumamoto with an aggregate of about 127 instructors and administration officers and 900 students. Pupils are admitted at the age of thirteen years, and remain three years. Many of them are sons of officers and soldiers, and the same argument is made in Japan as in other countries for and

against their continuance. The additional objection is made that their expense is excessive, costing three million yen per year.

At the end of three years the cadets are transferred to the senior cadet school at Tokyo, where the course is for two years. The Tokyo institution has about 530 cadets and a corps of 76 officers and instructors, a part of whom are attached to the junior cadet school at the same place. About 80 per cent of the cadets pay their own expenses. The five years at the cadet schools may thus be supposed to have been completed at the eighteenth year.

The cadet schools furnish less than half of the candidates for officers, so that provision is made for candidates for commission direct from civil life. They enlist as one-year volunteers or candidates for commissions, with the approval and consent of the colonels of the regiments in which they desire to serve. These candidates enjoy certain privileges and at the end of the year of service they take the examination for ensign, or they are appointed without examination, if they possess a diploma from a civil school of sufficiently high grade. Having reached the grade of ensign, they take their place with the graduates of the cadet schools for the next step.

(b) The candidate school for officers (*Shikwan Gakko*) at Tokyo corresponds to the war schools of many other countries, and receives the ensigns for one year. It is commanded by a major general, assisted by 104 officers, and accommodates about 720 students, divided into six sections according to whether the cadets are to enter the cavalry, field artillery, infantry, engineers, heavy artillery, or train. Upon graduating, their candidacy is passed upon by the officers of their regiments, and if the result is favorable they are commissioned as officers by the Emperor.

*B. Schools for Commissioned Officers, or Schools of Application* — (a) *The Cavalry School of Application* (*Khei Jissai Gakko*), at Tokyo, has a term of one year with two courses, (1) Tactics, for captains and lieutenants, (2) Equitation and Hippology, for lieutenants and sometimes for noncommissioned officers. Probably officers and noncommissioned officers of the artillery and train are also admitted. At the close of the first year the best are selected for a second year as instructors. There are about 33 instructors and 136 student officers at this institution.

(b) *The Field Artillery Firing School* (*Yasen Hohei Shageki Gakko*) has a course of eight months for captains and one of four months for lieutenants of field artillery and mountain artillery. There are about twenty instructors and twenty-two students.

(c) *The Infantry School of Application* (*To-yama Gakko*), at Toyama, has a term of about one year, and three courses: (1) Tactics for captains and lieutenants of infantry, and sometimes of engineers and heavy artillery, (2) Gymnastics,

firing, and musketry for lieutenants and some noncommissioned officers of all arms, (3) Music course for musicians. The school has 45 officers in the permanent personnel and 145 officers as students.

(d) *Artillery and Engineering School of Application* (*Hoko Gakko*), at Tokyo, is commanded by a major general, assisted by fifty-nine officers, and it instructs 230 students, who are second lieutenants. Although the course is usually one year, the best students are given a second year, and at the close of the second term the best are again designated for study abroad. There are courses in field and heavy artillery and engineering.

(e) *The Heavy Artillery Firing School* (*Ju-hohei Shageki Gakko*) has three courses: (1) for captains and lieutenants of artillery, eight months, (2) for captains and lieutenants, four months, (3) for captains and field officers who have completed studies in the telegraph battalion and for noncommissioned officers who desire to study electricity. It has a staff of nineteen officers and fifty-four students.

(f) *The Staff College* (*Dai Gakko*), at Tokyo, tops the system, with a three-year course. It is commanded by a lieutenant general, with a staff of 46 assistants and 159 students. It dates from 1883.

*C. Schools for Noncommissioned Officers and Enlisted Men* — In addition to the schools for ensigns and certain selected noncommissioned officers, there are many other schools for enlisted men.

(a) *The Artillery Master Workman's School* has five courses: (1) Pyrotechnic section, (2) Master Saddlers' Sections 1 and 2, (3) Master Armors' Sections 1 and 2, (4) Master Wheelwrights' Sections 1 and 2, (5) Master Blacksmiths' Sections 1 and 2. (b) *Veterinary School* (*Jui Gakko*) at Tokyo, for farriers, has a five months' course.

All army divisions have probationary schools for officers, aspirant officers, and noncommissioned aspirant officers.

*D. Schools for Officers of Auxiliary Services* — (a) *The Intendance School* (*Keiri Gakko*), at Tokyo, for officers, probationary officers, and intendant cadets. It has a staff of 29, and 131 students for about two years. (b) *The Army Medical School* (*Gumi Gakko*) at Tokyo. (c) *The School of Military Topography*.

In 1876 when the new army was fairly started there were 2131 students in military schools; in 1893 there were 2602 students, in 1908 there were 2755. This will evidently be increased to correspond to the increased size of the army since the Manchurian campaign.

*United States.* — *A. Officers' Preparatory Schools* in the United States are confined to two classes. The first class consists of a single school, the Military Academy at West Point. Cadets are admitted at the age of seventeen on nomination by a congressman or by the President of the United States, the number of can-





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WEST POINT MILITARY ACADEMY.



didates allowed to each being regulated by law. The course lasts four years. A qualifying examination is required, or a certificate of graduation at a public school of good standard. All expense is borne by the government. The Military Academy closely resembles the military scientific and technical schools of other countries, where cadets are prepared for engineers, coast artillery, and other scientific branches of the service. Its prototype in Europe would be the Military Academy at Modena, in Italy, or the Polytechnic School of France.

The West Point system developed by itself, and probably was little influenced by other schools. One of its most distinctive features, for which great merit has been claimed, is due to the provision in the law of 1812 which prescribed that cadets shall "be trained and taught all the duties of a private, noncommissioned officer and officer." The result is to give instruction in the duties of all arms of the service. In other countries this part of an officer's military education is usually given in the ranks with troops, and that the duties of all arms are not learned by all officers. Much unjust criticism of West Point has been due to ignorance of its place in military education. Always a preparatory school of a high class, it has never been a war college. Its greatness is due to the high character of its graduates, and not to the course of study pursued by its alumni. The higher duties of command must be learned in another school. The suggestion has been made that perhaps it is time to defer to foreign experience in the plan of the Military Academy, and to form each class into two sections, one an Engineer-Artillery section and the other a Cavalry-Infantry section, each with a course of study appropriate to future service.

The second class of cadet schools is composed of certain civil schools in which "Military Science and Tactics" forms a part of the curriculum. It is a large class of nearly one hundred institutions, although only ten of them have the privilege of furnishing commissioned officers to the army. At these schools there are ninety-two officers detailed as military instructors.

At the inspection of 1910 22,147 students were present. About 10 per cent of the attendance in 1909 were at ten schools rated as "Distinguished," and another 10 per cent were at strictly military institutions. About 15 per cent had target practice on the range. A part of the attendance consists of boys under fifteen years of age, and in this respect these schools are like the junior cadet schools.

Under the provisions of General Orders, No 231, War Department, Nov. 16, 1909, these institutions are divided into five classes, as follows:—

**Class A** — Schools or colleges whose organization is essentially military, whose students are

habitually in uniform, in which military discipline is constantly maintained, and one of whose leading objects is the development of the student by means of military drill, and by regulating his daily conduct according to the principles of military discipline.

**Class B.** — State land grant or agricultural colleges established under the provisions of the act of Congress of July 2, 1862, which are required by said act to include military tactics in their curriculum.

**Class BA** — Any college of Class B which attains the state of efficiency required for schools or colleges of Class A shall be classed as BA.

**Class C** — All schools or colleges not essentially military which maintain a course of military instruction equal or superior in character and hours of instruction to that required of institutions of Class B.

**Class D** — All other schools or colleges at which officers of the army may be detailed and which do not maintain a course of military instruction equal to that required of institutions of Class B, and at which such instruction is regarded as nominal.

Institutions, not exceeding ten, whose students have exhibited the greatest application and proficiency in military training and knowledge during the year are designated annually as "Distinguished Institutions."

**B Schools of Application** — These are provided for every branch of the service.

(a) The Mounted Service School at Fort Riley, Kansas, for officers and noncommissioned officers of the Cavalry and Field Artillery, has three courses: (1) Training school for officers (2) Training school for horseshoers and farriers (3) Training school for bakers and cooks. It has ten officers as staff and military instructors, and thirty-six student officers. The course is one year.

(b) The Coast Artillery School at Fort Monroe, Va., has a two-year term divided into three courses: (1) Regular (2) Advanced (3) Enlisted specialists. It has an instructional staff of sixteen, and twenty-four student officers.

(c) The Engineering School at Washington Barracks, D C., has a course in civil engineering and a course in military engineering, with a term of one year, five instructors, and a class of fourteen officers.

(d) The Army School of the Line at Fort Leavenworth has four courses in a year of time: (1) Military Art (2) Engineering (3) Law (4) Languages. It has twenty-four officers in the staff and as military instructors, and thirty-six students. An engineering school of the line is about to be formed at the same place. A portion of the instructors are assigned also to the Army Staff College, to be mentioned later.

(e) A School of Musketry for Cavalry and Infantry is provided at Monterey, Cal.

At all military posts there are garrison

schools for officers, in which a great amount of work is prescribed.

(f) The most advanced schools of the army are the Army Staff College, Fort Leavenworth, Kan., with a course lasting one year and a class of twenty-three, and finally the Army War College at Washington, D C., with a permanent personnel of eight officers and twenty-one students, for one year. The War College course may be compared with that of the third year at the German *Kriegs-Akademie*, the Staff College course with the second year, and the Army School of the Line with the first year at that institution.

C All posts are provided with schools for enlisted men, but attendance is not compulsory. Schools for bakers and cooks are at Washington Barracks, D C., and at San Francisco, Cal. Schools for saddlers and for battery mechanics of Field Artillery are located at Rock Island, Ill. At many of the officers' schools there are courses for noncommissioned officers, as noted.

D *Schools for Auxiliary Services* — (a) An Army Signal School at Fort Leavenworth, Kan., instructs fourteen officers every year.

(b) An Army Medical School at Washington, D C., maintains a personnel of ten officers as staff and instructors, and sixty students.

The notable features of military education in the United States are the lack of coordination between the different institutions, and the fact that graduation at a war college is not an indispensable requirement for the general staff.

A scheme by which the military departments of the civil schools may be available in the plan of national defense is a matter of importance. Many of these schools compare favorably with the preparatory military schools of other countries, and they ought to be of great service to the country.

In no country of the world are officers required to spend more time on military education than in the United States, or to maintain a higher standard. It has been suggested that the standard is too high in respect to the scientific knowledge required from officers of all arms of the service. If there are faults in the military system, they are not in the military education, but rather in the lack of coordination, in the obsolete methods of promotion, in the difficulty of obtaining units at war strength for practical work.

**Other American States.** — Canada maintains a Royal Military College at Kingston, which furnishes a few officers to the regular army of Great Britain and also to the local reserves. Entrance is secured by competition, the course is three years, and the Corps of Cadets numbers about 100.

In the Mexican army there is a system of compulsory military education, strict attention at the classes being enforced. The soldiers are for the most part Indians, and when they join the ranks are almost without excep-

tion illiterate. They are given instruction in reading, writing, arithmetic, natural sciences, history, drawing, and singing. For officers there is the Military School at the Castle of Chapultepec, which provides about one third of those who receive commissions.

In Chile there is a very good system of military education prepared under German influences. A The preparatory schools for officers consist of (1) The Cadet School (*Escuela de Cadetes*) (2) The Military School (*Escuela Militar*). B The schools for officers are (1) The Cavalry School (*Escuela de Caballeria*) (2) The Artillery School, firing included (*Escuela de Artilleria*) (3) The Infantry School, including musketry, gymnastics, and fencing (*Escuela de Infanteria*) (4) The War College (*Le Academia de Guerra*). C The schools for enlisted men are (1) Preparatory School for Noncommissioned Officers (*Escuela Preparatoria de Sub-oficiales*) (2) Noncommissioned Officers' School (*Escuela de Sub-oficiales*). All of the schools except the War College are under the control of the Inspector General of Education. The War College is under the Chief of Staff.

The scheme of military education of Argentine, like that of Chile, is based on German models and is complete and comprehensive.

In other South American and Central American states the scheme of military education is in various stage of development, with a constant tendency to improvement.

**Military Educational Methods** — Most of the educational systems just described are devoted to purely academic instruction, and might just as well be given at any civil school. The use of giving a military character to the preparatory schools has often been disputed, but the idea that a certain amount of military training and discipline is beneficial for youths of every age seems to be gaining. This kind of military training is far from being military education, and might also be obtained in the ranks or in volunteer companies. Both the academic education and the military training or drill are therefore considered necessary before a man becomes an officer. The actual duties of commanding men in gradually increasing numbers must be learned later. The Military Academy at West Point is probably the finest preparatory school of this kind in the world.

After entering the body of officers the purely professional part of military education begins, and this is the particular function of the schools of application and the staff schools or war colleges. Some of the advanced schools for the scientific branches continue to hold much of their technical character, but the scholastic element is quite absent in the schools where officers are sent to learn the higher duties of their profession.

It would be quite easy to fill the course of these schools with the pedantic military learning of many centuries. The mass of stuff of this kind is immense, and was greatly increased

after the Napoleonic wars by numerous commentators who claimed to have discovered in many fantastic rules and maxims the secret of his success. It soon became evident that most of this would have to be put aside, and that military education would have to follow another line.

As war is one of the most ancient and honorable of all the vocations of man, it strikes us at once as remarkable that it should have been so long and successfully conducted without the paraphernalia which in comparatively recent years have been thought necessary. The criticism is just, but easily explained. The wars of mobs and strong men were characterized by deceit and perfidy or by drill and discipline, and were won by the side which showed most proficiency in one or the other. The armies were small and easily handled. The world was often at the mercy of inferior races, ridiculously small in numbers, neither great in courage nor wise in mind. But the age of invention changed all this. The invention of gunpowder increased the length of each man's arm, brought the knight to a level with the peasant, and made new varieties of skill necessary for success. The invention of steam made it possible to feed and assemble greater armies than ever before. The policy of universal liability to service, quick mobilization, and peace training has given us the "Nation in Arms." To train officers for their new responsibilities, so much greater and more complicated than ever before, is the object of military education.

To teach men their duties in war by peaceful means without giving them the experience of war was the greatest difficulty to be met. In other words, to give them practical instead of theoretical methods of instruction was the important end of all instruction. Practical methods of instruction had indeed been found and long practiced by all other professions. The schools of medicine, electricity, law, engineering, and others, of late years have constantly improved and developed the practical course. They have reached the point where theory and practice go hand in hand, teaching principles by practical examples, and sending out graduates from their universities who are ready to begin the active practice of their profession.

The difficulties of giving a practical military training in time of peace disappear on an analysis of the situation, which shows. First that most of the situations requiring practical knowledge by officers can be studied apart from the battle itself and even away from the presence of troops. Second, that one thing should be learned at a time, following the sequence of events as they would present themselves in actual service. Third, that by a proper selection of examples for study an officer will be able to gain a variety of experience closely resembling that obtained in real war.

This, therefore, is the applicatory or deductive system, involving the study of concrete cases

instead of the abstract study of principles. The principle and the illustration may be considered together, but it is better to study the example first and decide on the principle afterwards. It is like the method of the child in learning to speak the language before learning the grammar, for here we study the campaign first and pick out the principles afterwards, thus reversing the former methods.

It will be apparent that our system has decided advantages over the actual school of war. During war the ground, the troops, the killed and wounded, conflicting reports, the sense of responsibility, the nervous strain, are all crowded upon us at once with a thousand variations. In our peace system every distracting influence is excluded, and every subject except the one proper to the case in hand.

Taking account only of the duties of officers, they may be divided into two classes — those conducted indoors and those conducted in the open. In the first class are map problems and map maneuvers, in the second class are staff rides or terrain exercises and maneuvers. Noticing them in the order named, there are map problems which are simply military situations stated in the form of problems for solution, and solved by the aid of a map. It is logical to consider them first, because the officer sees the map before he sees the ground, studies it, and makes his plans beforehand. The result of the study causes a decision to be reached which is stated in the form of an order to the troops. This order is the foundation on which the entire structure of command is built. To acquire the habit of issuing correct and sound orders takes much time and is reduced to a beautiful system. It makes no difference what the size of the command may be. The map maneuver comes next, and resembles in a way the ancient game of chess. The checkerboard is represented by a map of large scale, the pawns are replaced by blocks or markers indicating tactical organizations, and the rules are governed by the well-known powers and limitations of troops in moving over varying conditions of ground. The map maneuver tests the correctness of the decision made in solving the map problem. By these simple means many varieties of military questions are usefully studied, practiced, and decided.

The first kind of outdoor exercise has been called a war ride, although it may be a walk as well. Its distinctive feature is that the map of the map maneuver is here replaced by the real ground. The troops remain absent because of the rule to learn one thing at a time, and it is well known that the officers would otherwise have their attention largely devoted to personal direction of the troops. The object is still to practice the officers in making quick and accurate decisions, and for this the troops may continue to be imaginary.

Finally the troops themselves appear upon the stage, and the officers may now be said to

be ready to take up the mechanical duty of handling the men. This part of the military education is called the maneuver stage. It is also progressive in its character, beginning with an enemy whose position is outlined at first by flags and markers, ending at last with troops actually represented as an enemy, with both sides firing blank ammunition. This is the last rehearsal in time of peace for the serious drama of war. In most respects it gives a practical demonstration of war, lacking only the element of danger, which cannot be supplied in peace.

Abundant experience has shown that this method of military education in time of peace furnishes armies in every way ready for war, not only ready but able to carry on war more efficiently than any other soldiers who ever lived.

E S

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**MILITARY SCHOOLS, PRIVATE** -- See MILITARY EDUCATION, PRIVATE SCHOOLS

**MILITARY TRAINING IN THE SCHOOLS** -- See SCHOOL MANAGEMENT

**MILL, JAMES** (1773-1831) — The son of a shoemaker, born at Montrose, Scotland, and educated at the University of Edinburgh, where he distinguished himself in Greek and philosophy. Not succeeding as a preacher, he went to London as tutor in the family of Sir John Stuart. This constituted his educational experience, together with the training of his son, John Stuart Mill, an experiment of unusual interest. The education of this precocious child he kept entirely in his own hands and conducted according to his own peculiar ideas. The boy began Greek at three, and at eight had read in the original Æsop's *Fables*, the *Anabasis*, the whole of Herodotus, and six *Dialogues* of Plato, a translation of Plutarch, and the *Histories* of Robertson, Hume, Gibbon, Rollin, Burnet, and Mosheim. He had also begun the study of Latin, Euclid, and Algebra, and was teaching younger children. At ten he had read all the usual classical authors and more. At twelve he was studying Plato and Aristotle, and at thirteen Adam Smith and Ricardo. A detailed account of these studies is given in his *Autobiography* and in Bain's *Biography* of his father. The case was of singular psychological interest. This strenuous method of education produced an intellectual prodigy. Its most effective feature was the intimate association of the child with the vigorous intellect and character of his father and their partnership in scholastic pursuits. But the boy was not the passive victim of a mechanical process of indoctrination. In accordance with his favorite maxim that "one of the grand objects of education must be to generate constant and anxious concern about evidence," the elder Mill encouraged his son to collect and weigh evidence and to accept nothing upon authority. The boy was brought up as a thoroughgoing agnostic, and afterwards described himself as one of the few

persons in England who had not thrown off his religious belief, because he never had any. He always averred that his childhood was not unhappy, although almost entirely lacking in the element of play, and that his tasks were not so severe as to prevent his healthy growth.

James Mill wrote much for the magazines on educational topics in later life, and took an active part in the founding of University College, London. His life in London was devoted chiefly to literary and philosophical pursuits, although he held an important office in the East India Company. His *History of British India* was his greatest literary work, and produced a complete change in the government of that country. Mill played an important part in English politics, and was the originator of what is known as "philosophic radicalism." The Reform Bill was carried through Parliament under his auspices. He was the chief friend and ally of Jeremy Bentham (*q v*), to the propagation of whose principles he devoted all his energies. His *Political Economy*, written primarily for the instruction of his son and following the lines of Ricardo, was a highly finished work. His *Analysis of the Human Mind*, which has been regarded almost as the Bible of associationism, won him a high position in psychology and philosophy. Its chief merit lies in its accurate definition of terms and clear statement of results. It simplified association (*q v*) by reducing it to a single form—association by continuity, and made great use of "mental chemistry" in fusing ideas and feelings and in showing that morality is based on utility. Thus he furnished a psychological foundation for Bentham's legislative and ethical reforms. W R.

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**MILL, JOHN STUART** (1806–1873) — One of the greatest philosophical writers and thinkers of the nineteenth century, lived his whole life in London. Like Spencer, he had no university training, but was educated entirely by his father, James Mill (*q v* for this interesting educational experiment), in accordance with his own peculiar ideas. This rigorous discipline brought on in his twentieth year mental disorders from which he was rescued with difficulty. After a period of rest and foreign travel, he entered the service of the East India Company, in which he continued for thirty-three years. Much of his time was devoted to philosophical pursuits. In philosophy he was an empiricist, sensationalist, and associationist; in politics, a radical and individualist, in ethics, an utilitarian. He be-

came an author at a very early age. His *System of Logic* is the most original of his works. It was severely criticized by Whewell and others from the scientific point of view, but it became a classic, and ensured him a high reputation in the educational world. His *Principles of Political Economy* followed closely the lines of Ricardo. His *Examination of the Philosophy of Sir William Hamilton* was his chief philosophical work. His *Essays on Religion, Liberty, Utilitarianism*, and the *Subjection of Women* attracted wide attention. His chief contribution to educational literature was his *Address Delivered at his Inauguration* as Rector of St Andrew's University, which ranks with those of Spencer and Huxley, and exerted a profound influence upon the thought of his day. His thesis was that there is no real antagonism between classical and scientific studies, such as was then supposed to exist, and he raised the question, "Why not both?" He argued strongly for a full and complete education in both directions, but the curriculum which he advocated ruled out modern languages and literature entirely, made extravagant demands for ancient learning, and left little time for scientific training. It was a practical surrender to the classicists. W R.

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**MILLET, MME** — See INFANT SCHOOLS

**MILLIGAN COLLEGE, MILLIGAN, TENN** — A coeducational institution founded in 1882 as the outgrowth of Buffalo Institute. Academic, Bible, collegiate, commercial, and musical departments are maintained. The entrance requirements are fifteen units of work. The college confers the degrees of A B, B Lit., B S, and A M on completion of appropriate courses. The enrollment in the collegiate department in 1910–1911 was 134. The faculty consists of eleven members.

**MILLINERY** — See HOUSEHOLD ARTS

**MILLS COLLEGE, OAKLAND, CAL** — An institution for the higher education of women, founded in 1871 as Mills Seminary, and the only woman's college on the Pacific slope. A preparatory department was maintained until 1911. The entrance requirements are fifteen units. The degrees of A B., B L., and B S are conferred in the classical, literary, and scientific courses. The enrollment in 1911–1912 was 121. There is a faculty of thirty-five members.

**MILLS, CYRUS TAGGERT** (1819-1884) — Founder of Mills College, was graduated from Williams College in 1844. He studied at the Union Theological Seminary, and engaged in missionary labors in Hawaii. In 1860 he became president of Oahu College, near Honolulu, and from 1864 to 1871 was principal of secondary schools in California. He founded Mills Seminary, now Mills College, in 1871. W. S. M.

**MILLSAPS COLLEGE, JACKSON, MISS.** — An institution chartered in 1890 under the control of the Methodist Episcopal Church South, and opened in 1892. A preparatory school, college, and law school are maintained. The entrance requirements are fourteen units. The degrees of A B and B S are conferred by the college. The law school grants the LL B. after a course of two years without entrance requirements. There was in 1911-1912 an enrollment of 285 students in all departments. The faculty consists of fourteen members.

**MILTON, JOHN** (1608-1673). — During the English Civil War, as in other revolutionary periods, new ideas were in the air, not only in regard to politics and religion, but in every sphere of life. The stress of the war drove John Milton, already famous as a poet and a literary genius, to the practice of education as a profession, and, being what he was, also to write on the theory of education. In 1640 he set up house in Aldersgate Street, London, where he entertained a few select and aristocratic private pupils, whom he carried to prodigious lengths of learning. In 1644, at the invitation of Samuel Hartlib (*qv*), he published a *Tractate on Education*, and about the same time wrote a little schoolbook, not published till 1669, called *Accedence commenced Grammar*. The latter was written because the authorized Lily's *Grammar* made "two labours of one, by learning first the accedence, then the grammar in Latin, ere the language of those rules be understood" and purported to apply the only remedy, to join both books in one and in the English tongue. It was, in fact, a Latin grammar in English, much simplified, largely by omitting the exceptions to the rules. Though Milton's contemporary, Charles Hoole (*qv*), also translated Lily into English, Lily was destined to reign in Latin and produce a hatred for literature in many thousands of English boys for many years to come.

The *Tractate on Education* was also aimed at shortening the road to learning and to prevent "the waste of seven or eight years merely in scraping together so much miserable Latin and Greek, by giving a complete and generous education, which fits a man to perform justly, skillfully, and magnanimously all the offices, both public and private, of peace and war." This was to be done by substituting a knowledge of things for a knowledge of words. But Milton had no idea of

getting at the "things" in English. He would have none of the modern tongue, *Janua* and *Didactics*, "more than ever I shall read," of Comenius (*qv*), then in great vogue. Things must be got at through Latin and Greek. This was sensible enough, as all the authors who wrote on "things," from agriculture in Cato, Varro, and Columella, and architecture in Vitruvius to physiology in Aristotle or *Cynegetica*, the "Book of the Dog," in Oppian were to be found in the two tongues. Grammar, therefore, was the real gate of learning, as it always had been since Latin ceased to be a spoken vernacular. But it was to be learned "out of some easy and delightful book of education," as Plutarch or Quintilian, "with lectures and explanations." In passing through this gate, and having passed it, the pupil was to study everything, — geography, trigonometry, fortification, engineering, navigation, "then out of some not tedious writer, physic, so that they may know how to manage a crudity." Only later were to come comedies and tragedies, followed by politics and laws from Moses and Lycurgus to Justinian and the common and statute law of England. During hours of exercise, which were not to be stinted, fencing, wrestling, music, riding, sailing, were to be learned. Italian was thrown in to be learnt at odd hours, and Hebrew, Syriac, and Chaldee on Sundays. In fact, like Quintilian's Orator or Machiavelli's or Elyot's Prince, every one by the rational system was to become a living cyclopedia.

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The most familiar form of such interpretation is called muscle reading, a term that indicates the part played by involuntary contraction of muscles. Within this field the most familiar demonstration is that of indicating the mere direction of the object thought of or attended to. For this purpose an instrument such as the automatograph is helpful. The instrument consists, in one form, of a board suspended from the ceiling by a thread, and having

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**MILLS, CYRUS TAGGERT** (1819-1884).—Founder of Mills College; was graduated from Williams College in 1844. He studied at the Union Theological Seminary, and engaged in missionary labors in Hawaii. In 1860 he became president of Oahu College, near Honolulu, and from 1864 to 1871 was principal of secondary schools in California. He founded Mills Seminary, now Mills College, in 1871. W. S. M.

#### **MILLSAPS COLLEGE, JACKSON, MISS**

—An institution chartered in 1890 under the control of the Methodist Episcopal Church South, and opened in 1892. A preparatory school, college, and law school are maintained. The entrance requirements are fourteen units. The degrees of A B and B S are conferred by the college. The law school grants the LL B after a course of two years without entrance requirements. There was in 1911-1912 an enrollment of 285 students in all departments. The faculty consists of fourteen members.

**MILTON, JOHN** (1608-1673).—During the English Civil War, as in other revolutionary periods, new ideas were in the air, not only in regard to politics and religion, but in every sphere of life. The stress of the war drove John Milton, already famous as a poet and a literary genius, to the practice of education as a profession, and, being what he was, also to write on the theory of education. In 1640 he set up house in Aldersgate Street, London, where he entertained a few select and aristocratic private pupils, whom he carried to prodigious lengths of learning. In 1644, at the invitation of Samuel Hartlib (*q.v.*), he published a *Tractate on Education*, and about the same time wrote a little schoolbook, not published till 1669, called *Accedence commenced Grammar*. The latter was written because the authorized Lily's *Grammar* made "two labours of one, by learning first the accedence, then the grammar in Latin, ere the language of those rules be understood" and purported to apply the only remedy, to join both books in one and in the English tongue. It was, in fact, a Latin grammar in English, much simplified, largely by omitting the exceptions to the rules. Though Milton's contemporary, Charles Hoole (*q.v.*), also translated Lily into English, Lily was destined to reign in Latin and produce a hatred for literature in many thousands of English boys for many years to come.

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directions to perform a set task, but only one of which he is to open, and if upon his return he be subjected to a series of association or similar tests, an examination both of the time period and of the nature of these associations may determine beyond doubt which of the two envelopes he opened and which of the two tasks he performed. The wider and more delicate application of this principle for the discovery of crime has recently excited attention. Throughout, the common principle is the revelation of the mental content by involuntary indications, which in turn are either a form of muscular expression or of an interference with the normal flow of the mental expression. The methods by which we read human expression and the underlying sincerity of candor, or the insincerity or perturbation of embarrassment are similarly conditioned.

J J

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**MINERALOGY** — The science of minerals. See GEOLOGY; TECHNICAL EDUCATION

**MINING, EDUCATION IN** — See TECHNICAL EDUCATION

**MINISTRY, EDUCATION FOR THE.** — See THEOLOGICAL EDUCATION.

**MINISTRY OF EDUCATION, MINISTER OF EDUCATION.** — The name frequently applied to that department of government which administers educational affairs. Its director or minister of education is usually a party politician, and holds office and is a member of the cabinet as long as his party is in power. Such ministries of education have in most countries been established within the last century, and in some the ministry of education is combined with other functions. The modern tendency, however, owing to the increased importance of education everywhere, is to establish separate bodies.

**Germany** — The full development of ministries of education has not yet taken place in the German states. Educational affairs are either administered by the Minister of the Interior, by a Department for Ecclesiastical Affairs, or by a ministry which has charge of both public worship and education. (See GERMANY, EDUCATION IN.) Here only the development of the central administration in Prussia will be dealt with. As long as education was under church control, it was administered and supervised by the church authorities solely. In the middle of the eighteenth century both church and school affairs came within the jurisdiction of the Department of Justice, from which they were separated and placed under the *Oberkonsistorium* in 1750. In 1787 a separate

department for education (*Oberschulkollegium*) was established under the Minister for Church and School Affairs (then Zedlitz). In 1808 public worship and instruction was placed under a Minister for the Interior, from which in 1817 these functions as well as the charge of medical affairs were withdrawn and a new ministry established in the *Ministerium der geistlichen und Unterrichtsangelegenheiten*, which in the middle of the nineteenth century became the *Ministerium der geistlichen, Unterrichts- und Medizinalangelegenheiten*, or Ministry of Public Worship, Education, and Public Health. The Department of Public Health has been separated off since Jan. 1, 1911. There is a strong movement to establish an independent ministry for education. At the head of the ministry stands the minister, who is responsible to parliament for the management of affairs within his jurisdiction. He is assisted by an undersecretary. The educational section is divided into two departments, each under a director, the one dealing with university, secondary, technical, and art education, the other with the education of girls, physical training, and special institutions for idiots, blind, deaf and dumb. There are employed six sectional directors, thirty counselors, and twenty-three assistants.

**England** — The chief executive officer responsible for the national educational administration is the President of the Board of Education, established by the Board of Education Act, 1899. In 1839 a Committee of Council was formed to superintend the application of the first national grant for education. In 1856 the Committee of Council and the Science and Art Department were united in the newly created Education Department under the Lord President of the Council, sitting in the House of Lords, and a new official, the Vice-President, with a seat in the House of Commons. In 1899, as a result of the suggestions of the Bryce Commission, the Board of Education Act was passed, providing for the creation of a Minister of Education, known as President of the Board of Education, responsible for primary, secondary, and technical education in England and Wales. (See ENGLAND, EDUCATION IN.)

The President is assisted by a permanent secretary. The board is divided into two main departments for England and Wales, although certain branches are common to both. The following are the branches into which the work is subdivided: architects, medical, women inspectors, legal, elementary education, secondary school, technological, university and training of teachers, and special inquiries and reports. Scotland and Ireland have separate departments for education, but are represented by the state secretaries for the respective countries.

**France** — During the Revolution several experiments were made in establishing a central authority for education. From 1795 to 1808 there was a *Directeur Général de l'Instruction publique* in the *Ministère de l'Intérieur*; this

arrangement was continued under Napoleon, the director bearing the name of Grand-Maître. In 1815 a *Commission de l'Instruction publique* was established and continued until 1820, when it became the *Conseil royal de l'Instruction*. In 1822 the position of Grand-Maître was restored, and in 1824 education was placed under the charge of the *Ministère des Affaires ecclésiastiques et de l'Instruction publique*, from which it was separated in 1828, when a Minister of State for Education was appointed (*Ministère de l'Instruction publique*). To this ministry there was added in 1870 the department of fine arts (*Département des Beaux-Arts*). The ministry was reorganized in 1884. There are thirty bureaux under the control of the Minister of Public Instruction, of which seventeen have charge of educational affairs (cabinet of the minister, one bureau, higher education, five bureaux, secondary education, five bureaux, primary education, five bureaux, and accounts, one bureau). Each of the educational bureaux is under a director who is a professional expert.

**United States** — Here there is no ministry of education. There is no federal authority over education. A bureau of education under the control of a commissioner of education was established in 1867 in the Department of the Interior. It has several times been proposed to establish a separate department of education under a state secretary, but it seems improbable that this plan will ever be carried out.

For the central authority in other countries see the separate national systems, *e g.*, AUSTRIA, EDUCATION IN

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**MINNESOTA, STATE OF** — First organized as a separate territory in 1849, and admitted to the Union as the thirty-second state in 1858. It is located in the North Central Division, and has a land area of 80,858 square miles. In size it is one third larger than all New England, about one half as large as California, and about the size of England, Wales, and Scotland combined. For administrative purposes the state is divided into eighty-six counties, and these in turn into cities, towns, and school districts. In 1910 Minnesota had a total population of 2,075,708, and a density of population of 25.7 per square mile.

**Educational History** — The first school for white children in Minnesota was established at the present site of St. Paul in 1847, two years before the organization of the territory, and when it was first organized in 1849 there were but three settlements in the territory at St. Paul, St. Anthony, and Stillwater. The first territorial legislature in 1849 enacted the first school law. This provided for the appointment of a Territorial Superintendent of Public Instruction, to be appointed by the Governor

for two-year terms, and at a salary of \$100 per year, constituted each township having five families a school district, with a clerk and three trustees, but permitted the division into school districts if the township had ten or more families, and levied a county school tax of two and one half mills, to which was to be added all money derived from liquor licenses and fines for criminal offenses. The trustees had the power to examine and hire teachers. This law remained almost unchanged until 1860. The first report of the Superintendent of Public Instruction, for the year 1851, reports but eight districts and three schoolhouses in Ramsey County, and four districts and one schoolhouse in Washington County, and an enrollment of but 250 pupils in the state. In 1851 the legislature established the University of Minnesota, though the institution was not opened to students until 1868, the interval being spent largely in erecting a building and in struggling with debts in an effort to save the university's land endowment. In 1853 higher or grammar school classes were organized, and in 1854 a three months' term of school was required. In 1855 the office of Territorial Superintendent of Public Instruction was abolished, and no such official existed again under the territorial form of government.

In 1858 Minnesota was admitted to the Union. The constitution formed at that time made it the duty of the legislature to establish a general and uniform system of public schools, to provide for the sale of the school lands, the safeguarding of the principal, and the distribution of the income from the fund to the townships, on a census basis, provided for general taxation for education, and confirmed the University of Minnesota in its establishment and privileges. This section has remained practically unchanged ever since. An agricultural college was founded, by law, the same year, but in 1868 it was consolidated with the State university. The first state normal school, also, was established in 1858, and opened in 1860 at Winona. In 1868 a second state normal school was opened at Mankato, and in 1869 a third at St. Cloud. In 1860 the city of St. Anthony was authorized to establish a high school, town superintendents of schools were ordered to be appointed to examine and license teachers, and the chancellor of the State university was made *ex officio* State Superintendent of Public Instruction. In 1862 the town of Winona was permitted to effect a separate organization under a board of education, a county examiner, appointed by the county commissioners, superseded the town superintendent, and the Secretary of State became *ex officio* State Superintendent. In 1864 the appointment of a county superintendent of schools was authorized, if the counties so desired, in 1869 the appointment of such an official was required in all established counties, and in 1877 the office was made

elective and required of all counties. In 1867 the Governor was authorized to appoint a Superintendent of Public Instruction, a plan that has been followed ever since. The state first began to care for the blind, deaf, and dumb in 1863, establishing three institutions for such defectives at Faribault, school district bonds were authorized first in 1866, state teachers' institutes were aided first in 1867 and state teachers' certificates were authorized first in 1868. In 1875 an important change was made in the method of distributing the income from the state school fund by providing for a forty-day enrollment basis, instead of a census basis, and this was also made to apply to the distribution of the state one-mill tax for schools, first authorized in 1887. In 1877 the constitution was amended to prohibit aid to sectarian education. In 1878 the state high school law was enacted, the policy of state subsidies for high schools begun, and a State Inspector of high schools appointed. The policy, begun here, has recently been extended to many forms of extra-educational effort. In 1878 women were permitted to vote at school elections. In 1885 state aid for school libraries was granted, a state school for dependent and neglected children established, the Minnesota state reading circle organized, and a compulsory education law enacted requiring twelve weeks' attendance of all children eight to sixteen years of age. In 1899 this law was amended so as to cover the whole time the schools were in session, in 1907 the child labor law was re-enacted and made into a good law, and in 1911 the excuse of poverty for non-attendance was withdrawn. In 1901 the consolidation of schools and the transportation of pupils was authorized, in 1905 county rural school commissioners were authorized to redistrict the counties, and to locate consolidated schools, and in 1909 rural schools were permitted to vote to unite with a central town school for instruction in manual training, domestic science, and agriculture, and to put themselves under the supervision of the superintendent of the central town school. In 1911 state subsidies were granted for consolidation, state aid was granted for the erection of a consolidated school building, and an Assistant Superintendent of Public Instruction was appointed to help forward the consolidation of schools. Efforts were also made in 1911 to secure the creation of a State Board of Education. A constitutional amendment also was submitted in 1911, for the second time, to permit of the imposing of professional standards for the office of county superintendent of schools.

**Present School System** — At the head of the present state school system is a State Superintendent of Public Instruction, appointed by the Governor, with the consent of the senate, for two-year terms. He receives a salary of \$3000 and traveling expenses, and appoints a deputy superintendent at \$1800. He has

general oversight of the public schools of the state, meets with the county school superintendents and advises with them, makes provision for the county teachers' institutes, and apportions the State Institute Fund, provides for examinations for teachers' certificates in the different counties at times uniform throughout the state, holds examinations for professional state certificates, may grant permits to teach, and special certificates in certain cases, apportions the state school fund, and grants some of the subsidies for extra educational undertakings, and makes an annual report to the Governor. He is also a member, *ex officio*, of the State High School Board, the State Normal School Board, and the Board of Regents of the state university. The Attorney-General is the official adviser of the State Superintendent, and his opinions have the force of law until overruled by a court.

For each county there is a county superintendent of schools, elected by the people for two-year terms. The salary of the office is fixed by the county commissioners. If there are over 125 teachers in the county, a deputy may be appointed. It is the duty of the superintendent to visit each school in his county at least once each term, to organize and conduct teachers' institutes, to advise teachers and school boards as to the best methods of instruction and as to plans for buildings and ventilation, to keep all records, and file all official papers, to call a meeting each year of the district school officers, for the purpose of instruction on their work and duties, to hold examinations for teachers on dates designated by the State Superintendent, and to revoke the certificates issued for cause, and to make an annual report to the State Superintendent.

The organized territory within each county is divided into common, independent, and special school districts. These may be consolidated or divided, by petition and election. For unorganized territory, a county board of education, consisting of the chairman of the board of county commissioners, the county superintendent of schools, and the county treasurer, looks after the educational needs of the children, and levies a tax to provide instruction for them. The county commissioners may, and on petition of 25 per cent of the residents must, appoint a rural school commission of seven, one of whom is the county superintendent, to redistrict the county and form consolidated districts and farm schools. The plan and map are published and submitted to a vote of the people for approval. The annual school meeting is held in July, special meetings may be called, and women may vote at such and hold school offices. Such meetings may elect officers; select sites, build and move buildings, vote money for maintenance, and provide free textbooks. On request of five persons, the question of free textbooks must be voted on. About 90 per cent of the districts

provide free textbooks, the remainder selling them to the pupils at cost. Common school districts have a chairman, treasurer, and clerk, elected as such, and independent districts have a board of six directors, who may employ a superintendent of schools. The boards of both forms of districts have power to purchase and sell equipment, lease classrooms; employ and dismiss teachers, provide free textbooks, or sell them at cost to pupils, prescribe rules and regulations for the schools, determine the textbooks and courses of study, admit nonresident pupils, establish and discontinue such grades of schools as are thought best, provide transportation for pupils living more than half a mile from school, contract with adjoining districts for the instruction of pupils, and independent districts may establish kindergartens and evening schools. In common school districts the board submits an estimate of financial needs to the annual meeting for approval, but in independent districts the board determines and levies the tax. Clerks and treasurers may be paid a small sum for their services, and members are paid a *per diem* and mileage to attend the annual county school board convention, called by the county superintendent. The exclusion or segregation of pupils on account of race, color, social position, or nationality is forbidden. All public schools must be free, and taught in the English language, though one hour per day in foreign languages is allowed. The schools are divided into the following grades, or groups --

- (1) High schools nine months' term, teachers, course, and equipment approved
- (2) Graded schools nine months' term, four teachers, principal must be a normal school graduate, or must hold a state professional license
- (3) Semi-graded schools eight months' term, two teachers, principal must hold a first or second-grade certificate
- (4) Consolidated rural schools --
  - (A) eighteen or more sections of land, eight months' term, four rooms, principal able to teach agriculture
  - (B) eighteen or more sections, eight months' term, three rooms, principal same
  - (C) twelve to eighteen sections, eight months' term, two rooms, principal same
- (5) Common schools --
  - (A) eight months' term, teacher first-grade certificate
  - (B) eight months' term teacher second-grade certificate
  - (C) seven months' term, teacher second-grade certificate
  - (D) shorter schools and lower grade certificate

**School Support** -- The state originally received 2,969,990 acres of land in the sixteenth and thirty-sixth section grants, about two thirds of which have been sold. The permanent state school fund is now about \$20,000,000, and is increasing nearly one million dollars a year from sales of land and timber, mineral leases, and iron royalties. The state one-mill tax for schools produces over \$6,000,000, making a total state fund of about \$8,000,000 for

apportionment. This is about 20 per cent of the cost of the school system. The income on this fund, together with the state one-mill tax, produces a fund of over \$2,000,000 a year, which is apportioned to the counties and districts on the basis of a forty days' enrollment in the schools. The amount received in each county from fines, strays, and liquor licenses is added to the fund, before apportioned to the districts. This fund can be used only for teachers' wages, and all districts must raise an equal amount by local taxation. The local taxation consists of a one-mill county tax, but given back to the districts paying it, and local district taxes in addition, as voted. These latter may reach fifteen mills for maintenance, and ten mills for buildings in common districts, up to eight mills for buildings in independent districts, up to nine mills for all purposes in districts of 20,000 to 50,000, and up to eight mills for all purposes in districts of over 50,000.

In addition to the regular state fund and tax Minnesota has gone further perhaps than any other state in the matter of special grants and subsidies for special and desirable educational efforts. A list of these grants, as they were made for the biennium of 1911 and 1912, will show their nature and extent --

SCHOOL	GRANTS	APPROPRIATIONS, 1911 AND 1912
Regular High Schools	\$1750	
Two year High Schools <sup>1</sup>	\$500	
Normal Training Course in	\$750	\$320,700
Agricultural High Schools <sup>1</sup> Up to		
Graded Schools	\$2500	210,000
Semi-graded Schools	\$600	133,600
Industrial Courses in high or	\$300	160,958
graded schools <sup>2</sup>	\$1000	
Rural Schools <sup>2</sup> uniting for Maintenance	\$200	125,000
Consolidated Rural Schools <sup>2</sup>	\$750, \$1000 or \$1500	
Consolidated Rural Schools <sup>2</sup> -- New buildings	Up to \$1500	100,000
Rural Schools abandoned and pupils transported <sup>2</sup>	\$150	
Grants to Common Schools	\$50, \$100, \$150	910,617
Schools in unorganized territory		100,000
Public School Libraries	\$10, \$20	15,000
Public Schools on Indian Reservations		15,000
Five cents an acre for state land in districts. Up to Webster's Dictionaries for schools	\$250	50,000
Teachers' Institutes in the counties	\$7	4,800
		27,000
Total Specific Grants for Biennium		\$2,192,675.

<sup>1</sup> Added in 1909

<sup>2</sup> Added in 1911

The total cost of the public school system for maintenance only was about \$10,000,000 in 1910.

**Educational Conditions** -- Educational conditions in Minnesota are very good, for a state so sparsely settled. The state is richly agricultural, with a thrifty agricultural people.

59 per cent of the total population live in country districts, and 25 per cent in the two cities of St. Paul and Minneapolis. In the whole state are only 165 cities and towns with schools of four or more teachers, while among the rural schools of the state 258 enrolled less than 10 pupils, and 1860 less than twenty. 53 per cent of the total population is male, less than one third of 1 per cent are of the colored race, and 73 per cent are native born. The illiteracy is low, being about 4 per cent in 1910. The foreign born are largely Norwegians, Swedes, English and Canadians, and Germans. Marked educational progress has been made during the past decade, particularly along the lines of lengthening the term, eliminating the untrained and weak teacher, the consolidation of schools, and the introduction of agricultural and industrial instruction. The state has good schoolhouses, 85 per cent of the districts have school libraries, and the schools have good equipment. A State Library Board, consisting of the State Superintendent and the presidents of the five state normal schools, publishes lists of books, arranges contract prices, and apportions state aid to the districts of \$20 the first year, and \$10 thereafter, provided the district raises at least as much. About 100,000 volumes are added to the libraries each year. The inspection carried on by the different state inspectors has had a marked influence for good on the schools. The state has a good compulsory education law, children from eight to eighteen being required to go to school all the time the schools are in session, unless excused for certain specific reasons. In 1911 the excuse of poverty was withdrawn. Any board may appoint a truant officer, maintain a truant school for pupils from eight to sixteen, and may secure commitment of incorrigibles to the state training school. No child under fourteen can be employed in any factory, and not at all during school time. Children over fourteen must have labor certificates. The state labor department is charged with the enforcement of the child labor laws. Since 1909 all deaf and dumb, eight to twenty, must attend the state school, unless provided for in cities or excused for certain statutory reasons. The school term in all the larger schools is from eight to ten months, and averages seven and a quarter months for the state as a whole.

**Teachers and Training** — The state employed 15,157 teachers in 1911. Of these 12 per cent were men, 45 per cent were high school graduates, 26 per cent were normal school graduates, and 9 per cent were college graduates. The state aid for schools employing teachers with first or second-grade certificates has done much to eliminate the third-grade certificate, only about 7 per cent of the teachers holding such. In addition to the five large state normal schools at Winona, Mankato, St. Cloud, Duluth, and Moorhead, many high

schools offer one year of professional training, following three years of high school work, and the graduates of such a course receive a one-year second-grade certificate. The State Superintendent issues first-grade professional certificates to permanent teachers, on examination or credentials, and second-grade professional certificates on examination. County superintendents issue first and second-grade certificates on examinations or credentials, and third-grade certificates on examination, only when necessary, and these are limited to particular districts and valid for but one year. The examination subjects are graded, and form a continuous series, each examination involving new subjects and broader preparation. Graduates of the state university, who have taken the pedagogical course, and graduates of the normal schools, are granted first-grade certificates. Cities of over 50,000 inhabitants (Minneapolis, St. Paul) may examine their own teachers. Two examinations are held each year, all expenses for such are paid by the state or county, and no fees are charged teachers admitted to them. A teachers' institute of four days is required in each county each year. Summer sessions of four to six weeks are held in each of the state normal schools.

**Secondary Education** — Secondary education in the state is well organized, and the number of high schools in the state is increasing very rapidly. In 1895 there were 86, 1900, 115, 1905, 174; and in 1910, 210, with over 21,000 pupils enrolled. There is a State High School Board, composed of the State Superintendent, the president of the state university, the president of the board of normal school directors, *ex officio*, the principal of one high school, and one other, appointed by the Governor. This board looks after the high schools and the graded schools of the state, and has power to prescribe rules and regulations for courses of study, examinations, and conditions for receiving state aid. To represent them, and to act as their agent, they appoint a high school inspector to visit the high schools and a graded school inspector to visit the graded schools each year, and they may ask county superintendents to visit and report to them. The provision for aid and inspection for graded schools (nine months, four departments) is a meritorious feature of the Minnesota state school system. The agricultural high schools, ten of which were authorized in 1909, are another meritorious feature. In 1911 the number authorized was increased to thirty. In 1911 state aid to two-year high schools, and to high schools offering instruction in agriculture and either manual training or home economics, was also authorized.

**Higher and Special Education** — The University of Minnesota (*qv*), at Minneapolis, a large, important, and rapidly growing institution, opened in 1868, is the culmination of the public school system of the state. The state

## MINNESOTA, UNIVERSITY OF

also maintains, under the direction and control of the University Regents, state schools of agriculture at Crookstown and Morris, a sub-agricultural station at Grand Rapids, and an agricultural high school at the university (See AGRICULTURAL HIGH SCHOOLS) In addition to these institutions, the following colleges offer higher instruction:—

INSTITUTION	LOCATION	Op'd	CONTROL	For
Hamline University	St Paul	1854	M E	Both sexes
St John's University	Collegeville	1857	R C	Men
Gustavus Adolphus College	St Peter	1862	Luth	Both sexes
Carleton College	Northfield	1867	Nonsect	Both sexes
Augsburg Seminary	Minneapolis	1869	Luth	Men
St Olaf College	Northfield	1874	Luth	Both sexes
Albert Lea College	Albert Lea	1884	Presby	Women
Macalester	St Paul	1885	Presby	Both sexes
Parker	Winnebago	1888	Free Bap	Both sexes

The state also maintains a number of institutions for the training of defectives. These are the State Training School for Boys and Girls (reformatory), at Red Wing, the State Reformatory at St. Cloud, the Minnesota School for the Blind, at Faribault, the Minnesota School for the Deaf, at Faribault, and the Minnesota School for Feeble-Minded and Colony for Epileptics, at Faribault. E P C

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## MINNESOTA, UNIVERSITY OF, MINNEAPOLIS AND ST PAUL, MINN —

A coeducational institution established in 1851. A preparatory school was conducted until the financial panic of 1857. After a period of difficulties, a reorganization was effected in 1868, and collegiate instruction was begun in 1869 under President Folwell. The university was given lands for the support of a college of agriculture, and was empowered to organize other colleges and schools. President Folwell fostered practical agricultural education, organized the geological and natural history survey (1872) in organic connection with the university, and secured the establishment in 1878 of high schools receiving state aid in consideration of their preparing students for the university. The university thus became actually as well as nominally the head of the state system of education. Under the administration of President Cyrus Northrop (1884-1911) the following colleges and schools were organized: engineering and mechanic

## MINNESOTA, UNIVERSITY OF

arts in 1885, medicine and surgery, homeopathic medicine (discontinued in 1909), dentistry and law in 1888, mines in 1889, pharmacy in 1892, analytical and applied chemistry in 1903, graduate school and college of education in 1905, forestry and training school for nurses in 1909. The work in agriculture has developed until it includes a college, school, short courses for farmers and teachers, an experiment station at the university, and three schools of agriculture and two experiment stations at other points in the state. The college of forestry has extensive forest lands near Lake Itasca for practical work. In 1911 Dr George Edgar Vincent succeeded Dr Northrop as president of the university.

Prior to 1884 more than \$300,000 had been invested in farms, campus, buildings, and equipment. By the year 1906 this had increased to nearly \$2,000,000, and by 1911 to about \$6,000,000. The university has received from private benefactions about \$550,000. Since 1907 the campus has been increased from about 53 acres to about 120 acres at an expense of \$841,000, and the sums made available by legislative appropriation for the years 1908 to 1913 for the purpose of new buildings, equipment, and other permanent improvements amount to over \$4,000,000. The university is supported by funds received from the federal government, by legislative appropriations and the proceeds of a 23 mill tax from the state, by interest on invested proceeds of land sales, and by students' fees. The annual budget for current expenses for the year 1911-1912 shows a total income of \$1,410,000. The university still retains a large part of the lands granted for its support, and much of this land contains valuable ore deposits. The endowment ultimately to be derived from these ore lands can scarcely be estimated at present — certainly several millions of dollars. The university occupies twenty-five buildings on the university campus, twenty-nine buildings at the university farm, and thirty-three buildings at the other agricultural schools and experiment stations. There are under construction six buildings on the university campus and ten buildings at the college and schools of agriculture.

There is required for admission to the colleges of science, literature and arts, agriculture, engineering, dentistry, mines, pharmacy, chemistry, forestry, and nurses' training school, a four years' high school course (fifteen units), including certain specified subjects. The colleges of medicine, law, and education require two years of college work for entrance.

The length of the courses of study in the several colleges is as follows: education, two years; dentistry, law, and nurses' training school, three years; science, literature and arts, agriculture, chemistry, forestry, mines, and pharmacy, four years; medicine and engineering, five years. The college of medicine requires

one year of satisfactory service as hospital interne before granting the M.D. degree. The usual degrees for undergraduate and graduate work are conferred by the university.

The enrollment of students of collegiate grade in 1911-1912 was 4073, of whom 311 were in the summer school. Students in agricultural schools, 1322, of whom 186 were at Crookston and Morris. Correspondence and extension courses, 306. Total enrollment, 5701. The faculties at Minneapolis and St. Paul consist of 418 professors and instructors and 104 assistants, at Crookston and Morris, 22 instructors, total, 544 members. J B J

**MINSHEU, JOHN** — A teacher of languages and writer of a polyglot dictionary in 1617. He edited and enlarged R. Percyvall's *Dictionary* in Spanish and English in 1599 (and 1623), and augmented Percyvall's Spanish Grammar in 1599. His polyglot dictionary is entitled 'Ἑγμών εἰς τὰς Γλώσσας, id est, *Ductor in Linguas The Guide into Tongues*. Originally there were eleven languages: English, Welsh, Low Dutch, High Dutch, French, Italian, Spanish, Portuguese, Latin, Greek, Hebrew. These are given together for the sake of comparison. In his address to the reader he enumerated the various gentlemen who had assisted him in undertaking his great work, and prefixed to the *Dictionary* a catalogue of subscribers for the volume, headed by the King (James I), the Queen, and the Prince — the first instance of a book containing such a list. Published in the year following Shakespeare's death, it is of special value as containing the most representative names of book-buyers in England. F. W.

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**MIQUELON** — See FRENCH COLONIES, EDUCATION IN

**MIRABEAU, GABRIEL HONORÉ RIQUETI, COMTE DE** (1749-1790) — French author, orator, and statesman. His chief interest in the field of education is indicated by four speeches published posthumously by his friend Cabanis under the title *Travail sur l'Éducation publique trouvé dans les Papiers de Mirabeau l'année* (Paris, 1791). In one of these he advocated the abolition of the three French academies (later done by the Convention, 1793), to be replaced by a single national academy. A rather elaborately worked out plan of educational organization recognized the following as essential factors in the scheme: (1) academies (i.e. learned societies); (2) colleges and public schools, (3) medical schools, (4) the theater; (5) museums, botanical gardens, and public libraries. This never got beyond the stage of a "proposed" bill, but it merits note among the educational activities of

the revolutionary period. His works were published in nine volumes (*Œuvres*, Paris, 1825-1827). F. E. F.

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**MIRROR WRITING** — Writing which would appear like normal writing if seen in a mirror. Such writing as this very frequently appears in abnormal cases. It is readily produced by a normal individual by taking a pencil in his left hand, and moving this hand freely without special effort to control the direction of its movements while he writes with the right hand. Certain persons when hypnotized produce mirror writing with the right hand. The whole matter is of importance to the teacher because certain children exhibit a tendency to produce mirror writing in the early years of their training. Such a tendency of the young child may be due to the fact that a child is extremely left-handed. When he is forced to write with his right hand, he sometimes inverts the order of the movements as a normal individual inverts these movements in the experiment of tracing with his left hand. The teacher will very frequently regard a child as utterly incompetent to form letters because the regular form of the movements is overlooked on account of their inverted character, where such cases arise, it is usually best to make some concession to the left-handed character of the child's organization. C H J.

See AMBIDEXTERITY, WRITING

**MISSIONS, THE EDUCATIONAL ASPECT OF MODERN** — Modern missions began with the last century. The charters of the missionary societies organized at that time and for fifty years afterward contained little or no allusion to educational work. The purpose of the missionary endeavor was set forth in the general statement, "to preach the Gospel to the heathen nations." An occasional charter refers to the translation of the Scriptures into the languages of the East as indicating a part of the work the missionary society was set to accomplish, but in none of these earlier charters was there revealed any purpose to plant systems of education in the East. It is equally apparent that when the earlier missionaries reached their widely separate fields they quickly saw the necessity of beginning some kind of educational operations, and schools of low grade were among the first reported results of missionary labor. The fact that this method of approach was adopted by practically all of the earlier missionaries indicates a general practical need for educational



work as a foundation for the missionary enterprise. As in most instances the early schools established by the missionaries were the only educational institutions in the country, they were naturally of the most primitive grade. In reporting the schools thus started, emphasis was laid by the missionaries, not upon their educational value, but upon the approach to the people that the schools afforded, and also upon the fact that through these schools natives were being trained to become missionaries' helpers.

It is not within the province of this article to record the development of the mission school, but it should be recognized that as a natural and inevitable result the grade of mission schools was lifted until there were developed special forms of education, as ministerial training for selected young men and a more general line of education with emphasis upon languages, history, geography, and mathematics, for the preparation of teachers. It was inevitable, however, that the school should experience a larger degree of development, especially in countries like India and Turkey, where there was a strong desire on the part of the people for a higher education for their children.

Another stimulus to the development of the educational work of missions was the fact that so many of the missionaries had received college education and were naturally appreciative of the value of such a discipline in the new society which they were endeavoring to establish throughout the mission fields. These saw the necessity of thoroughly educated men and women to hold positions of leadership, not only in what are called the learned professions, but in all departments of business. At the same time the mission plan involved the development of the Christian Church as an institution developed within the East, with Eastern funds and under Eastern leadership, itself aggressively extending Christianity in the country in which it was established. It required no argument for these men and women, themselves the product of the highest education given in England and America, to realize that such an Eastern Church must have as its leaders men and women of the broadest intellectual training. This fact was emphasized when attention was called to the defective educational systems already existing in China, India, Japan, and other countries, which, although inadequate to prepare men for modern life, nevertheless possessed great disciplinary values. It was evident that if the Church of Christ, which the missionaries were attempting to develop throughout the East, was ever to become a recognized force and assume a place of leadership, it must be through the wide dissemination, among the Christians at least, of general education, including even that of collegiate grade and rank.

Another important factor in the development of missionary education, particularly

that carried on by missionaries from England and America, was the introduction of the study of English. In most of these countries at the beginning of the last century there was no educational literature, and it could hardly be expected that the missionaries would ever be able to produce a modern scientific literature in the vernaculars of the various countries where they were carrying on work sufficient to meet the demands of the higher educational institutions into which their intermediate and boarding and high schools were bound to develop. They did create a literature for the primary and intermediate schools which was measurably adequate, but the task of doing the same for the colleges was practically too great to be undertaken.

At the same time, as the earlier missionaries represented for the most part the English speaking world, and as the countries from which they came were recognized by the people as of leading political and commercial influence, it was but natural that there would be a general desire on the part of the young men, at least in mission collegiate institutions, and even in high schools, to study English. In India a knowledge of the English language opened a career under the East India Company, and later under the British government, for any Indian young man, the same was true of Burma and Ceylon. Moreover, in other countries, not officially connected with English-speaking nations, there was soon developed the opinion that English was a modern classical language, the language of the great commercial nations of the world, and that the mastery of that tongue would be of financial as well as intellectual value to their young men.

From 1855 to 1875 there was a reaction on the part of some missionary societies against higher educational work in mission institutions, and especially against the teaching of the natives through the medium of Western languages. This department of mission effort had not made the same progress in German and Scandinavian societies that had been made by English-speaking societies. There was at that time much discussion among the home societies and their constituency as to the place of higher education in missionary work. While in not a few instances the decision in the councils of the home societies was against the further development of higher educational work on the mission field, under the direction of the missionaries this work was gradually and persistently enlarged, until during the last quarter of that century, mission boarding and high schools in no small number began to assume the rank and do the work of collegiate institutions. It should be stated that in the meantime the conservative constituency at home began to realize the place that education must take in the planting of permanent Christian institutions in the East, and opposition rapidly diminished until it has now practically disappeared.

Among the Roman Catholics quite another set of problems presented themselves. Their schools were not as democratic and general as those of the Protestants, but were regarded more as church schools, and were maintained within and for the Church.

**The Aim of Mission Schools.**—In creating a system of education in the mission field the endeavor has been made from the beginning so to develop the work that it shall belong to the country and not have the appearance of being a foreign educational system imposed upon the country. The teachers in most primary schools, apart from the heads of kindergartens, are natives. The same is practically true in the boarding and high schools, except that occasionally the head of the school, for the present at least, is a missionary. It is not expected, however, that the foreigner will hold permanent control.

In collegiate institutions the great majority of the teachers are natives of the country. In some of these the president is a native, with missionaries working under him, as in the Doshisha in Japan. Even in the theological schools in mission fields, native teachers are employed. It is probably true that the foreigner will keep his hand upon the collegiate and theological institutions longer by far than upon the other schools of the country; how long he will continue to hold dominating influence will depend upon the rapidity with which the country itself develops in moral and educational ability and the native leaders show themselves capable of assuming the larger Christian responsibility. The general policy, however, of mission institutions in this respect has been from the first, and still is, to develop native talent as rapidly as possible and to employ that talent in the educational work.

**Support of Mission Schools.**—Another phase of this work is the development of self-support. It was early learned by the missionaries that free schools were practically valueless. The Asiatic appreciates that for which he pays something, but is liable to look almost with disdain upon that which costs him nothing. No free school can expect to command the regular attendance of its pupils. There are probably no schools in the world that come nearer to self-support through the tuition paid by pupils than do many of the mission schools of the East. In fact, large numbers of these schools are wholly self-supporting, although still retaining their relations to the mission. Even the collegiate institutions, in some countries like Turkey, secure from the pupils themselves in the form of fees or tuition from three-fourths to five sixths, or even a larger ratio of the cost of the conduct of the schools. The development of self-support has not been so marked in India because of the greater poverty of the class of people who make up the student clientele. So long as Americans and Europeans remain in any appreciable num-

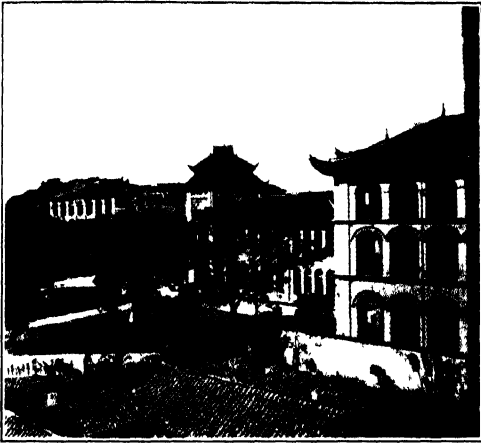
ber as teachers in the mission colleges and universities, financial help from abroad will be necessary for their conduct.

**The Character of Mission Schools.**—Missionary education has been handicapped for the lack of a model or precedent, the whole plan of education had to be wrought out by the missionaries through long and protracted experiments in each country. Each different country presented new problems to be met and solved. At the same time few of the missionaries had received scientific pedagogical training. Large numbers had full collegiate training, but with no special reference to the teaching profession. Many missionaries went to the field expecting to engage only in evangelistic enterprises, but soon found themselves in charge of a large educational work.

It is no wonder then that the development of the missionary educational system, if it could be called a system, was irregular and often unscientific. The hindrances already named were enhanced by the fact that the man who was at the head of a high school, college, or even university was seldom able to give his entire time and strength to that work. Recognizing also that missionary educational efforts from the beginning have been curtailed for the want of proper financial support, we begin to realize some of the limitations under which this work has been developed. There is hardly a mission school to-day that is properly equipped. In the marked educational advance of countries like Japan the missionary schools are rapidly left behind. The Eastern governments, becoming alert to the value of modern education, are able to appropriate funds for the erection of buildings and for their equipment, far superior to those of any mission plant. China is making rapid progress in this line at the present time, and even the Turkish Empire, under the new régime, is appropriating large sums of money for developing a national educational system.

Notwithstanding that missionary work is so defective in equipment and in skilled leadership, the fact remains that the mission schools in most of these countries have been the models which have demonstrated to the officials of the country what can be done in the line of modern education, while, at the same time, they have awakened ambition in the hearts of the people for education. Moreover, though far surpassing the missionary institutions in equipment, in many places the government schools are not popular, because of inability to secure teachers able to command the confidence of the parents and pupils.

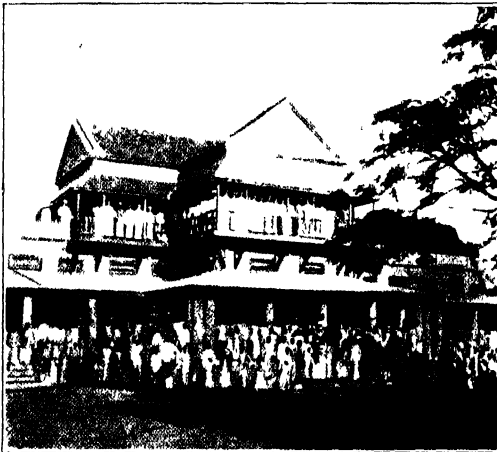
**Courses of Instruction.**—It is impossible within the limits of this article to give any adequate conception of the courses of study offered in the higher collegiate missionary institutions. In each case and in every country the missionary college offers a curriculum that places it among the first educational institu-



St. John's College, Shanghai, China



An Elementary School in Africa



Reid Christian College, Lucknow, India



Robert College, Constantinople



Baptist College, Rangoon, Burma



A Mission School for Girls in Japan

TYPICAL MISSIONARY EDUCATIONAL INSTITUTIONS.



tions of the land. This position is held by nearly all of the so-called mission colleges, although at present in Japan the national universities are in advance of the missionary college, and it is expected that the students of the missionary college, to complete their course, will go to the university. In each country the endeavor is made to adapt the course of instruction to the needs of the country. In no instance has the American or English curriculum been transported bodily to the East. Less emphasis is laid upon the dead languages, and more emphasis upon spoken tongues, especially English, French, and German.

The sciences, which were at first indifferently taught, are receiving more emphasis as the East is developing. Special stress is laid upon the history of Western nations, upon the science of government, economics, etc., all of which are demanded. At the present time there is an unusual demand for the sciences and the development of technical training. How far missionary societies will be able to respond to this call remains to be seen. To meet this demand the universities' missions are coming to the front.

It should also be understood that all of the mission colleges put emphasis upon the training of the stable moral character. This statement applies to all of the mission schools, beginning with the kindergarten and primary school. The development of character is fundamental in the ideas of the missionaries and the societies backing them, and emphasis upon this point is not lacking even in institutions not especially labeled as missionary, but which have grown out of the missionary educational system.

The Protestant mission schools, with few exceptions, have no religious tests for admission or for graduation. In most of the schools the fundamental truths of Christianity and the principles that underlie it, as well as something of an outline of the history of its development and the growth of the Christian Church, have place in the regular instruction given. Every pupil is left free to adhere to the religion of his fathers, without loss of standing in the school and without sacrifice of any of its privileges.

**Female Education** — There is probably no department of missionary education which is more fundamentally important than that dealing with the education of girls. In nearly every country where the missionaries have started schools there was not only an immemorial custom, but a deep-seated and fundamental prejudice against the advance of woman, and in most of these countries it was a matter of belief that women were incapable of intellectual improvement. In some places the idea that a woman could learn to read was hardly to be entertained, but the still more advanced idea that she should be educated was regarded as preposterous.

In the face of this handicap, the missionaries began in a modest way to educate girls, in the face often of open and violent opposition. It has been a matter of surprise to the missionaries themselves that this opposition has so completely disappeared. Girls' schools in many of the mission fields are among the most popular of missionary institutions, and many an Oriental parent is paying handsomely for the education of his daughters. While Japan has made marvelous progress in adopting an educational system for the empire, she has not made the same development in girls' schools as in those for young men, and even to-day it has been stated on what seems to be good authority that the mission collegiate institutions for young women are superior to the government institutions for girls.

The girls' schools, at first of the humblest character, have developed, as have the schools for boys, and have proven to the people beyond any possibility of doubt, not only that girls are capable of intellectual discipline and development, but that there is a place in Oriental society for the educated woman. These school systems have developed into colleges for young women, some of which have already gained international repute, like the American College for Girls in Constantinople, and other institutions in Turkey of similar character, as well as colleges for girls in India, China, and Japan. While the courses of study in these colleges are not yet quite up to the grade of corresponding institutions for men, yet they do not lag far behind. They are all thoroughly abreast of local conditions, and are preparing women for positions of marked influence and leadership. The graduates of these schools have open to them the teaching profession, and the demand even from government institutions for teachers is far greater than the mission schools can supply.

As a natural result of the elevation of womanhood through these schools of the East, we find that the young men who are graduates from higher institutions of learning are eager to secure wives who have had a higher course of instruction. About one third of all the pupils in the mission schools of the world are girls and young women. This fact demonstrates the place which these schools already hold and the influence they exert.

**Classification of Schools** — Departmental classifications of mission schools have been most unscientific in all countries, and without uniformity throughout the world. The fact that every missionary society prosecuting work for any length of time in a single country has felt it necessary to take up some form of educational work is a clear indication that, in the judgment at least of the workers on the ground and the societies at home, permanent missionary institutions cannot be established in any country without their being embodied in some form of general education.

The first educational work undertaken by the missionaries was elementary

*Primary or Village Schools* — Even during the first modern missionary generation the primary school held an important place. The first work the missionaries could do, even while they were learning the language of the people and, in fact, as one of the most effective ways of securing a working knowledge of the vernacular, was to gather groups of children together into rude schools. If there was a literature of the land, the children were taught to read that literature, if, as in the case of many of the peoples of Africa and the islands of the Pacific, their own vernacular had no written character, the children were taught the characters which the missionaries created and the grammar of the language which they made, and thus education in the vernacular commenced.

The village or primary school, however, has become one of the institutions of missionary effort, and lies at the foundation of the educational work carried on in all countries. In these schools are gathered by far the largest number of the pupils under missionary instruction. Most of these lowest schools are not carefully and thoroughly organized. In no single country can the missionary primary educational work be called a "system," as there is little or no relation between the schools carried on by one mission board and the schools even in near regions carried on by another missionary organization. While there is lack of systematic cooperation in primary educational work, essentially the same things are taught in all these schools, *viz* training in writing and reading the vernacular, with a smattering of number work and a little geography and history, with stories about foreign countries and the Bible. In some countries, and by some mission boards, English, German, or French is taught even in the lower grades.

It can be laid down as a fact that wherever the modern missionary has gone and among whatever people he labors, there have been organized under his direction widely extended common village schools for both boys and girls. These, for the most part, were at the beginning and still are the only schools of the kind in the country, and furnish the only rudimentary education afforded the children of that country. The teachers in these schools are natives, who in turn have received their training in the higher schools more directly under the missionary. The missionary has general charge of the primary educational system, and, in many cases, the expense of the school is paid in whole or in part by the people themselves in the form of tuition. This statement does not apply to Japan and some other countries, since the governments of Japan and a few other nations have themselves developed a comprehensive primary educational system which has made it unnecessary for the missionary to give

time and strength and to spend money on this line of work.

The primary and village schools now carried on by Protestant missionaries alone number nearly 29,000, and they have an attendance of over 730,000 pupils, of whom nearly one third are girls. In each instance it is in these schools that children receive the first rudiments of an education and get their first ambition to advance in an intellectual course. The most of these schools are in rural regions, away from centers of influence and action, but among some of the most virile populations.

The Roman Catholics were in some respects the pioneers in the prosecution of primary education. In schools organized and conducted by them among non-Christian races they have a primary school population under their direction and control numbering 841,000. This gives a total of children in non-Christian countries studying in Christian mission schools in the primary grade of 1,571,000, but few of whom would have had any school privileges had it not been for the missionary.

*Kindergartens* — The kindergarten was introduced into Asia by missionaries. It is a comparatively new method of education in the Nearer and the Farther East. Missionaries introduced the first kindergarten into Japan and prepared the first kindergarten literature, but the Japanese government has now adopted this method of training. It is proving to be one of the most popular methods of education that the missionaries have introduced into any country, attractive to parents and receiving general favor from government officials. In India the government gives subsidies for well conducted kindergartens. The Chinese are showing unusual interest in kindergarten training, and in Turkey parents are eager to have their children come into the developing and suggestive atmosphere of the kindergarten. The kindergarten holds a different place in missionary education from that occupied by the common village school. In the latter, for the most part, pupils are gathered from the lower strata of society, while the kindergarten has the patronage of the higher classes and thus brings the missionary educational system closer to the palace. The kindergarten has not yet been widely introduced in any country abroad. Only the more advanced of the Eastern peoples have yet been offered this method of child instruction. There are as yet only about 5000 children in the Protestant missionary kindergartens, while the Roman Catholics seem to have given little or no attention to this type of education.

*Intermediate and High Schools* — During the first missionary century in this modern era, practically all of the education carried on by missionaries was of the primary character. It was inevitable, however, that in the awakening of the East, education could not be kept down to primary grade, and that steady advance

should be made until the primary and village school grew into the intermediate school, which, in turn, developed into the high school. This statement should not give the impression that the missionaries had a well developed school system, in which pupils passed readily and systematically from one grade to another. It is not uncommon even to-day to find under a single roof, occupying the same classroom, and studying side by side, students of primary and of high school grade, with all gradations between.

At the same time it should be recognized that the desire for education on the part of the people themselves, cooperating with the need of the missionaries for trained native workers, led to the development of the educational system at the larger centers of population until there came to be well-defined schools, which, in the ordinary classification, would be called high schools. These did not fit for college or have a uniform course of study, but they were the schools giving the highest and most extensive training to both young men and young women in the country, and would compare favorably with even some collegiate institutions in the United States, two hundred and fifty years ago. In the Protestant mission schools in Africa and the East, of intermediate and high school grade, including mission boarding schools referred to under another heading, there are now studying 165,500, of whom about 60,000 are girls and young women, while the Roman Catholics have an attendance in schools of a similar class of 156,000. This makes a total of students studying in mission intermediate, boarding, and high schools for both sexes and in all countries of 321,000.

*Boarding Schools* — The missionary boarding school might almost be classed under the name of high school, but having characteristics peculiar to itself, it fills a place of such great importance in the work of missionary education among Eastern races that it should receive special mention. The missionary boarding school is probably the poorest classified and organized school which can be named. Under modern development it has become much better organized than a few years ago, but the basis of classification in the boarding school is the pupil, and not his studies or age. In most of these schools pupils are gathered from outlying districts and kept in the school home, which may well be compared to the old New England academy. The emphasis, from the missionary standpoint, is placed upon the Christian character of the home into which the pupils are gathered, and not upon the courses of study or the scientific character of the instruction given. It is from these schools both for boys and girls that the missionary secures teachers for the lower schools and the best native missionary workers. Statistics were given under the preceding subject.

*Normal Schools* — The normal school is one

of the later developments of the missionary educational system. It is only in recent years that the missionaries have been conscious of the necessity of having more scientifically trained teachers. Even at the present time, however, the missionary normal schools are woefully deficient. Few indeed have come up to grade, but it should be said that an earnest endeavor is now being made to put normal instruction upon a better basis. In some countries the missionaries of various denominations are uniting in the development of a normal school that is worthy of the work to be done. Missionaries are securing for themselves special pedagogical training, with a view to giving more attention to normal school education. This advance has been made under the stress of the need and the pressure of the governments where the schools are. India, for instance, is demanding a better grade of teachers for the primary schools that receive grants-in-aid from the government. The same is true of Ceylon, and it will undoubtedly be true soon of China and of Turkey.

It is strange that the normal school has not had earlier and more complete development. It is expected that this phase of missionary work will henceforth develop more rapidly, and that the missionary schools will be called upon much more than in the past to provide teachers for the governments, and that they will be copied more as models for the development of national institutions. It is impossible to secure accurate statistics regarding the number of pupils under normal training in mission schools, since in most cases instruction in this department is given in collegiate and training schools to special classes, of which separate records are not kept.

In probably a majority of the mission boarding schools for girls, domestic economy is taught. This is not the domestic economy of Occidental life, but of the life of the pupils among whom the school is established and for whom it works. Attempt is made to avoid training the girls into ways of living that will not be in harmony with their life after graduation. It was once thought necessary to introduce Western ways into Asiatic schools and to teach these ways to the pupils, but wiser counsels are now prevailing. The girls in boarding schools, as, for instance, in India, are taught to prepare the foods of India with Indian apparatus, and to serve these foods in the best possible way with the equipment an Indian kitchen affords. In most of the boarding schools each pupil is expected to have a share in the domestic economy of the institution, under wise and competent teachers, so that when she completes her course she will carry to her home the highest domestic skill to be found in the country.

In some instances, where it is expected that pupils will be brought into contact in their after life with people of the West, or where it is anticipated that Western customs will pre-

vail more or less in their homes, Western phases of domestic economy are introduced into the school, as, for instance, in great centers like Tokyo, Bombay, and Constantinople, certain girls are taught the domestic economy of the West, which consists of the preparation of Western food in a Western way and the serving of those foods at a table as it would be served in Europe or the United States. At the same time, the pupil is taught to sit at the table and to carry herself in a way that would be acceptable in good society in the West.

This phase of domestic economy is not widely extended, but it is important, since not a few of the graduates of these institutions, especially the girls' colleges, become wives of professional men who either themselves go to America or to Europe with their wives or are called upon to entertain Western men of note in their homes. In all such cases a knowledge of Western customs is of great value. But for the most part the domestic economy taught in the mission schools is that of the country wherein they are located.

*Collegiate Institutions* — The missionary colleges were in many instances the first institutions of higher learning to be developed in the countries in which they exist to-day. This statement is true of Turkey, Persia, Bulgaria, India, Burma, Ceylon, Korea, and Africa, and, viewed from a Western standpoint, of China and Japan. They were the natural outgrowth of the village school, and have come into existence at the demand of the people for modern Western education, accompanied by the need in missionary work for thoroughly trained native leaders. It is this requirement of the missionary work, together with the aspirations of those who sought an education for its own sake and for what it would bring to them in the way of advancement, that has made the missionary college a significant institution in the East to-day. It must be remembered that many high schools, and even ordinary boarding schools under missionary direction, have been given the name "college." This weakness, on the part of certain missionaries, for a high-sounding name has brought discredit, in some countries, upon the missionary college. At the same time it cannot be denied that missionary colleges have been, in most cases, the foremost institutions for higher Western learning in the countries where they have been established, and in lands like Turkey, Africa, India, Ceylon, Burma, China, and Korea they stand without a rival. The development of missionary colleges within the last generation has been rapid. In 1850 there was hardly a missionary school that bore the name "college." The real collegiate movement began in the last quarter of the last century. The development of the college is quite parallel with the awakening of the Asiatic races, and may be regarded as a part of that awakening.

The courses of study in these colleges are

on a par with the curricula of the ordinary colleges of the United States and Canada, and many of the denominational colleges of Great Britain. Not so much emphasis is put upon the dead languages as upon the living, and in all these institutions the native tongue of the missionary in charge is made the principal foreign tongue, as, for instance, in the French missionary colleges, French is the principal foreign language, in the German colleges, German, and in the English colleges, English.

These institutions have been most satisfactorily patronized by the people. They are more largely self-supporting, because of the heavy tuitions the people themselves pay, than are similar institutions in America and Europe. It has been currently reported that the American colleges in Turkey, all of which have grown out of the missionary work there, have had unusual influence in shaping the new Turkish Empire and in preparing the minds of the people for constitutional government. It would be impossible to overestimate the place which the missionary colleges to-day hold in the great national movements of the East and the influence which they exert over the minds of the young men and young women coming forward rapidly to positions of leadership among these awakening nations. These colleges have formed the model upon which private and national collegiate institutions have been created.

More than 25,000 of the brightest young men and women in the Nearer and the Farther East are to-day receiving a thorough higher education in the collegiate and training institutions which Protestant missionaries have established, and which directly or indirectly they sustain. This means the graduation of some 4000 young men and women each year to take positions of commanding influence among their own people. The Catholic missionaries furnish no distinct statistics covering this grade of work.

*Medical Colleges* — The medical college is an outgrowth of the medical as well as of the general educational missionary work. Even to the present time there have been not a large number of medical colleges established in mission fields, but a few of these are of a high order and rapidly developing, as, for instance, the Medical College at Peking, China, in which six different organizations unite and which is already recognized by the imperial government, also the Syrian Protestant Medical College at Beirut in northern Syria. In China, in India, and in Turkey, as well as many other of the Eastern countries, the first modern scientific medical education provided for young men has been given through the missionary medical college and by the medical missionary in the form of personal instruction to native assistants. There are some 1000 students in the distinctly Protestant missionary medical colleges, besides medical missionary assistants



and nurses numbering several thousands. The Roman Catholics furnish no statistics

*Industrial Schools* — Industrial schools are the least systematized and the poorest developed of any of the educational institutions connected with missionary work. They are probably the least scientifically conducted. The first idea of the industrial mission school grew out of a desire to provide for needy pupils some means by which they might earn a part, at least, of their own support, while securing an education. For that purpose industries were introduced with the main object of furnishing food and clothing for the students practicing them. This was followed by the idea of teaching pupils some trade by which they might earn their livelihood after they had finished their education. The necessity for this vocational training grew out of the persecution which the Christian student often received and which handicapped him in industrial competition. This part of missionary work has not, on the whole, proved a success. Missionaries have not shown themselves capable of teaching trades to Asiatic young men by which they may earn a livelihood after going out into the world. Instances are comparatively few where students graduating from an industrial school have successfully pursued the trade studied in the school.

At the present time industrial work is taking a somewhat modified form, and will probably be widely developed along this line, namely, to teach the pupil to use the tools of his country and produce that which the people themselves require, and to do it at a price that will make it possible for him to live thereby. Altogether too many of the industrial schools have taught the pupils to produce goods which could not be sold except in a foreign market and through the missionary agency. One thing has been accomplished by all these forms of industrial work, namely, the pupils have been taught the dignity of labor, and their minds have been dispossessed of the false impression so prevalent in the East that a scholar must not do manual labor. The results in this direction have been most beneficial.

There is an independent line of industrial work for women which needs to be mentioned. This consists largely of lace making and needlework, and has been, in large part, for the purpose of furnishing them a means of livelihood. The results have been most satisfactory in that widows and others who without this would be beggars upon the street or something worse, have become self-respecting and independent, earning their living by the skill and labor of their hands. Industrial work of this kind on a large scale has been carried on, as, for instance, by Miss Shattuck at Oorfa, where thousands of widows and orphans were provided an opportunity to earn their living when Turkish massacres had cut off their every source of support.

The Roman Catholic missionaries do not publish reports of their industrial operations, although they are not behind the Protestant societies in teaching the dignity of labor and self-help and in instructing their pupils in various handicrafts. In Africa the demand for a fuller development of this line of instruction is on the increase.

*Technical Schools* — The missionary technical school has not been widely developed, although at the present time the call is growing louder for the enlargement of this phase of collegiate education. The reason for slow development has been, without doubt, the great cost of the technical school as compared with the ordinary college. The colleges themselves have been poorly equipped, and the most of them are meagerly supplied with apparatus and with a proper teaching force. The demand for such technical schools in India, China, and Turkey is now insistent. It is probable that in China, as in Japan, the government will soon provide for this line of education. Few missionary societies will feel able to make the necessary outlay of money for the establishment of adequately equipped plants for full technical education.

*Theological Schools* — The theological school has been a natural outgrowth of missionary work, and has for its object the training of Christian leaders for the newly organized churches and for general evangelistic work in the field. The purpose of the theological school is to train up natives of the country who will themselves bear the burden of the work which the missionaries at first bore, and to lead the native church into independence and self-support. These schools have been in many instances rude, and the development has not kept pace with the development of the missionary colleges and other educational institutions. About 12,000 Protestant young men in mission countries are now pursuing courses of instruction in preparation for the pastorate of native churches and for general religious leadership. Again we are provided with no statistics for Roman Catholic missions.

*Agricultural Institutions* — In many different sections of the mission field, missionaries have done not a little to improve the agricultural conditions of the country by securing land and training young men connected with their schools in scientific methods of tilling the soil and raising crops. This phase of missionary work has never received much attention, although not a little has been done by the missionaries in many countries in introducing, through this line of education, better implements of agriculture and more scientific methods of farming as well as new seeds and vegetables from the West. There is at the present time much call in many mission countries for the establishment of agricultural schools. Plans are already being developed to have an agricultural department connected

with some of the existing missionary colleges. This work is eagerly desired by the people, and, if properly guided, would be of infinite value in raising the productive power of land as well as in increasing the quality of agricultural products.

*Schools for the Blind* — The early loss of sight is probably one of the greatest afflictions of the East, but until Christian work began little or nothing was done for the blind. The missionaries have opened schools for the blind in many of the great mission centers. They have secured the printing of books for the blind in the languages of the country, and have opened schools in which blind children are taught not only to read, but to become self-supporting through the practice of some handicraft suited to their condition. These schools have made profound impression upon the people of the country, and are changing their attitude toward the helpless blind in a way that was not contemplated.

Something of the same line of work has been opened in many places for the deaf and dumb, and with similar results. This work as yet is not very extensive, but it has led, as in Japan, to calling the attention of the government to the necessity of doing something for this class of their citizens.

In Protestant schools for the blind and for the deaf and dumb there are 844 children under special instruction. The Roman Catholic figures make no report of these departments of training. This is one of the new lines of mission work, and probably as resources increase it will be rapidly developed.

*Orphanages* — There are few missionary societies that have not at one time or another in their history opened schools for orphans, which have been practically orphanages pure and simple, but with provision for the intellectual as well as physical and industrial training of the children brought into them. The Roman Catholics have done more in this direction than have the Protestants. As a general thing the Protestant missionary societies have not regarded this as a permanent part of their work, but in countries which have suffered severe scourges of plague, famine, or massacre, it has been impossible for the missionaries to remain in the country and not open refuges for the reception of the great numbers of orphan children left absolutely without protection.

It was under such an impulse as this that the Protestant orphanages, for the most part, were opened. It was necessary to continue the work at least until that generation of orphans had received their training and had been placed in positions where they could become self-respecting, self-supporting members of society. The massacres at different times in Bulgaria and Turkey and the plagues and famines that have afflicted India in the not remote past have led to a large and necessary development of this line of work.

Among Protestant societies funds for the support of these orphan schools have been provided largely by special gifts for that purpose, and have not come directly from the treasuries of the missionary societies.

The Roman Catholic missionaries put greater emphasis upon orphan institutions than do the Protestants. Among the Protestants, in large part, orphan children are cared for in the boarding schools, and not in separate institutions. There are, however, separate orphanages, especially in India and Turkey, in which the latest reports show there are 20,206 children. In the orphanages under the Roman Catholic missionaries in the various countries of the world there are 89,699 children.

*Japan* — When Protestant missionaries entered Japan about 1860, they found a considerable degree of education in the country, but not of the Western type. As missionaries could reside outside of treaty ports only when employed by Japanese, it became necessary for those who wished to take up their residence in the interior to be connected with some Japanese institution, in whose employment they were registered in the government records. At the same time, the desire of the Japanese for Western learning was increasing, and many Europeans and Americans were called to Japan to teach in the government schools. The mission schools were eagerly sought by the young men and young women of Japan as affording unusual opportunity to study English, constitutional government, history of Western nations, and, what may seem rather strange, the fundamentals of Christianity. In some of the earlier schools, as, for instance, those under the direction of the famous Guido Verbeek, the two subjects which were most eagerly sought by the Japanese pupils, all of whom came from families connected with the *samurai*, or titled classes, were constitutional government and Christianity. A large number of the men who became foremost in the reorganization of Japan and the development of constitutional government were pupils in those early mission schools.

Mission schools have a reputation for maintaining a standard of English and of music which it is impossible for the government schools to surpass. They also are said to have developed a strength of character in their students noticeably lacking in government schools. These mission schools exercise great care in the selection of teachers, basing school government upon Christian principles. The historic foundations of Christianity are taught to all the pupils, although in none of them are there religious tests for admission or graduation.

The grade of school in which missionaries chiefly work is the *Chu Gakko*, or middle school for young men, and the *Koto Jo Gakko*, or middle and high school for young women. In the empire there are twelve such mission schools for young men and forty-five for young women.

These are all beyond the experimental stage, no new schools having been opened in recent years

The total number of young men who have received more or less instruction in the Protestant mission schools in Japan is about 25,000. From three to four thousand of these are graduates of the schools, either of the middle or higher course, or of both. Of those who have received or are receiving instruction, about 3 per cent are in the Christian ministry or some other form of special Christian work, 12 per cent are teachers in either mission or government schools, 5 per cent are officials under the government, 28 per cent are in some form of business, 1 per cent in military service, and 2 per cent in various other callings, while 7 per cent have died, 35 per cent are still in schools, and the rest are unreported.

There are certain professions in which almost no graduates of mission schools are found, namely, the military, medical, and legal. About 700 of the graduates of mission schools are engaged in farming, manufacturing, commerce, and in various arts and professions. Not a few are managers of banks and presidents of commercial companies. There are 117 graduates of mission schools who are active in official and political life, and among these a considerable proportion have risen to prominence. They hold positions in city and *ken* offices, postal and customs service, they are members of the Upper and Lower Houses of Parliament, mayors of large cities, and diplomats. It is, however, in the realm of ideas rather than in business or official life that the former pupils of mission schools have especially distinguished themselves. Here they have exerted their widest influence over social and national progress in Japan. It has been said that the sign "Importers of new ideas" might appropriately be hung over the entrance of every mission school in the empire. The graduates of these schools are prominent in teaching positions, even in the highest national schools.

It is stated on good authority that the students in mission schools originated magazine literature in Japan. They also hold prominent positions in journalism, many later graduates choosing that as a profession. The following is only a partial list of prominent Japanese journals which have graduates of mission schools either as editors-in-chief or as prominent members of the editorial staff: *The Mainichi Shimbun*, *The Kokumin Shimbun*, *The Hochi Shimbun*, *The Osaka Asahi Shimbun*, *The Nagoya Fuso Shimbun*, *Kagoshima Nichi Nichi Shimbun*, *The Chinzei Nippo*, *The Tokyo Asahi Shimbun*, *The Yorozu Choho*, *The Kahoku Shimpō*, *The Sendai Nichi Nichi Shimbun*, *The Jitsugyo no Nihon*, *The Eibun Shinshi*, *The Boken Sekai*, *The Bunko*, *The Waseda Daigaku Shippun Bu*, *The Chuo Koron*, *The Taiyo*, *The Jinsen Chosen Shimpō*, *The*

*Maji Shimpō*. In the field of authorship, students from these schools present an equally interesting record. Eminent national poets, historians, lecturers, and authors on topics connected with education and sociology, as well as novelists, have come from these schools, and their writings have exerted and are exerting a strong influence on the thought of the empire. In fact, these have led the way in creating a new literature for Japan, a literature that is rapidly familiarizing the whole nation with the best ideals of the West. It naturally follows that the Christian press of Japan is under the direction and control of former pupils in these schools. All of the editors-in-chief of the Christian papers are of this class, and most of the assistant editors and contributors have received the same training. The leaders in the Y M C A movement in Japan are from the same class. The Doshisha, a Christian university established in Kyoto by Dr. Neesima, has a national reputation, and its graduates are sought for important positions because of the record they have made for moral strength, stability of character, and integrity of purpose.

In the education of girls in Japan, the mission schools have taken the lead, and have been of great influence in stimulating the government to make better provision for female education. It is impossible to follow the course of the graduates of mission schools for girls in the same way that we can follow the graduates from the schools for boys and young men. Most of these graduates are soon found in homes of their own. It is impossible to trace the influence of those homes, presided over by a Christian woman or one who has been trained in Christian schools, in shaping a new order of society in Japan. The number of mission schools for girls is reported as forty-five, with ninety-three mixed schools, including fifty-four kindergartens. There are twenty-two theological schools in the empire, conducted by missions, fourteen schools for training women for special forms of Christian work, and five kindergarten training schools for the education of kindergartners. The Roman Catholics have about eighty schools of all grades, attended by about 8000 pupils, but no data are given regarding the grade of these schools or the walks of life into which these students enter after graduation.

**China** — As a nation China has been more favorable to higher education than any other great country of the world. For the last five hundred years, indeed, official positions have been more completely based upon a civil service examination than in any other country. This national education, however, contained nothing that is regarded in Europe and America as part of the curriculum of any educational system. While the national education gave a certain measure of mental discipline, it did not inform the student regarding the outside

world, nor was anything in the line of science or mathematics included. The basis of the old educational system of China was the Confucian classics and Chinese history (See CHINA, EDUCATION IN)

Protestant missionary work began in China in 1807, and for a century endeavor has been made to exhibit to the Chinese the value of "Western learning," as this system of education was quickly named by the Chinese themselves. Acceptance was slow. Perhaps one of the most far-reaching results has been the turning of the minds of Chinese youth toward the Western world, which has resulted in sending to America and Europe a considerable number of young men for educational purposes. Not long since, the Chinese Students' Association, made up of several hundred Chinese youths studying in American universities and colleges, reported that over 80 per cent of their number came from mission schools in China.

Missionary education has received a great impulse since 1900, following the reorganization immediately after the Boxer Movement. The revival of Western learning in China is coincident with the inauguration of the new order and the development of the idea of constitutional government. Mission schools which were long tabooed by the masses of the people then became popular, the government system of education was changed by imperial order, and Western learning was made the basis of the official education of the Chinese empire. No longer does the old system prevail, and the new government is endeavoring to build up its own educational system on the model laid down by the missionaries and brought back to China by the Chinese students who have taken degrees in European and American universities.

It is impossible here to trace the history and development of the Protestant educational propaganda, and we can give only a summary of the work of seventy-three missionary societies in China. There are eighteen missionary universities and colleges in the country, with a total attendance of 919 students in the collegiate departments. These institutions are pretty well scattered throughout the empire, with locations generally at great political and influential centers, as, for instance, two in Peking, two in Foochow, two in Canton, and others in Nanking, Hankow, Wuchang, etc. In theological, normal, and training schools there are 2544 students, in the boarding and high schools, 20,866, and in the elementary and village schools, 54,964, making a total in all the Protestant mission institutions in China of about 80,000 Chinese children and youth. To these should be added 122,000 pupils in Roman Catholic schools, the most of whom are in middle or primary grades, with one sixth of the entire number in orphanage schools, making a grand total of 202,000 Chinese youth in mission schools in the country.

**Turkey** — There is probably no country in which mission schools have figured more prominently in the development of the intellectual and social life of the people than in the Turkish empire. The work of missionary education was begun in Turkey in 1820, and has been continuous to the present time. Until very recent years the missionary schools were the only ones based upon scientific methods of instruction. The pupils in these schools, which quite generally cover the empire north of Arabia, have come largely from the Syrian, Greek, and Armenian communities, although there have been in them all some pupils of other nationalities. Owing to the alertness of the Armenian and Greek minds and the readiness with which they have sought education, the mission schools in Turkey have developed into colleges more rapidly than in any other country, and, in the absence of government institutions to supply the need of higher education, these mission colleges have occupied a place in the empire which such institutions have assumed in few if any other countries.

To-day the mission colleges in Turkey, and institutions which have grown out of missionary work and are substantially a part of it, are affording the highest and most thorough scientific training available for young men and young women. As illustrations we mention Robert College (*q r*) on the Bosphorus, which, although never under missionary control, has always had a missionary for its president, and has been conducted along precisely the same lines as missionary institutions, the Syrian Protestant College at Beirut, which began as a missionary school, but has since become independent under a separate board of trustees, and the American College for Girls at Constantinople, once missionary, but now independent.

Collegiate education for women has reached a high stage of development in Turkey. The Greek and Armenian races have been responsive to the call for the higher intellectual training of their women, and in response to this call three colleges have developed, the Central Turkey College for Women at Marash, the International Woman's College at Smyrna, and the college already referred to at Constantinople. Euphrates College at Harpoot in Eastern Turkey has two departments, one for women and one for men. The girls' high and boarding schools at Marsovan, Aintab, and Beirut have reached a stage of development which carries their pupils into the collegiate grade, although as yet these institutions do not bear the college name.

The influence of these colleges upon Turkey cannot be measured by the rolls of their pupils. A great number of national schools have sprung up among the Greeks, Armenians, and Syrians, as well as other nationalities, which employ teachers who were trained in mission schools. In this way modern missionary education has penetrated into the remote sections of the

Turkish empire and has prepared the people not only for constitutional government, but for the adoption of a general system of education which the new régime in Turkey is now endeavoring to establish. Many of the native teachers engaged in these collegiate institutions in Turkey have received special training in European and American institutions. A majority of the American colleges in Turkey are incorporated under the laws of Massachusetts or New York, and are partially endowed.

In these institutions to-day there are about 5000 young men and young women, natives of Turkey, taking a general course of instruction. This number includes the pupils in the preparatory departments, but does not include pupils of high school grade in institutions outside. The boarding and high schools, with the elementary and village schools in the empire, have over 40,000 scholars, making a total, with the normal and industrial institutions, of more than 48,000 pupils receiving their training in Protestant missionary schools. The Roman Catholics have extensive educational plants, in which some 68,000 pupils are receiving instruction under Christian training, making a total of nearly 120,000 children of Turkey receiving their education in mission schools.

One of the Moslem leaders in the inauguration of the new constitutional government in Turkey stated that they would never have dared to undertake such a bold step, had they not relied upon the influence of the missionary educational work which has been carried on in Turkey for two generations to sustain them and to make constitutional government possible.

**India** — Beginning with Ziegenbalg, Plutschén, Schultze, and Schwartz in the eighteenth century, missionaries inaugurated an educational program which has since played an important part in the development of the intellectual life of modern India. In 1728 the Christian Knowledge Society began work in the Madras Presidency, and from that day to the present, Christian missionaries have been engaged in a multitude of forms of educational work. The first decided attempt at female education was undertaken in 1800. The government system of education was based upon Sanskrit, Arabic, and Persian, while the missionaries made use of the common vernacular and placed emphasis upon religious instruction. Dr. Alexander Duff, an early missionary, made a remarkable record as an educator. (See **INDIA, EDUCATION IN**.) Of forty-eight young men who were under his tuition, nine became ministers, ten catechists, seventeen professors and high-grade teachers, eight high-rank government officials, and four physicians and surgeons. He was especially influential in shaping the educational policy of the Indian government, which is now of almost universal application in India, Burma, and Ceylon.

In India and Ceylon the government method

of carrying on its own educational work is largely through a subsidy to those mission schools that come up to the government standards and meet the requirements. In Ceylon, for instance, the support of the missionary primary and village schools comes almost wholly from the government grant, and in a large number of the schools in India by far the greater proportion of the funds for maintenance is supplied by the government. The schools thus aided are under the regular inspection of government officials, and the grant is based upon the number of pupils in the schools that reach a fixed standard. These grants are also given in still more liberal form to industrial institutions.

In the Protestant missionary school system in India there are thirty-seven collegiate institutions well scattered over the empire and directly connected with the Indian university system. In these colleges, nearly all of which are for young men, there are about 5000 matriculated students. In the 141 theological and normal schools there are 77,400 students. In the industrial training institutions and schools there are 9000 pupils, although there are many pupils in other institutions who are receiving regular industrial instruction. In the elementary and village schools of the country there are 362,000, with about 1000 in the missionary kindergartens. This makes a total in the Protestant missionary schools of all grades and classes in India, and representing eighty-five missionary societies, of about 458,000 children.

The island of Ceylon, although not densely populated, furnishes a good illustration of the influence of missionary educational endeavor. While in the entire island there is a population of only about 3,988,000, in the Protestant missionary schools on the island, consisting of three university and collegiate institutions, seven theological and normal training schools, forty-four boarding and high schools, six industrial institutions, and 871 schools of elementary village grade, there is a total attendance of 63,000.

The Roman Catholic figures for India and Ceylon report a school attendance of 225,000, making a total of pupils in these two countries in Protestant and Roman Catholic mission schools of 819,000 who are receiving their instruction in missionary institutions.

**Africa** — Africa, unlike other countries that are named in this list, is not a united or compact empire, it represents no single government, and has no native administration at any point which is now developing education. Under the British flag the government is beginning to render some assistance to primary, intermediate, and normal education for native populations, but this affects only a limited area. Very little is done by the French and German governments, and perhaps less by the Portuguese in this direction. There is no country

## MISSIONS

here named that is so dependent at the present time upon the educational work developed and carried on by missionaries as the continent of Africa. There is, moreover, little hope that in the near future any form of native government or of the foreign governments holding control in Africa will take advance steps in this direction. This being the case, the missionary educational work has the greater significance.

It should be stated also that in missionary education in Africa there is an increasing consciousness that the system that will be most valuable in the future must be more or less connected with some form of industrial training. While the African learns to read and write, he, by this method of training, is also learning new processes of agriculture, how to make brick and tiles for his home, how to construct his home according to improved modern methods, how to make his own agricultural implements and tools and furniture, and to do many other things which belong to a more civilized society. These processes of education are going on at the mission centers in different parts of the great African continent.

As might be expected, higher education in the line of collegiate work has been but little developed up to the present time among the natives of Africa. There are few institutions which should bear the name of college or university, and the number of students in these to-day aggregates less than two hundred. In theological and normal institutions that are training preachers and teachers for the lower schools, statistics show that there are over 2500 African youth receiving training. In the mission boarding and high schools the number of pupils passes the 20,000 mark. It is, however, in the elementary schools that the largest number of African youth are found. Protestant mission institutions of elementary grade in Africa, exclusive of the work carried on in Egypt, number over 405,000 pupils. Taking all of the Protestant mission institutions together, exclusive of Egypt, there are now under missionary instruction in Africa, in schools of all grades, a little more than 432,000 youth and children. This is probably largely in excess of the number of native youth in all of the other modern and equipped schools in the entire continent. The Roman Catholics have in schools under the direction of their missionaries in all Africa, also exclusive of Egypt, a school population of over 400,000. The figures which they furnish are not capable of as careful analysis and classification as the figures provided by the Protestant societies. This makes a total missionary school attendance of native African pupils of 832,000.

**Statistics** — The following statistics will show the present strength as well as the growth of Protestant missionary educational work during the last decade, though these figures are changing rapidly: —

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### PROTESTANT AMERICAN MISSIONARY SOCIETIES

	SCHOOLS	PUPILS
1900	6,252	240,263
1905	8,638	303,835
1909	9,949	437,138
1910	10,632	515,108

### ENGLISH SOCIETIES

	SCHOOLS	PUPILS
1900	9,160	437,874
1905	11,447	628,407
1909	10,649	604,675
1910	11,179	662,723

### GERMAN SOCIETIES

	SCHOOLS	PUPILS
1900	2,022	97,587
1905	2,466	120,817
1909	3,373	150,021
1910	3,130	159,547

### CONTINENTAL AND OTHER SOCIETIES

	SCHOOLS	PUPILS
1910	5,274	224,661

The totals of schools and pupils, together with the summary of the schools of Christendom, are as follows, with their growth for the last decade: —

	SCHOOLS	PUPILS
1900	20,196	1,035,724
1905	27,835	1,246,127
1909	29,190	1,413,995
1910	30,215	1,562,039 <sup>1</sup>

<sup>1</sup> About one fourth of these are girls.

Figures showing the growth of the Roman Catholic missionary educational work are not available, but the following statistics of the pupils recently reported show the number of students under Roman Catholic instruction under three classifications: —

### ROMAN CATHOLIC

In Lower Schools, including Primary	840,974
In Middle Schools (approaching the Boarding and High Grade in Protestant Statistics)	66,399
In Orphanages	89,699
Total	997,072

Their figures do not indicate the proportion of girls among the pupils under instruction

Grand total of pupils in missionary schools in all mission countries:—

Protestant . . . . .	1,552,039
Roman Catholic . . . . .	997,072
Total . . . . .	2,549,111

**Cost of Missionary Schools** — It is difficult to state accurately the amount which mission boards and societies of Christendom at the present time are using annually for the support and development of educational work in their various mission fields. Including the support of those who are engaged in whole or in part in educational enterprises, together with the subsidies given to schools of various grades and character, it is probably not an exaggeration to say that at least \$6,000,000 a year go directly or indirectly into the various Protestant missionary educational enterprises, in Africa and the Nearer and Farther East. A large part of the cost of this educational work is carried by the natives themselves. It can be said without exaggeration that the educational institutions that are called missionary around the world are carried on at an annual cost of not less than \$12,000,000. It should also be stated that not a few institutions, all of which are here classified as missionary either in origin or in character and spirit, have organized themselves under separate boards of trustees, with charters from different states. This has been done in a large number of instances for the purpose of securing more funds for their support. Many of these stand to-day as distinctively missionary, and all are classified as Christian and are supplementing missionary work.

**Coöperation** — During the last decade there has been a marked movement among the mission boards of various denominations to combine their efforts along higher educational lines in union collegiate and theological institutions, and all in the interests of economy and greater efficiency. This movement is progressing rapidly, and union Christian missionary institutions are constantly increasing in numbers, strength, power, and influence through the combined support and cooperation of two or more missionary organizations. Good illustrations of this are the North China Union Colleges at Peking, in which three or more missionary societies unite (these include a college for young men, a college for young women, a theological seminary for young men, a men's medical college, and a women's medical college); the Union College at Nanking, in which three missionary societies unite, the Union Educational Movement in Chengtuhsien in China, in which more than half a dozen missionary societies join, the Union Theological College in Bangalore in southern India, participated in by several different communions.

Another marked step is now contemplated,

which may not be classed as strictly missionary, but which probably indicates another step in the development of missionary education. The universities of Oxford and Cambridge in England and one or two universities in Scotland are uniting with several institutions in America, including Harvard University, McGill University in Montreal, and the University of Toronto, in developing a Christian university in Wuchang, China. It is expected that this university will be closely affiliated with the missionary colleges already established at that center, and that other missionary organizations will join in the plan.

Other institutions also are maturing along a somewhat similar line in other parts of China, as, for instance, the Yale Educational Mission in Chang Sha and the Harvard Medical Mission in Nanking. These indicate another step in the development of educational work of missionaries and institutions which are in sympathy and close cooperation with the original missionary enterprises.

**The Place of Christian Colleges in the Educational Systems of Christendom** — It is a significant fact of history that the leading educational institutions of Christendom had their origin in schools which were started by the Church and for the primary purpose of strengthening and perpetuating the Church. Out of these church institutions have grown the great universities of England and America. The state universities followed long after, and received their inspiration and impulse from these church institutions. The educational awakening upon the continent of Europe in the seventh and at the beginning of the eighth century is traceable to the influence of the Irish-Scotch missionaries, who, wherever they located, founded centers of learning. Rashdall in *The Universities of Europe* declares that "so much of the culture of the old Roman world as survived into medieval Europe survived by virtue of its association with Christianity." "It was only among churchmen that an educational ideal maintained itself at all."

Dr James S. Dennis says: "The pioneers of the educational revival of nations outside Christendom have been the missionary teachers who have always striven to have this mental awakening identified with Christian enlightenment. In this they have succeeded to an extent that is not surpassed in the educational provisions of the most favored communities of Christendom."

Reasoning not only from this analogy, but from modern movements which are distinctly traceable at the present time in many of the leading Asiatic countries, there is reason for assuming that mission schools started in the great East and in Africa by the Church are already becoming the nucleus and foundation for still greater and more advanced educational systems. Again the Church is proving itself

the pioneer of the intellectual development of races and nations. J L B

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**MISSISSIPPI AGRICULTURAL AND MECHANICAL COLLEGE, AGRICULTURAL COLLEGE, MISS** — A state institution founded in 1878 as a land grant college for the benefit of agriculture and the mechanic arts. The college offers a two years' industrial training course, two years' training course for teachers, and a four years' course in agriculture, engineering, textiles, and education, leading to the B S degree. The entrance requirements are equivalent to a good knowledge of the common school branches. The enrollment in 1910-1911, including the summer school, was 1390. There is an instructing staff of sixty-five members.

**MISSISSIPPI COLLEGE, CLINTON, MISS** — Founded in 1826 as Hempstead Academy, and now under the auspices of the Mississippi Baptist Convention. Preparatory and collegiate departments are maintained. No entrance requirements are stated. Degrees of A B, B S, and Ph B are conferred. The enrollment in 1911-1912 was 415. The teaching staff consists of twelve members.

**MISSISSIPPI, STATE OF** — As first organized in 1799, the territory included the present states of Alabama and Mississippi. In 1817 the territory included within the present state was admitted to the Union, as the twentieth state. It is located in the East South Central Division, and has a land area of 46,362 square miles. In size it is about the same as New York. For administrative purposes the state is divided into seventy-nine counties, and these in turn into school districts, black and white, and special school districts. In 1910 Mississippi had a total population of 1,797,114, and a density of population of 38.8 per square mile.

**Educational History** — There seem to have been no schools of any kind in the territory preceding 1795. A few private schools were opened by 1800, and in 1801 "the first public female school" in the territory was opened, though doubtless on a tuition basis. In 1802 the territorial legislature chartered Jefferson College, though it was not opened until 1811. Up to the time of its admission as a state the territory had done nothing beyond the establishment of a few tuition academies.

The only mention of education in the constitution of 1817 was a declaration, adapted from the N. W. Territory Ordinance, to the effect that "religion, morality, and knowledge being necessary to government, schools and the means of education should forever be encouraged in this state." The first legislature, meeting in 1818, passed an act giving the care of the sixteenth section lands to the judges of the county courts, to protect and lease, and with power to provide one or more schools in each county, as they might deem best. In 1821 a "Literary Fund" was constituted, additional sources of future income were specified, and a State Board of Directors was created for the management of the fund. A board of five to ten commissioners was provided for each county, to distribute the fund to a school or schools for the aid of such poor children in the county as might be selected, with the assent of their parents, to be taught reading, writing, and arithmetic. The income from the fund was to be used only for the building of schoolhouses and for the education of the children of the poor. The county school commissioners were to appoint, annually, a visiting committee to visit, examine, and report to the directors of the State Literary Fund, as to the condition of all schools. A form of teachers'



certification, by the directors of the Literary Fund, was also provided for. Three years later this law, which had been a dead letter, was virtually repealed by a new law making the township the unit. Five trustees of schools and school lands were to be elected annually in each township, and they were to build schoolhouses on the school section, employ teachers, and lease the school lands. Practically nothing was accomplished under any of these early laws. The new constitution of 1832 merely reproduced the brief and inadequate section on education contained in that of 1817, and no attempt to organize schools was made for some years. In 1833 the Literary Fund, which had by this time reached \$50,000, was distributed to the different counties for investment, and the state system of education provided for in the law of 1821 was abandoned.

About 1844, owing to immigration, increasing illiteracy, and the general agitation for education then going on in many states, the question of education in Mississippi began to attract new attention. In 1844 the University of Mississippi was created, in 1846, despite bitter local opposition, funds to establish it were voted, and in 1848 it began instruction. The central figure in the campaign for schools was Hon. A. G. Brown, Governor of the state from 1844 to 1848. In his inaugural in 1844 he pleaded with the legislature for a general system of common schools, open to all, and free to the poor. In 1846 a school law was finally enacted. This created boards of five school commissioners for each police district, established county school funds, and gave the commissioners power to open schools, license teachers, and levy specific taxes, but contained a proviso whereby no tax could be levied without the consent of a majority of the heads of families in each township, and made the law inoperative in any township if a majority filed a protest in writing against it each year. This almost completely nullified the law. The commissioners were to look after the sixteenth section lands and funds, and to report to the Secretary of State, who was made *ex officio* a general school commissioner for the state. The law proving ineffective, the ruinous policy of special laws for cities and groups of counties was begun in 1848, and this completely destroyed the chance for any general school system. Practically all of the succeeding legislation up to 1860 was of this character. The Civil War put an end to all of these efforts.

A new constitution was formed in 1868, which provided for a complete system of free public instruction for all children in the state. Rejected by the people in June, it was finally accepted by them in December. The section on education provided for a State Board of Education, for state and county superintendents, for a four months' school in each school district; for the establishment of

a state school fund, by consolidation and additions, for a poll tax, for educational purposes, for general state taxation, for the establishment of an agricultural and mechanical college, and forbade sectarian control of any school funds. The detailed law of 1870 carried most of these provisions into effect, and established the first real state school system the state had known. County superintendents were to be appointed by the State Board of Education, each county and each city of 5000 population was created a school district, boards of subdistrict school directors were also created to look after and manage the school, county taxation of ten cents on the \$100 for a schoolhouse fund and five cents for a teachers' fund was authorized, county examination and certification of teachers was provided for, and a form of the county system of school management was inaugurated. The law and the system of school taxation encountered much opposition, for many years, and the idea of popular education was combated openly and covertly. In time, however, the system was accepted, and slow but steady progress was made, although for a long time the schools were kept without a definite plan. What one legislature enacted the next modified or repealed.

In 1871 the Alcorn Agricultural and Mechanical College for negroes was opened. In 1873 the boards of district directors and the subdivision system were abolished, and their functions turned over to the county authorities. The patrons of each school were permitted, however, to elect trustees to care for the property, visit the school, and recommend teachers for election. A general state school tax of forty cents on \$100 was levied, the proceeds to be distributed on census, though this was later changed to a fixed biennial appropriation. All schools were divided into two grades, corresponding to primary and grammar, and the monthly wages of teachers in each were fixed by law. In 1878 an agricultural and mechanical college for whites was established, and opened in 1880, and in 1885 a state industrial institution for whites was opened at Columbus. The system thus established weathered the political revolution of 1875-1876, and remained almost undisturbed up to 1886, when a complete revision of the school law was made. Uniform state examinations for teachers were instituted, and standards for teachers' certificates were insisted upon for the first time, county teachers' institutes were established, county superintendents were directed to fix the salaries of teachers in their counties according to a definite schedule, based on the certificate held and on evidence of teaching capacity, the payment of teachers was changed from a yearly credit to a monthly cash basis, and towns were permitted to form separate school districts, and to tax themselves for buildings and maintenance. This law has since remained the basis of the Mississippi school system.

Most of the educational provisions of the constitutions of 1868 were readopted in the new constitution of 1890, and a number of additions were made. The additions in the new constitution prohibited special or private laws for the benefit of any private or common schools, permitted the use of the Bible in the public schools, increased the amount of poll tax for schools, practically made the maintenance of a four months' school by state taxation and funds mandatory, established a literacy test for the exercise of the suffrage, made the maintenance of separate schools for the two races mandatory; and confirmed the establishment of an agricultural and mechanical college for each race, from the proceeds of the Congressional grants. Few changes were made in the school law following the adoption of the new constitution, the revision of 1886 still forming the basis for the state educational system. In 1893 the Peabody Fund established an Institute Conductors' Training School for the state, and grants for teachers' institutes were made by it to the state for a number of years. In 1896 the State Board of Examiners was created, with power to grant higher state teachers' certificates, to assist the Superintendent in the preparation of all examination questions used in the state, and to transfer teachers' licenses from one county to another. Epidemics of yellow fever and smallpox interfered greatly with the schools from 1896 to 1900, and almost no educational progress was made during this time. In 1904 a State Textbook Commission was created, and the first uniform state series of textbooks was adopted in 1905. In 1908 a law regulating child labor in factories was enacted, and in the same year a bill was passed providing for the establishment of an agricultural high school for whites in each county, with a county tax on all property up to two mills, for support, and with state aid of \$1000 per school, but in 1909 this was declared unconstitutional. During the ten years from 1900 to 1910 there were two small increases in the annual state appropriation for schools, but there was little legislation of importance. By the legislatures of 1911-1912 much important educational legislation was enacted, the results of which are noted in the following section.

**Present School System** — At the head of the present state school system in Mississippi is a State Superintendent of Public Education, a State Board of Education, a State Textbook Commission, a State Board of Examiners, and a State Board of Control for the higher educational institutions of the state. The State Superintendent is elected by the people for four-year terms, and has an annual salary of \$2500. He is given general supervision of the public free schools of the state, and may prescribe rules and regulations for their organization and conduct, prepares all printed forms and blanks; renders official opinions,

and construes the school laws, meets the county superintendents for conference; apportions the school funds semi-annually; requires annual reports from the county superintendents, and submits an annual report to the legislature, showing the condition of the schools. He is also *ex officio* a trustee of the State University, the State Agricultural and Mechanical College, the State Industrial Institute and College, the Alcorn Agricultural and Mechanical College, and the different state educational boards and commissions.

The State Board of Education consists of the Secretary of State, Attorney General, and State Superintendent. This board is a board of appeal from the decisions of the county superintendents, and has final jurisdiction, audits claims against the school fund; determines the allowance to the State Superintendent for contingent expenses, grants special certificates to teachers in Indian schools; may adopt a state course of study, names a list of institute conductors, and has oversight of the teachers' institutes in the state, and may make rules and regulations covering all matters of school administration not covered by law. The State Textbook Commission consists of the State Superintendent and eight educators, no two from the same congressional district, appointed by the Governor for five-year terms. This commission adopts uniform textbooks in the common school subjects for use in all of the schools of the state, and contracts with publishers for the same, districts being free to adopt supplemental books and books for higher branches taught. The State Board of Examiners consists of the State Superintendent and two teachers appointed by him, for four-year periods. This board prepares the examination questions used in all teachers' examinations in the state, and examines applicants for the county superintendency, and for state and professional teachers' certificates. The Board of Control consists of seven trustees appointed by the Governor, one of whom must be a farmer, one a lawyer, and one an architect, builder, or factory man. This board has full control of the four institutions of learning mentioned above.

For each county there is a county superintendent of public education, elected by the people for four-year terms. To be eligible for election to the office he must pass an examination on all the subjects required for a first-grade county certificate and on the art of teaching. The county superintendent acts under the instructions of the State Superintendent and the State Board of Education, and by law is required to employ all teachers for the schools, and to fix their salaries; to examine the reports of teachers and trustees, to enforce the course of study adopted by the State Board of Education, and the textbooks adopted by the State Textbook Commission, to enforce the rules and regulations in refer-

ence to the examination and certification of teachers, to visit and inspect the schools, to decide controversies (appeal to the State Board allowed in most cases), to keep a record of the proceedings of the county board of education, and of his official acts, to make annual reports to the board of supervisors, the mayor and aldermen of special city districts, and to the State Superintendent, and to instruct trustees as to their duties. For each county there is also a county board of education, a county board of examiners, and a county library commission. The county board of education is composed of the county superintendent, together with one member from each supervisorial district in the county, to be appointed by the county superintendent, with the consent of the board of county supervisors. The Superintendent may remove members for cause, and may fill vacancies. The board meets annually, and has few functions. Its chief duties are to define and alter the boundaries of the white and black school districts, and to locate schoolhouses, to approve the creation of special districts in unincorporated villages, to provide educational facilities for small numbers of isolated children, and it may locate the public school, in any school district, in connection with a chartered institution of learning and provide for joint control. If there is a sufficient number of Indian children in the county, the board may establish an Indian school for them. The county board of examiners consists of the county superintendent and two teachers holding first-grade teachers' certificates, appointed by him each year, prior to the September examinations. This board conducts the examinations of all teachers applying for teachers' certificates. The county library commission consists of the county superintendent, together with two teachers holding first-grade teachers' certificates, named by him. Their function is to select and publish lists of library books from which district libraries may purchase, to make rules and regulations for the control of school libraries, and to receive annual reports from each library in the county.

Each county is divided into ordinary school districts and "separate" or independent school districts. School districts may be formed by the county board of education, whenever there are forty-five children of school age of either race, but where the distance is too great, or where streams or lack of roads make attendance difficult, districts may be constituted for fifteen children. In the case of isolated families, ten children may be declared to form a "special" school district. "Line" (joint) school districts may be formed by the action of two county boards. Consolidated school districts have recently been provided for, with transportation for pupils living more than two miles from the school. Schools with a monthly attendance of less than five may be closed at

the end of any month. For each common school district the patrons elect a board of three school trustees, one each year, and for three-year terms. The election is held in annual meeting, the first Saturday in August, and the annual school meeting seems to have almost no other function. If the patrons fail to elect, the county superintendent appoints. The board elects one of its members as secretary, and may designate its choice for teacher to the county superintendent. If the trustees express no choice, or if the person chosen fails to secure a teacher's certificate, the county superintendent appoints. The final appointment, fixing of salary, and contract rests with the county superintendent. The trustees are to visit the school, provide fuel, care for the property, settle disputes (with appeal to the county superintendent), and may suspend or expel pupils. They can spend no money unless authorized to do so by the county superintendent.

Any municipality, by ordinance of its mayor and board of aldermen, may erect itself into a special school district. Similarly, any unincorporated district having sixteen square miles of territory, on petition of a majority of its electors, may be set off as a special district by the county board of education. All such special districts are financially independent of the county. For all such special districts a board of five trustees, for three-year terms, is appointed by the mayor and aldermen in cities, and by the county superintendent in unincorporated places. The powers and duties of boards in special districts are practically the same as in common school districts, and, in addition, they may employ principals and a superintendent, may elect their own teachers, contract with them, and fix their salaries, may maintain both graded schools and a high school, and may charge tuition for the latter; and may estimate needed funds, up to three mills, and submit the estimate to the aldermen or county supervisors for levy.

**School Support** — Mississippi originally received 902,744 acres of land in the sixteenth-section grants, as well as two townships for a seminary of learning. Some of the sixteenth-section land is still unsold. The total common school fund of the state is now about \$3,500,000. The constitution of 1890 practically requires an annual state appropriation sufficient, with poll taxes and the interest on the permanent fund, to maintain all of the schools for four months each year. This state appropriation which at present is \$1,424,088 a year, constitutes the chief source of revenue for the school system. County taxation up to three mills is permissible, and is resorted to in a number of the counties, but the chief local taxation is in the special and financially independent (town and city) districts, where a seven months' school at least is always maintained. Tuition fees for high school instruction are still per-

mitted To the county agricultural high schools is granted \$30,000 a year of state aid, and \$5000 a year to weak districts

**Educational Conditions** — The property valuation of the state compared with the population is very low, and this shows itself in the matter of school support In percentage of children, five to eighteen years of age, in the total population (34 per cent); in the amount which each adult male must contribute (\$1 51) to produce \$1 of school money for each child, and in the small amount of school money raised for each child five to eighteen years of age, Mississippi is only surpassed by one state,—South Carolina But little is spent on school buildings (34 cents per capita of attendance, at last report, as against an average for the United States, of \$6 45), and the average value of all school buildings in the state is only about \$300 The state has no cities of over 25,000, and 88 5 per cent of its people live in country districts Of the total population in 1910, 56 2 per cent were black and 43 7 per cent white In some counties the blacks outnumber the whites three, four, and five to one 99 5 per cent of the population is native born The average length of term of all schools is about seven months, while in country districts it is less than six In 1908 a child labor law was enacted The state has no compulsory education law as yet The state has a school library law whereby any district which subscribes \$10 and provides a bookcase may receive a similar amount from the county school fund, though not more than ten districts can be aided each year, and no district can receive aid a second time, if other districts are applying

**Teachers and Training** — The state employed about 10,166 teachers in 1910, and at an average of about \$250 a year County superintendents in employing teachers are limited by a state wage scale, varying from \$15 to \$75 a month for teachers, and up to \$100 for principals Three grades of county teachers' certificates are issued, and only those holding a first-grade certificate can receive more than \$30 a month The examination subjects are the common

school subjects, the grade of certificate varying with the percentages made in the examination. The state also issues two grades of certificates: (1) State licenses, which are the same as a first-grade county certificate, but, on examination, have been validated for the entire state; and (2) Life diplomas, which involve high school subjects, and are the only certificates issued which represent any educational standards County teachers' institutes and summer normal schools have for years rendered a valuable service in educating the teachers of the state The state has for some time made provision for the training of colored teachers at Holly Springs, and a normal school for the training of white teachers, located at Hattiesburg, was opened in 1912.

**Secondary Education** — The public high schools are mostly of low grade, and most of them are still in part grammar schools, though in the nine cities of more than 8000 inhabitants, well-organized high schools are found The recent legislation relating to agricultural high schools promises much for future development In all, 137 high schools were reported in 1911, with 394 teachers and 7763 pupils enrolled Seven public and twelve denominational schools offer secondary instruction to the colored race

**Higher and Special Education** — The University of Mississippi, founded in 1844 and opened in 1848, and located at University, stands at the head of the public school system of the state, though it is only within the past ten years that any real coördination between it and the public school system has been effected. The school of pedagogy of the university, established in 1893, has done a valuable service, serving as a form of state normal school for white teachers for the state The university summer school for teachers has been well attended The Mississippi Agricultural and Mechanical College for white students, founded in 1878 and opened in 1880, at Agricultural College, and the Alcorn Agricultural and Mechanical College for colored students, opened in 1871 at Alcorn, are also state institutions In addition, these state institutions are assisted by the following —

INSTITUTION	LOCATION	OPENED	CONTROL	FOR
<i>For Whites</i>				
Port Gibson Female College	Port Gibson	1839	M E South	Women
Whitworth College	Brookhaven	1850	M E South	Women
Central Miss Institute	French Camps	1886	Presb	Women
Millaps College	Jackson	1892	M E So	Both Sexes
Belhaven College	Jackson	1894	Nonsect	Women
Stanton College	Natchez	1894	Nonsect	Women
Meridian Male College	Meridian	1901	Nonsect	Men
Meridian Women's College	Meridian	1903	Nonsect	Women
<i>For Negroes</i>				
So Christian Institute	Edwards		Discip of Chr	Both Sexes
Rust University	Holly Springs		M E	Both Sexes
Kosciusko Industrial College	Kosciusko			Both Sexes
Tougaloo University	Tougaloo		Congr	Both Sexes
Marv Holmes Seminary	Westpoint		Presb	Both Sexes

Many of these institutions are in large part preparatory schools; all have small endowments, and the collegiate work is of a somewhat elementary type.

The State Institution for the Blind, at Jackson, the Institute for the Deaf and Dumb, at Jackson; and the State Industrial Institute and College for whites, at Columbus, are supported by the state. The last named offers business, normal, collegiate, industrial, and music courses to both sexes. E P C

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**MISSISSIPPI, UNIVERSITY OF, UNIVERSITY, MISS** — A state-maintained co-educational institution chartered in 1844 and opened in 1848, out of the endowment of one township granted by Congress in 1819. The institution has been liberally supported by appropriations from the legislature. The following departments are maintained: academic, education, engineering, law, medicine, pharmacy, science, literature, and arts. The entrance requirements are fourteen units. The university confers the degrees of A B and A M in science, literature, and arts, B E and C E in engineering, A B. and B S in education; Ph G. and Ph B in pharmacy, and LL B in law. The courses in the last two departments are two years in length. The enrollment in 1911-1912 was 480, and the faculty consists of forty-three members.

**MISSOURI, STATE OF** — First organized as a separate territory in 1812, and admitted to the Union as the twenty-fourth state in 1821. It is located in the West North Central Division and in about the center of the Mississippi Valley, and has a land area of 68,727 square miles. In size it is about as large as all of New England and New Jersey combined, and about one third the size of France. For administrative purposes the state is divided into 114 counties and the city of St. Louis, and the counties are in turn divided into cities, towns, villages, and rural school districts. In 1910 Missouri had a population of 3,293,335 and a density of population of 47.9 per square mile.

**Educational History.** — The first school in Missouri is said to have been opened by J. B. Trabeau in 1774, and he is reported to have been teaching forty years later. The first attempt to organize a public school was made at St. Louis in 1817, when the village, acting under a territorial law, appointed a board of trustees to organize a public school. The

attempt was not successful, and it was not until 1838 that schools were opened there. (See ST. LOUIS, CITY OF.) The first constitution was framed in 1820. This contained two sections relating to education. The general assembly was instructed to preserve the school lands, apply the income as it should be, to establish at least one school in each township, "where the poor may be taught gratis," and "as soon as may be," to establish a university, as provided for in the grant of two townships for a seminary of learning. Commissioners for the care of the school lands were to be appointed by the county courts, five for each county by the law of 1820, and two for each township by the law of 1822, and they were authorized to build schoolhouses, as needed, when the funds would permit. In 1824 the first real school law was enacted. This made each township a school district, school boards of five were created to build or to rent schoolhouses, employ a teacher, appoint school visitors, and to make rules and regulations, and, on demand of two thirds of the voters, the boards were to levy a tax for the desired term. Little was done under this law. In 1835 the law relating to schools was revised. Three trustees were to be elected for each township, some of the powers of supervision were taken from the school visitors and given to the trustees, and biennial reports were to be made to the county courts. A "Committee for Literary Purposes," virtually a State Board of Education, was also created, to consist of the Governor, Auditor, Treasurer, and Attorney-General. In 1839 a new revision of the school law was made, the office of State Superintendent of Common Schools was created, county commissioners and township inspectors were provided for, and a three months' school term was required. The office of State Superintendent was abandoned two years later, however, and the Secretary of State again received such reports as were made, acting *ex officio*. The census of 1840 showed that most schools were still private, there being but 642 primary schools in the state, St. Louis included, and but 526 pupils educated wholly on the public charge. In 1842 only 28 of the 77 counties then organized had schools. By 1850 there were 1570 public schools, though nearly one half of the income still came from tuition fees. In 1844 the state university, provided for in the constitution of 1820, was opened, but it had a very struggling existence until after 1853.

In 1853 the office of State Superintendent of Schools was reestablished, and the first public high school in Missouri was opened in St. Louis. In 1855 a revised school law was enacted. This law created the office of county school commissioner, and made a number of improvements in the system. By 1858 every county had been organized into the public school system. By 1861 there were 5670

teachers employed, and the expenses of the schools were about \$850,000, one fourth of which came from rate bills. The coming of the war put an end to this school system, and the legislature of 1861 abolished the office of State Superintendent, and suspended the school appropriation. During the war the schools of the state were virtually closed, and the office of State Superintendent of Schools was not reestablished until 1865. The public school system of Missouri really dates from after the Civil War.

A new constitution was adopted in 1865, which made a much more detailed provision for the creation of a state school system. Separate schools for the colored race were permitted, but the apportionment of school money was to be made without regard to race or color. The State Board of Education was continued, and a Superintendent of Public Schools was provided for. The maintenance of the state university was made mandatory. A three-months' term was required, and permission was given to enact a compulsory education law. The school funds were safeguarded, the investment of the principal narrowly limited, and a state tax, and apportionments to equalize inequalities, were permitted. The new school law of 1866 carried these provisions into effect. Separate schools were permitted, if twenty or more colored children were in any district. The township, while still nominally remaining the school district, was in reality abandoned for the Iowa plan of subdistricts, with three directors for each, thus virtually introducing the district system. County superintendents, elected for two-year terms, were provided, and given the full functions of a county superintendent. Cities were permitted to organize under boards of education of six, with the usual powers. This school system lasted ten years, when it was superseded by a third constitution and a new school law. In 1870 two state normal schools were established for white teachers (Warrensburg, opened in 1871, and Kirksville, established privately in 1867, and adopted by the state in 1872), and one for colored teachers (Lincoln Institute, at Jefferson City). In 1874 a third school for white teachers was authorized at Cape Girardeau. In 1874 the first textbook law was enacted, providing for county uniformity, the presidents of the district school boards of the county constituting a textbook commission.

In 1875 the constitution adopted at the close of the war was abandoned, and a new one, under which the state has since been governed, was substituted. Most of the provisions of the constitution of 1865 were retained, though the statements in the new constitution were in some cases less forceful and less emphatic. This constitution of 1875 and the laws following form the basis of the present Missouri school system.

Since 1875 four periods in Missouri education stand out. From 1875 to 1883, under the administration of Superintendent Shannon, was a period of material organization, and the maintenance of a system of public education was changed from a questionable undertaking to a settled public policy. From 1883 to 1891, under Superintendent Coleman, and following the period of organization, came a period of agitation for careful work in the fundamentals of elementary education, and for perfection in classroom management. The only legislation of any importance during this period was the repeal of the county textbook law in 1885, leaving the state under district adoption until 1891, the amendment to the constitution in 1887, changing the percentage of state revenue which must be appropriated to education from one fourth to one third, the lengthening of the school term from four to six months in 1889, if a tax levy of forty cents on the \$100 would permit of it, and the enactment of a permissive county superintendency law in 1889, permitting any county so desiring to vote to employ a county superintendent. But nine counties had provided county superintendents as late as 1903.

From 1891 to 1899, under Superintendents Wolfe and Kirk, was a period of agitation for a better school system and a broader outlook in education, and a period of struggle against the extreme conservatism of the state in educational matters. The legislation during this period was rather meager, and centered around textbooks and the training and certification of teachers. In 1891, after six years of district adoption of textbooks, state uniformity in textbooks was substituted. An Institute Board of Examiners now superseded the county commissioners, in the matter of certifying teachers, three grades of teachers' certificates were issued, and teachers were certified after two weeks' attendance at the summer county institute. Two years later the training school for institute conductors was abolished, and a new law rigidly fixed the weekly wages to be paid institute conductors and instructors. The same year the State Reading Circle, which had existed from 1884 to 1887, was revived and made effective. In 1899 the teachers' certification law was again revised, a graded series of certificates provided for, which materially raised the standard, uniform questions for the state were to be supplied, and the certification of teachers after a two weeks' summer institute was abandoned. The development of high schools was stimulated during this period, and the state university, for the first time, began to receive some real recognition.

Beginning with 1900, under the administration of Superintendents Carrington and Gass, the state has experienced an educational awakening before unknown. This last period has been essentially one of reconstruction and unification, and marked educational progress.

has been made. In 1901 a state library law was enacted, and a State Library Commission, consisting of the State Superintendent and four appointed by the State Board of Education, was created. County boards of education, consisting of the county school commissioner, one appointed by the county court, and one appointed by the State Board of Education, were also created, and given some powers of supervision. They were authorized to supervise and grade the rural schools, to issue a county course of study, to renew teachers' certificates, and to approve summer schools. The consolidation of school districts was first authorized in 1901, also. In 1902 the people approved a constitutional amendment to extend and renew the state's Certificates of Indebtedness to the School Fund, and the discussion preceding the election brought out clearly the necessity for more revenue for schools. In 1903 the summer county institute law was repealed, a three days' county teachers' association in the autumn was substituted, and attendance for ten to twelve weeks in an approved summer normal school was substituted for the two weeks at the summer county institute. The State Superintendent was authorized also to inspect and classify the high schools of the state. In 1904 a constitutional amendment, providing a five cents additional tax, to be distributed to the school districts and to be used in supplying free textbooks and supplies, was defeated. In 1905 the state textbook law, enacted in 1891, and under discussion ever since, was entirely repealed, and county adoptions once more substituted, two new normal schools were established, at Springfield and Marysville, both of which were opened the next year, and the first compulsory education law was enacted. In 1907 the school law was revised and a number of changes made. The State Library Board was changed to its present form, state inspectors of high schools and of county schools were provided, the school term was increased from six to eight months, if a forty cent tax will provide the necessary funds, districts having less than twenty-five children were authorized to close their schools and transport their children, orphans, half orphans, and dependent children were to be educated free in any district, boards were permitted to employ superintendents for two years instead of for one, and St. Louis was permitted to require pupils to attend the whole time the schools were in session. In 1909 the compulsory education law was amended to require attendance, outside of St. Louis, for three fourths of the time the schools are in session, and boards in towns of 1000 or over were authorized to appoint attendance officers. Also in 1909, after thirty years of agitation, a county supervision law was enacted and made mandatory for all counties, with state aid of \$400 toward the salary of each county superintendent, all state aid to districts not

providing \$350 was cut off, unless they raised a tax of forty cents, special state aid to poor and weak school districts was granted, under certain restrictions, night schools, and an eleven-month term in cities, for physical training, were both permitted, and a state industrial home for negro girls was established. In addition, the school laws applicable to all schools (Section I) and to common schools (Section II) were thoroughly revised. In 1911 the child labor law was extended to all cities of 5000 inhabitants or over, the certification bill was revised so as to give the State Superintendent the supervision of all certification, and the method of apportioning school funds was revised so as to substitute a combined teacher and attendance basis for the old census basis.

**Present School System** — At the head of the school system is a State Board of Education and a State Superintendent of Public Instruction. The State Board is an *ex officio* body, and consists of the State Superintendent as President, the Governor, Secretary of State, and the Attorney-General. This board has nominal supervision of the educational interests of the state, but its real work is the investment of the school funds and the sale and preservation of the school lands. The Superintendent of Public Instruction is elected by the people for four-year terms. He is also charged with the supervision of the schools and the school funds of the state, confers and advises with county school officers, may visit and inspect schools, prepares all questions for the examination of teachers, has general supervision of all examinations, and the grading of the answers, issues state certificates, valid anywhere in the state, receives annual reports from all school officers and state institutions, and makes an annual report to the Governor. There is an Inspector of High Schools, who assists in classifying and prescribing courses for the high schools, and an Inspector of Common Schools, who assists in their examination and approval.

Below the State Superintendent is a county superintendent for each county, the county boards of education having been abolished by the county superintendency law of 1909. The county superintendents are elected by the people in district school meetings for four-year terms, must have taught two years in the preceding four, or have spent the preceding two years in a college or normal school, and, in addition, must hold a college or normal diploma, a life state certificate, or a first-grade county certificate. The county superintendent has general supervision of the schools of the county, except in the case of cities, towns, or villages employing a superintendent, with at least half his time free for supervision. The Superintendent must visit each school yearly, supervise the work and the accounts of the district officers, issue a course of study; adopt a plan

of grading for the schools, arrange for examinations and for graduation from the district schools, hold six public meetings each year, at different points in the country, to instruct and to advise, hold a county teachers' institute in the autumn, and must follow the instructions of the State Superintendent and make an annual report to him. An especially meritorious provision of the law is one requiring each county superintendent to spend five days each year at a convention of school superintendents, and twenty days each year in the state university, a state normal school, or in a manner approved by the State Superintendent, and in the study of rural school problems and school supervision. The salary for the office ranges from \$700 to \$1500, and of this the state pays \$400, in each case. County uniformity in textbooks is secured by the county textbook commissions, consisting of the county superintendent and two teachers, one appointed by the county court and one by the State Board of Education. Cities of 100,000 or over and accredited high schools may select their own books. This commission adopts books for five-year periods, from a printed list of registered books supplied by the State Superintendent. Publishers have to be properly licensed to sell, and books and prices must be on file. Supplemental books are not included. Indigent pupils may be supplied with books free.

Below the county are four classes of school districts: (1) common, with three school directors, elected in annual school meetings; (2) consolidated school districts, with boards of six directors; (3) town school districts in towns, villages, and cities of the fourth class, with boards of six school directors, and (4) cities of the first, second, and third class, under boards of education and special laws. The township unit is permissible, but is little used.

Each common school district holds an annual meeting, at which vacancies are filled, and one school director is elected, for a three-year term. The board of trustees then organizes by electing one of their number as clerk, who then performs most of the functions assigned to the board. The school meeting may also vote to lengthen the term beyond eight months, may vote a tax in excess of forty cents, or a tax for buildings or equipment, may decide changes in boundaries, or site, may direct the sale of property, and vote on allowing the school-houses to be used for specified purposes, and once in four years designates its choice for county superintendent. City, town, and consolidated districts may select a secretary and a treasurer, not members of the board; may establish graded schools, high schools, and libraries, as needed; and must maintain a term of at least eight months. Consolidated districts may be formed of three or more contiguous common school districts, or a vil-

lage and two adjacent districts, and may maintain elementary and high schools. Any district which provides less than eight months school, if a tax of forty cents will provide it, forfeits its organization. School boards in all classes of districts may borrow, by vote of the district, up to 5 per cent of their assessed valuation, may make rules and regulations for the government of their schools, admit and suspend pupils, require a medical examination of any pupil, contract with teachers, have an annual school census taken; condemn sites, estimate funds needed; maintain separate schools for the two races, establish a negro school whenever there are fifteen negro children in the district, and provide equal privileges and terms for each race, and make an annual report to the county superintendent and to the county clerk. The latter reports all statistics to the State Superintendent.

**School Support** — Missouri, on its admission as a state, received two townships of land for a university, the sixteenth section in every township for common schools, and seventy-two sections of saline lands for schools, — the sixteenth-section lands being given to the state for the benefit of the townships. The sixteenth-section grants amounted to 1,199,139 acres. In 1837 the saline land fund, together with the Surplus Revenue fund (\$382,335) then received, was constituted a permanent state school fund. To this was added the money received from the sale of the State Tobacco Warehouse (\$132,000) in 1865. This fund now amounts to \$3,159,281, and yields an income of about seventeen and a half cents per pupil per year. The one third of the state revenue added raises the amount to about \$180, the amount having risen rapidly with the recent increase in wealth in the state. The swamp-land grants of 1849 Missouri put into a series of county school funds, to which have been added the proceeds of fines, forfeitures, and the sale of estrays. These funds now amount to \$5,750,000. The sixteenth-section township funds amount to a total of approximately \$4,000,000. Both the county and the township funds vary greatly in amount, being from ten to thirty times as large in some counties as in others, and produce very unequal incomes per pupil in the different counties and townships. The income from all school funds must be used only for teachers' wages.

The largest proportion of the money for support comes from local taxation, which may go to sixty cents on the \$100 in cities and to forty cents elsewhere, and may exceed these limits by a vote of the people. A tax of forty cents must be levied, if necessary to provide an eight months' school. If a tax of forty cents will not provide sufficient funds, with a salary of \$40 a month to the teacher, to provide an eight months' school, the State Treasurer will add an amount sufficient, provided the district is not less than nine square miles in



area, has an assessed valuation of \$40,000 or more, a school census of twenty-five, and has levied a tax of forty cents for the teachers' fund and twenty-five cents for incidental expenses. Such aid cost the state \$13,078 in 1910. All other school money was distributed on census up to 1911, but thereafter all state money is to be apportioned on the combined basis of teachers employed and aggregate days' attendance. The total cost of the school system in 1910 was about \$13,000,000, or about \$3.97 per capita of the total population.

**Educational Conditions** — Aside from two large cities and a few smaller ones, which contain 30.8 per cent of the total population (St. Louis and Kansas City contain 28.1 per cent), 57.5 per cent of the people live in rural districts. Of the total population, 95.2 per cent are white and 4.8 per cent negro, while 93 per cent are native born, and about 5 per cent are illiterate. Of the foreign born a little over one half are Germans. The state has many small schools, and very unequal educational conditions in the different parts of the state. Not much headway has as yet been made in the matter of the consolidation of school districts, or in the provision of school libraries. The compulsory education law requires the attendance of children, eight to fourteen, for only three-fourths of the time the public schools are in session, and the same for employed children, fourteen to sixteen, unless excused for a number of statutory reasons. Cities and towns of 1000 population may appoint attendance officers, who may enforce attendance and visit factories. Cities of 10,000 or over may establish parental schools. Children, eight to fourteen, cannot be employed in any mine, factory,

or shop during school hours, unless possessed of a certificate showing attendance at school for three-fourths of the school term. City school authorities may contract with homes established for the care of delinquent, dependent, or neglected children, for their care and training. Children who are orphans or half orphans, or dependent, may receive free schooling in any district where they find either a temporary or a permanent home.

**Teachers and Training** — The state employed approximately 19,000 teachers in 1911, about one-fourth of whom were men. For the training of new teachers, the state maintains five normal schools for whites and one for the colored race. The city of St. Louis also maintains an institution for the training of teachers for the city. All of the state normal schools (five for whites and one for colored students) and the state university maintain summer sessions. Three grades of certificates are issued, these being arranged in a graded series. The questions are furnished by the State Superintendent, and are uniform throughout the state. The county superintendents act as agents in giving the examinations, and certify the professional grade of the candidate, but the State Superintendent has oversight of the grading of the papers and the granting of the certificates to teach. Certificates may be renewed. County institutes are to be held in each county, and ten or more are to be provided in the state for colored teachers. Cities of 300,000 (St. Louis) examine their own teachers and conduct their own institutes. Grades made in approved summer schools may be accepted in lieu of examinations in the subjects covered.

INSTITUTION	LOCATION	OPENED	CONTROL	FOR
St. Louis University . . . . .	St. Louis	1829	R C	Men
Linwood College . . . . .	St. Charles	1831	Presby	Women
William Jewell College . . . . .	Liberty	1849	Bapt	Men
Christian Brothers College . . . . .	St. Louis	1851	R C	Men
Christian College . . . . .	Columbia	1851	Christian	Women
Christian University . . . . .	Canton	1853	Christian	Both sexes
Westminster College . . . . .	Fulton	1853	Presby	Men
Carleton College . . . . .	Farmington	1854	M E	Both sexes
Lexington College . . . . .	Lexington	1855	Bapt	Women
Stephens College . . . . .	Columbia	1856	Bapt	Women
Central College . . . . .	Fayette	1857	M E South	Both sexes
Washington University . . . . .	St. Louis	1859	Nonsect	Both sexes
Central Wesleyan College . . . . .	Warrenton	1864	M E	Both sexes
Pritchett College . . . . .	Glasgow	1866	Nonsect	Both sexes
Central College for Women . . . . .	Lexington	1869	M E South	Women
Morrisville College . . . . .	Morrisville	1872	M E South	Both sexes
Drury College . . . . .	Springfield	1873	Nonsect	Both sexes
Synodical Female College . . . . .	Fulton	1873	Presby	Women
Hardens' College . . . . .	Mexico	1873	Bapt	Women
Park College . . . . .	Parkville	1875	Presby	Both sexes
Pike College . . . . .	Bowling Green	1881	Nonsect	Both sexes
Conception College . . . . .	Conception	1883	R C	Men
Tarkio College . . . . .	Tarkio	1883	U Presby	Both sexes
Cotley College . . . . .	Nevada	1884	Nonsect	Women
Missouri Wesleyan College . . . . .	Cameron	1887	M E	Both sexes
Missouri Valley College . . . . .	Marshall	1889	Cumb Presby	Both sexes
George R. Smith College . . . . .	Sedalia	1894	M E	Negroes

**Secondary and Higher Education** — The development of secondary schools in the state has been rapid during the past decade. Many small and short-term schools have been developed, and put on the accredited list. Four hundred nineteen high schools were reported in 1910, about one half of which were classified as first grade. Any city, town, or consolidated district may establish a high school, and any four or more common school districts may unite to form a joint high school, if approved by the people. In the latter case, 20 per cent of the teachers' fund may be used for high school purposes. Teachers in high schools must hold a first grade county or a state professional certificate.

**Higher Education** — The University of Missouri, at Columbia (*q v*), stands as the culmination of the system of public education of the state. The agricultural college is combined with the university at Columbia, but the school of mines is located at Rolla. The university is assisted in the work of higher education in the state by the institutions as shown on page 275.

Many of the above are small and struggling institutions, and nearly all of them were founded before the state university began to receive real support from the state.

**Special Education** — The state also maintains the Missouri Training School for Boys and Girls, at Booneville, the State Industrial Home for Girls, at Chillicothe (both reformatory), the Missouri School for the Blind, at St. Louis, the Missouri School for the Deaf, at Fulton, and the Missouri Colony for Feeble-Minded and Epileptics, at Marshall. E. P. C.

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**MISSOURI, UNIVERSITY OF, COLUMBIA AND ROLLA, MO** — A coeducational institution, forming part of the public school system of the state of Missouri, founded in 1839. The present organization, with two colleges (Arts and Science, and Agriculture) and schools for professional and graduate work, was adopted in 1909. The separate divisions, each of which was in some form differentiated from the rest of the institution in the year indicated, are: College of Arts and Science (1839); School of Education (1867),

College of Agriculture (1870), School of Mines and Metallurgy at Rolla (1870), School of Law (1872), School of Medicine (1873), School of Engineering (1877), Graduate School (1896), School of Journalism (1906). Special minor divisions are the Extension Division, the Summer Session, the Agricultural Experiment Station, the Engineering Experiment Station, the Mining Experiment Station, and the Military Department. All of these divisions are located at Columbia, with the exception of the School of Mines and Metallurgy and the Mining Experiment Station, which are situated at Rolla.

The entrance requirements are fifteen units for the College of Arts and Science, the School of Mines, and the College of Agriculture, and in addition two years of college work for all the other schools. These requirements, which are on the certificate basis, have been strictly administered, and this policy has stimulated and built up an excellent system of secondary schools in the state. The institution was one of the first four state universities admitted to the benefits of the Carnegie Foundation.

The final control over the institution is vested in the Board of Curators, which is appointed by the Governor of the state and is granted large powers by the state constitution. The internal organization is based on a general university faculty of all teachers of the rank of assistant professor and above, and special faculties for the various divisions. The university faculty assumes an unusually large degree of responsibility, and to it report many of the committees that in similar institutions report to the board of control.

The university holds the distinction of establishing the first school of education in a state institution, and of establishing the first school of journalism in the world.

The institution has a productive endowment fund of \$1,258,839, and receives the income of a 5 per cent state tax on collateral inheritances. Almost one third of its income is derived from the general revenues of the state by legislative appropriations. A movement to give the university other permanent support as a substitute for legislative appropriations has been under way for several years, but so far has not been successful. The receipts from fees are insignificant. The total income for 1911 was \$875,000. The enrollment of students for 1911-1912 was 3063. Albert Ross Hill, LL.D., is the president. C. A.

**MISSOURI VALLEY COLLEGE, MARSHALL, MO** — A coeducational institution chartered in 1881 and opened in 1889 under the charge of the Presbyterian Church of Missouri. An academy, a college, and a school of music are maintained. The entrance requirements are sixteen units. Studies are divided into required subjects and classical, modern language, and science courses leading

to the A.B. and B.S. The enrollment in 1911-1912 was 105 students in the college proper. There are fourteen members on the faculty.

**MISSOURI WESLEYAN COLLEGE, CAMERON, MO** — A coeducational institution established in 1883 as the Cameron Institute and incorporated under its present title in 1897, under the control of the Methodist Episcopal Church. Collegiate, academic, normal, commercial, and music departments are maintained. Students are admitted to the college on completing a high school course. The degrees of A.B., B.S., and B.S. in Civil Engineering, are conferred. The enrollment in 1910-1911 was 275. The teaching staff numbers nineteen members.

**MISTRESS, SCHOOL** — See **TEACHERS, SEX OF**

**MITCHELL, MARIA** (1818-1889) — Professor of astronomy and advocate of the higher education of women. She was educated by her father and in the private school of Cyrus Pierce (*q.v.*). She discovered a new comet in 1847, was for several years engaged in astronomical work for the United States Coast Survey, and was professor of astronomy at Vassar College from 1865 to 1880. She was the first woman elected to membership in the American Academy of Arts and Science and the American Association for the Advancement of Science. She served as one of the editors of *American Nautical Almanac*, and published several papers on scientific subjects and the question of the higher education of women. W. S. M.

**MITTELSCHULE, MIDDLE SCHOOL** — A term which in Austria and Southern Germany is applied to those schools which are intermediate between the elementary schools and universities (*Hochschulen*), i.e. secondary schools. In Prussia and the states whose systems are modeled on Prussia, a *Mittelschule* is a type of school which furnishes a higher elementary education preparatory to the higher artisan occupations and the lower commercial and administrative positions. It is accordingly intermediate between elementary and secondary schools. This type of school originated toward the end of the eighteenth century, and has been known under many different names (e.g. *höhere Burgerschule*, *Stadtschule*, *gehobene Burgerschule*, *Rektorschule*, etc.). It was not officially recognized until the General Regulations of 1872, but even then it was not definitely organized, so that several types existed: (1) attached to an elementary school, (2) a separate school with five or six classes taking pupils from elementary schools, (3) a separate school with nine classes. The middle school is established and maintained entirely by local efforts, and receives no grants from the

government. Hence the curriculum can be adapted to meet local needs. The only restriction until recently was that the teacher employed in such schools must have passed the *Mittelschullehrerprüfung* or else an examination for higher school teachers. In 1910 the middle schools were reorganized, the complete school of this type must have nine classes, but pupils may enter into the sixth class (Class I is the highest) from the elementary schools, the curriculum has been defined, and, most important, such schools may prepare for the secondary schools. Up to the present the progress of the middle schools has been retarded because, although they charged fees and kept pupils as long as the *Realschule*, graduation carried no privileges, and pupils could not be transferred to secondary schools. The recent regulations remedy this. See further details under **GERMANY, EDUCATION IN**.

The term is not used in English to refer to any type of school, although it has been employed with reference to secondary education by Chancellor Elmer E. Brown in *The Making of our Middle Schools*, which deals with that type of education which is midway between elementary and university. In Ireland secondary schools and education are known as intermediate, although here pupils may be received from the age of nine on and the elementary branches may be taught.

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**MIXED NUMBER** — A number in which the sum of an integer and a fraction is expressed. For example,  $2\frac{1}{2}$  is a mixed number. The term has generally been applied to the case in which the fraction is a common fraction, but there is no reason why this limitation should be placed, since 2.5 is just as much of a mixed number as  $2\frac{1}{2}$ . The term is merely one of convenience in the school, and aside from its value in distinguishing the various cases that it is thought best to take up in fractions, it might well drop out of the vocabulary. The operations with mixed numbers are sufficiently treated in any common arithmetic. D. E. S.

**MNEMONIC SYSTEMS** — Artificial devices for memorizing depending upon the creation of arbitrary associations. Every one at times deliberately associates some fact to be remembered with some more well-known fact, as in the case of fixing the memory of the name of a person which it has been found difficult to remember. A device of this sort which is a little more elaborate is the verse commonly used for remembering the number of days in the various months, beginning "Thirty days hath September." The early logicians made use of many such aids to memory in connec-

## MOB PSYCHOLOGY

## MODEL SCHOOL

tion with the methods of syllogistic reasoning. Thus, the syllogistic moods were indicated by the vowels of the words of the barbarous Latin verses —

Barbara, Celarent, Darn, Ferio, Baralipon  
Celantes, Dabitis, Fapesmo, Frisesomorum,  
Cesare, Camestres, Festino, Baroko, Darapti,  
Felapton, Disamis, Datisi, Bokardo, Ferison

More modern mnemonic systems apply the same principle in a more general way by the use of the figure alphabet, which is committed to memory. The one most frequently used is as follows —

1	2	3	4	5	6	7	8	9	0
t	n	m	r	l	sh	g	f	b	s
d					j	k	v	p	c
					ch	e			z

"To briefly show its use, suppose it is desired to fix '1142 feet in a second' as the velocity of sound t, n, r, l are the letters and order required. Fill up with vowels forming a phrase like 'tight run,' and connect it by some such flight of the imagination as that if a man tried to keep up with the velocity of sound he would have a tight run" (E. Pick, *Memory and its Doctors*, p. 8)

Two chief objections have been brought against the use of such systems. In the first place, they are either so limited in their application or so cumbrous as to defeat their purpose. And in the second place they are purely mechanical, and thus tend to discourage logical memorizing, which is not only more useful, but has been shown experimentally to be more economical than the mechanical methods.

See MEMORY

E H C

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**MOB PSYCHOLOGY** — A special type of behavior and mental activity is exhibited by groups of persons who come together under the influence of any strong emotional excitement. Thus a community aroused by some crime is likely to behave in a fashion entirely different from any individual member of the community. The behavior of the company as a whole is characterized by lack of deliberation and lack of a feeling of responsibility. Imitation undoubtedly plays a very large part in mob behavior and in mob consciousness.

The imitation here involved is likely to be relatively blind. The whole situation can be described by saying that the emotional tension is raised to a very high level, and the action which proceeds from the company as a whole is intense to a degree which would be impossible in a single individual, even if he were dominated by the same emotion. Some writers on social psychology have been led to regard the behavior of a mob as typical of all social consciousness. Emphasis should be laid upon the fact that mob behavior is distinctly characterized by emotional tension. There are many other forms of social behavior which depend upon common ideals and common plans, but are not dominated by emotional stress. General interpretation of social phenomena on the analogy of mob behavior is therefore not justifiable. C H J

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**MOBERLY, GEORGE.** — See WINCHESTER COLLEGE.

**MODE** — See GRAPHIC CURVE; STATISTICAL METHOD.

**MODEL LESSON** — In the training of teachers it is customary to illustrate the principles of teaching by the use of actual classroom instruction. For this reason, most normal or training schools for teachers are equipped with a special laboratory school with carefully selected teachers in charge. When there is but one such school, it provides opportunity for (1) demonstration, (2) practice, and (3) experimental teaching. In the teaching of pedagogical theory, the demonstration school is an important and necessary adjunct to reading and discussion. The critic or class teachers of the observation or model school teach before the class in theory to illustrate the various types of teaching employed in current practice. The students report their observations and discuss them, thus gaining a more concrete basis for their theoretic study. The use of model or type lessons is vastly superior to random observations by students, for they can be given for the particular purpose and at the specific time required by the instructor in pedagogical theory. H S

See ILLUSTRATIVE LESSON

**MODEL SCHOOL** — A term commonly applied to a graded school connected with a normal school, or teachers' training college. The school may be used as a real model school, and little or no practice teaching or

experimental work be done in it, or it may be used as a regular training school, in which student teachers teach under direction. The term is rather loosely used. Strictly speaking, it should be used only for such schools as are models or types, serving mainly for observational purposes, the terms training school or practice school or experimental school being used for schools serving primarily for practice teaching purposes. See **EXPERIMENTAL SCHOOL**, **NORMAL SCHOOL**.

In Ireland the term "model school" is used to refer to a type of higher elementary school. The model schools when established by the Board of Commissioners of National Education aimed "to promote 'united education,' to exhibit the most improved methods of literary and scientific instruction for the surrounding schools, and to train young persons for the office of teacher" in the national schools. It was proposed to establish one in each of the thirty-two school districts, but this was never carried through. The first model school was opened in 1849. A higher education is given than in the elementary schools, and the teachers receive a higher rate of pay. Although the term has been retained, many of these schools have long ceased to serve as models, and provide an education intermediate between the elementary and secondary schools for those pupils who cannot proceed to the latter.

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**MODELING** — In teaching geography in the elementary school, modeling in relief is used to fix the interpretations of flat maps. Clay, papier maché, and sand are among the materials used. Owing to its cheapness and its ready use, modeling on the sand table has been very popular among teachers. The value of such work has been the subject of considerable controversy. It has been opposed as an inaccurate mode of representing physical features, which necessarily leads to exaggeration and the fixing of false impressions. Those who favor it contend that it is merely a supplement, not a substitute for accurate map reading, its main value being found in its use as a psychological device for teaching children facts in an active and concrete way. H. S.

See **FINE ARTS**, **GEOGRAPHY**, **TEACHING OF**.

**MODELS** — See **VISUAL AIDS TO TEACHING**.

**MODENA, ROYAL UNIVERSITY OF.** — See **ITALY**, **EDUCATION IN**.

**MODERN LANGUAGE AND LITERATURE** — The modern languages as subjects of study in the higher institutions of learning

take as their province the culture both old and new of the foreign peoples as revealed in their languages and literatures. In the broadest acceptation of the term it is the study of philology. For a full discussion of this discipline, particularly with regard to modern tendencies and the development of scientific methods, see under **Philology**. Of close relation, also, is the article on **Phonetics**. This article is limited to a consideration of the scope and methods of the study of these languages and literatures in the universities and schools at the present and during the very recent past.

**In Universities** — *Germany* — The scientific study of Romance languages and English in the universities of Germany is but the natural outgrowth and broader application of the philological method that began to flourish in the early decades of the nineteenth century, and is associated with such names as Grimm, Wilhelm von Humboldt, Bopp, and others. There were few chairs established in the Romance field before 1850. Halle, Giessen, Bonn, are among the earliest. All the chairs for the study of English came in the last three decades, the earliest at Leipzig and Strassburg in 1873. At present there is, even in the largest German universities, only one chair for Romance and one for English philology. Here and there a *privat Dozent* gives lectures, and the plan of having foreign lektors, usually one French and one English, has also been quite generally adopted. Berlin boasts of two English lektors, one Italian, one Russian, one Dutch, and one lektor for the Scandinavian languages.

There is a widespread feeling in Germany that the modern language departments, especially in the larger institutions, are considerably undermanned to carry on the work satisfactorily and meet the practical demands that are becoming more and more imperative. Even if the professor keeps within the field of philology, to such an extent has it grown that it is impossible for one man to cover the ground satisfactorily to himself or to his students. The German *Neuphilolog* justly prides himself upon the thorough grounding he gives his students in scientific method, in historical grammar, and in the interpretation of the older texts. To accomplish this and yet add courses in Shakespeare, Molière, to say nothing of interpreting writers nearer our own times, in whose works there is so much of truly scholarly interest, must obviously soon bring about an increase in the modern language staff.

The scholarly work is in the hands of the professor, a law unto himself as regards the courses he offers during a semester or series of semesters. For more intensive work in method with advanced students, there have been established seminars. The kind of work done in the modern language seminars varies with the personality of the director.

The English seminar at Berlin under Professor A. Brandl is a very good example of the more modern type of organization. There are three rooms for books which now amount to over 11,000 volumes; one room for phonetic apparatus, a room for conversational practice, and various offices. The doors are open freely to all, but only the advanced students are regular members, allowed to take part in the work of the seminar. In the winter semester, 1909-1910, there were 290 using the seminar, and twenty-one regular members. In order to become a regular member it is necessary to pass an examination, or the applicant must prove to the lektor that he has sufficient practical command of the language to omit the work demanded in the preliminary proseminar. Even entrance to the proseminar is safeguarded by a preliminary trial. The lektor does the practical teaching of the departments. On the whole, his work is primarily planned to give students of the university an opportunity to hear the foreign language rather than a scholarly discussion of a limited field of knowledge. His lectures deal with modern literature, or serve to orient the student in the life and customs of the foreign peoples. He also usually offers some work for small groups of advanced students in composition and phonetics. How much the lektor adds to the scholarly side of the departments concerned, depends upon his personality, training, and, doubtless, upon the attitude of the professor, as head of the department.

The following paragraph presents two types of courses. The first is very progressive. It takes cognizance of the practical as well as the more strictly philological side of the subject. Lectures in most courses are held in English by the professor as well as the lektor. The second is a more typical offering of courses found in Germany. Great stress is laid upon historical grammar, syntax, and the interpretation of old texts. The modern authors are usually treated by the lektor.

Courses offered in English at the University of Marburg during the summer semester of 1912: Introduction to the study of English Philology, two hours, Old English Literature, with readings, three hours, English Seminar, philological section. Shakespeare's *Hamlet*, one hour, Essays of Addison, one hour. English Seminar, practical section. Poetic of George Meredith, one hour, Proseminar, philological section. Introduction to Old English (Prose), one hour; Practical Section. Reading of Phonetic Text, one hour, England and the English (Part I), one hour, Introduction to spoken English, open to students of all faculties, two hours, Essays and Discussions, one hour.

Courses offered in the Romance Languages at the University of Göttingen during the summer semester of 1912: French Phonetics, two hours; Historical Italian Grammar, with interpretation of selections from Dante, Pe-

trarca, Boccaccio, four hours, Introduction to Old French with exercises in interpretation, two hours, Selected topics of French Syntax, two hours, Seminar, exercises in Old French (*Erecc*), one hour, Proseminar, reading and interpretation of Racine's *Plaideurs*, one hour. The French lektor gives the following courses: Modern French for beginners in two sections, two hours each, Modern French for advanced students, two hours, Alfred de Musset, two hours. Italian lektor offers: Introduction to the study of Italian, four hours, *Le Novelle della Pescara* by Gabriele d'Annunzio, reading and composition for advanced students, one hour, Italy and its People, illustrated lectures for students of all faculties, one hour. Spanish courses: Elementary course, two hours, *Doña Perfecta*, novela de Pérez Galdós, reading and composition, for advanced students.

*France* — In a number of the provincial universities there is still only one professorship of modern languages. Others have one professor of English or German, the work of the second language being in charge of men of non-professional rank, variously named *maître de courses*, *maître de conférences*, *chargé de conférences*. Only in the larger universities like those of Paris, Lille, and Poitiers do we find separate chairs for German and English. Two or three others have one full and one adjunct professor. All, however, have teachers of the modern languages usually for both German and English, and sometimes for Russian, Italian, etc. Here and there, the German system of having lektors, native Germans and Englishmen, seems to have found favor. This, however, is not at all general.

The young man or woman who has passed the French *baccalauréat* and who wishes to specialize in modern languages has a very definite course of study to pursue in order to obtain, through public examination, the various diplomas granted by the State. The chief state diplomas are the (1) *Licence*, (2) *Diplôme d'études supérieures*, (3) *Doctorat ès lettres*. In addition to these diplomas there are, among others, competitive examinations for the *certificat d'aptitude* and the *agrégation*. The work, including the reading, demanded for these several diplomas is pretty definitely prescribed, and the courses offered in the universities are planned, very largely, to prepare students to meet the requirements. There is, consequently, great similarity in the offerings of all the universities, in marked contrast to the lack of uniformity of courses given in the various German universities. In the preparation for the advanced examinations, however, the student must evidently largely depend upon himself, the university professors and courses serving merely as guides. The candidate is also doubtless aided by the full accounts of all examinations that are found in educational journals.

The *licence* can be obtained after one year's study beyond the passing of the baccalaureate. As a rule, a longer time is necessary to prepare for this diploma. The prescribed work in modern languages is narrow in scope, with the chief emphasis upon a few books that are representative of different periods of literature. The examination is both oral and written. In addition to the general three-hour Latin examination required of all arts students, the candidate specializing in modern languages passes (A) written tests in (1) Translation and grammatical commentary, modern language, chosen by the candidate. Commentary written in the modern language, four hours. (2) Modern language theme, three hours. (3) French essay, four hours. (B) oral tests in: (1) Interpretation of a modern language text, together with a literary and grammatical commentary in the foreign language, (2) literary history of the modern language, (3) interpretation of a text from modern French literature, (4) any university course, at the choice of the candidate, (5) translation of an easy selection from the second modern language chosen by the candidate. About on a par with the *licence* are the competitive examinations for certificate of proficiency for modern language teaching in the various state schools.

Great stress is laid upon the candidate's ability to speak and write the foreign language, and it is usual to spend a year abroad before attending the regular university courses.

The English books chosen for 1913 for the modern language certificate for teaching in normal schools are: Sheridan, *The School for Scandal*, G. Eliot, *Adam Bede*, Kipling, *The First Jungle Book*, Wordsworth, *Michael*, a *Pastoral Poem*, Keats, *Isabella*, Tennyson, *The Miller's Daughter*, *The Brook*, Dora, *Morte d'Arthur*, *Ulysses*, *The Revenge*, Browning, *The Pied Piper of Hamelin*, Hervé Riel, *How they brought the Good News from Ghent to Aix*, Whittier, *Maud Muller*.

The Diploma of Higher Study can be obtained after two years at the university. It is the intermediate stage between the *licence* and the competitive *agrégation*. Greater specialization in the chosen field characterizes the work for this diploma. The candidate must prepare and defend a memoir written either in French or in the language the student offers. The examination also includes the grammatical and literary interpretation of passages from authors of the Middle Ages, Renaissance, and Modern periods, previously chosen by the candidate.

A much-coveted state diploma is the *agrégation*, which carries with it the right to a position in a Lycée, or college. The *agrégé* is the highly trained specialist in his own particular field. The École Normale at Paris, now the professional school of pedagogy of the University of Paris, is closely associated with the name

*agrégation*. The competitive examination is, however, open to all those who possess the prerequisite training. It requires at least three years beyond the baccalaureate to pass the *agrégation*. As only a certain number can pass each year, depending on the demand for teachers of this grade, even good candidates try four or five times before meeting with success. The work in preparation for the *agrégation* is pretty definitely outlined, and, to a certain extent, the courses given at the university meet the needs of candidates. Practice teaching in a Lycée, and special classes at the École Normale supplement the regular university courses in subject matter. Independent work under supervision occupies the better portion of the student's time, particularly at the later stages of preparation.

In addition to the teaching qualifications the written requirements are — (1) An essay in French on some topic dealing with the literary history of the foreign people, seven hours, (2) essay in the foreign language dealing with the history of civilization of the foreign people, seven hours, (3) translation from and into the foreign language, two papers, four hours each. The oral test includes a lesson given in French and one in the foreign language after five hours' preparation, three quarters of an hour, a half-hour test of the candidate's practical knowledge of the spoken language.

The books chosen for 1912 upon which the various papers are set are —

I The vision and the dream in English literature. Chaucer, *The House of Fame*, Books I and II. Shakespeare, *A Midsummer Night's Dream*. Macpherson's *Ossian*, *Fingal*, *Carthou*, *The Death of Cuchullin*. Byron, *The Dream*, *Darkness*, *The Vision of Judgment*. R. Kipling, *The Finest Story in the World* (Many Inventions), *The Brushwood Boy* (The Day's Work).

II Biblical influence on English literature and society. Judith (Sweet's Anglo-Saxon Reader), *The Revelation of St John the Divine* (Authorized version of 1611). Milton, *Paradise Lost*, Books VII and VIII. Bunyan, *The Pilgrim's Progress*. W. Hale White, *The Autobiography of Mark Rutherford*, *The Deliverance of Mark Rutherford*.

III Criticism of contemporary English society. Carlyle, *Later-day Pamphlets*. Ruskin, *Sesame* and *Lilies*. Chesterton, *Orthodoxy*. Galsworthy, *The Island Pharisees*. As examples of the topics set at the oral examination of the English *agrégation* for 1911. French lessons. Treatment of Nature in *The Tempest*, The humor of Wells. English lessons. comment on the versification of the *Knight's Tale*, line 1363 to line 1439, the manners of the Restoration as illustrated by the *Way of the World*.

There is a state *Doctorat ès lettres* and one primarily for foreign students granted by the University. The state diploma is usually

taken several years after the *licence* or even the *agrégation*. Two theses are required, one in French and the other either in French or the foreign language. They are mature and scholarly contributions to the subject, corresponding to the doctors' dissertations accepted by the best American universities. To gain the University diploma requires four semesters' enrollment and a thesis either in French or Latin. There is, in addition to the public defense of the dissertation, an examination on university courses.

The following German courses were offered at the University of Paris during the year 1911-1912. Language and Literature. M. Andler, Professor, director of studies. Public Course. Intellectual geography of Germany in the nineteenth century, one hour. Conferences. (1) Historical syntax of modern German, one hour, (2) exercises in syntax in preparation for the *licence* and the *certificat d'aptitude*, one hour; (3) consultation with students, one hour. Reception of students of modern languages, one hour. M. Lichtenberger, Adjunct Professor. Conferences. (1) History of the German language, one hour, the legend of the Grail, one hour; (2) explanation of texts of Middle High German, one hour, (3) lessons in preparation for the *agrégation*, one hour. M. Rouge, Maître de Conférences. Conferences. (1) Heinrich von Kleist, one hour, (2) correction of work and explanation of texts, one hour, (3) exercises in preparation for the *licence*, one hour. M. Basch, Chargé de Cours. Conferences. (1) Religious and moral philosophy of German Romanticism, one hour, (2) practical exercises, one hour, (3) history of German literature in the eighteenth century, one hour.

*England*. — Work in modern languages in the older universities of Oxford and Cambridge is, on the whole, but a generation old. To be sure, as early as 1778 Sir Robert Taylor bequeathed £189,000 to the University of Oxford for the establishment of an institution for the teaching of modern foreign languages. The Taylorian Institute, however, did not come into existence until 1845, and the first professor of modern European languages was chosen three years later. Max Müller succeeded the first incumbent, but after he became Corpus Professor of Comparative Philology in 1868, the professorship lapsed and Taylorian teachers of French, German, Italian, and Spanish were appointed instead. It was not until after the establishment of the honor school of modern languages that appointments were again made, one professor of German in 1907, and one of French in 1909. At present there are also a professor of Russian, about nine or ten lecturers or readers, and about an equal number of tutors and teachers connected with the Women's Colleges and Halls. Cambridge celebrated in 1909 the twenty-fifth anniversary of the founding of the Medieval and Modern

Languages Tripos, and in that same year appointed the first professor of German. At present there is a reader of French. Four lecturers also give instruction in modern languages exclusively, and a number of recognized women teachers.

The other modern English universities, such as London, Manchester, Liverpool, etc., have about the same strength and organization of teaching staff as the German universities. As the work in modern languages required for the pass and honor degrees in the various English universities does not differ essentially, a description of the status of modern languages at Cambridge will be given.

A Cambridge man may take a degree with no knowledge of a modern language at all. Since 1886, however, German and French form two of the three so-called additional subjects, one of which must be passed at the "previous examination" or entrance examination. As French is the language usually taken in the boys' schools fitting for college, there is a dearth of young men coming to the university well grounded in German. The percentage of young women that have had both languages is very much higher. Attempts to induce the authorities to allow German as a substitute for Greek have thus far failed. A certain amount of specialization in the modern languages may be done even by students who go in for the ordinary B.A. degree by preparing for the special examinations in English and German, or English and French. These examinations are comparatively easy and consist of translation and composition based upon prescribed books. Some of the work is voluntary. No oral examination is at present required. Candidates can, however, obtain recognition for their practical command of the foreign language by taking the oral test held for honor degree students. The prescribed books in French and German for 1911 were: French: Racine, *Athalie*; Marbot, *Mémoires*, vol. 2, cc. 1-26, (voluntary) *Extraits de la Chanson de Roland*, Molière, *Les Femmes savantes*, Bossuet, *Oraisons funèbres*. German: Gutkow, *Zopf und Schwert*, Tieck, *Ein Dichterleben*; Fulda, *Der Talisman*, (voluntary) Hartmann von Aue, *Der arme Heinrich*, Uhland, *Ernst von Schwaben*, Hebbel, *Agnes Bernauer*; Liliencron, *Anno 1870*.

Most students especially interested in modern languages prefer to go in for the Medieval and Modern Languages Tripos, corresponding to the Honor Schools at Oxford. As at present constituted, there are ten sections, six of which deal with the modern literatures of England, France, Germany, Italy, Spain, and Russia. Four emphasize older periods and philology. (English and Germanic, French and Romance, and German and Germanic.) A candidate for an honor degree in modern languages must pass in



any two of the above sections. It is possible for him, therefore, to do all his work in one language or divide his time between two, if he so desires. Other combinations can be made with subjects outside the modern language field, with history, the classics, etc. Both sections may be passed off at the end of the third year, or one may be taken at the end of the second and the other at the end of the third. The examination in the "German" section tests the candidate's ability to translate into the foreign tongue, to write a German essay on some topic bearing upon the literature, history, or institutions of Germany. There are papers on the general field of literature since 1500 and on some special modern period, and also on the history of the German language, the elements of historical German grammar, and on meter. The examination on the "Old German" section is more strictly philological in character and serves to test the candidate's knowledge of the language and literature previous to 1500. The courses given at both Oxford and Cambridge are in general plan of organization very similar to the modern language courses found in the various German universities. In recent years more attention has been given to the literary side of the field. The aim has, however, always been to make the work of the tripos as sound philologically as the time and conditions permit. The practical and modern side of the student's training must be obtained largely through residence abroad before or during the university course. An oral test now forms a regular part of the examination at both Oxford and Cambridge. But it is possible, at least at Cambridge, for one to pass the tripos without satisfying the examiners in the oral command of the language. In both places, however, the names of successful candidates in the *vive voce* test are especially distinguished in the published class lists. During the first twenty-five years since the establishment of the Medieval and Modern Languages Tripos, 567 took honor degrees in Modern Languages at Cambridge. Of these 230 were men, and 337 women.

The older English universities do not confer degrees taken in courses beyond that of B A. But both Oxford and Cambridge offer opportunities for work to advanced and research students under certain conditions. The degree of M A in the University of London can be taken in the several modern languages and literatures by those who have already passed the B A honors examination. It is an examination in both language and literature and includes: (1) a thesis, (2) a written examination, (3) a *vive voce* examination, especially on the subject of the thesis. The written portion of the examination consists of general questions to be treated in the form of an essay and translation of texts chiefly chosen from early periods, with commentary. The following courses were offered at Cambridge during

the year 1911-1912. The foundations of modern German Literature, 1800-1850, Goethe's *Faust* I, Historical German Grammar, Modern German Seminar, Advanced German Composition, Old German Seminar, History of the German Language, Old High German, German Historical Grammar, Introduction to Middle High German Translation (with papers), Kudrun and Walther von der Vogelweide. Special subjects and books announced for the German section of the Modern Languages Tripos, Cambridge University, for 1912 are as follows. Paper (4) Walther von der Vogelweide. Das Niebelungenlied (Sammlung Goeschen), pp 27-99. Braune, Althochdeutsches Lesebuch, xvi, 7-11, xvii, xxx, xxxii, 10-12; xxxiii, xxxiv, xxxvi, Paper (5) (special subject) The historical drama in connection with Lessing, Goethe, Schiller, Kleist, Grillparzer, Uhland, Wildenbruch, Saai. Paper (6) Luther (Sammlung Goeschen). Goethe Poems, *Iphigenie*, *Faust*. Schiller Poems of the third period, *Die Braut von Messina*. Uhland Ballads. Consbruch und Klencksiek, Deutsche Lyrik des neunzehnten Jahrhunderts.

Special subjects and books announced for the Old French and Provençal section, the Modern Languages Tripos, Cambridge University, for 1912. Paper (2) (special subject) French literature in the reigns of Louis VII, Philippe Auguste, and Louis VIII, in connection with Aiscans; Chrétien de Troyes. Lancelot, Guillaume de Dole, Aucassin et Nicolette; Villehardouin, La conquête de Constantinople; Le Mystère d'Adam. Bartsch et Horning, La langue et la littérature françaises depuis le IXème siècle jusqu'au XIVème siècle, pp 101-394 and 399-408. Paper (4) Bertran de Born, Flamenca, Appel Provençalische Chrestomathie.

*England* — The status of modern foreign languages in English schools of secondary grade is still in the making. Among the factors that have retarded their growth are (1) Lack of any national system of public instruction before 1902, (2) The influence of the older Universities and Public Schools—strong bulwarks of classical training, (3) Until a few years ago, the over-emphasis of science and art subjects in non-endowed schools, in order to obtain State grants of money, and the consequent neglect of the humanities, (4) The attitude of the Board of Education towards modern languages, its insistence upon Latin as one of the two foreign languages taught in every school. In the most recent circular, however, it has taken a more liberal attitude and has yielded so far as to say that provision for the study of Latin need not be made in every school, but only in one out of every group of schools. The present ratio of pupils taking French to those taking German is about five to one. Since it is usually only possible for pupils to take two foreign languages of which Latin either must be, or almost invariably is, one, Ger-

man goes to the wall. Indeed many feel it is in a state of serious decline.

According to the *Report* on the conditions of modern language teaching presented in 1908 at the meeting of the Modern Language Association, the average age of pupils beginning French was 11; of 98 schools of the local type reporting, 74 began French first, 4 schools Latin, and 20 began the two languages simultaneously. German, if studied at all, is taken up at 14. This gives little time to the study of this language where the leaving age is 16 or 17. Four or five 45-minute lessons a week are quite usual for the foreign language.

The teaching has shown great improvement in recent years. In the past, particularly in the Public Schools and the numerous private schools, the scanty instruction was in the hands of a foreigner who was, far too often, treated as an outsider in the social scheme. Today there is an increasing number of men and women—trained at the universities or by study abroad—who have done much to put modern language work in a better strategic position. Within the past ten years or so, the principles of the German reform method have found many advocates. The Modern Language Association with its excellent organ *Modern Language Teaching* has been a powerful instrument in arousing apathetic official boards and in creating public interest in the cause, and particularly in threshing out and adapting the so-called "direct method" to English conditions. Judging from the report of the committee referred to above, reform teaching has already made considerable headway especially in the elementary stages of instruction. The various university and other examining bodies that play such a rôle in English education have also begun to set papers more in keeping with modern aims of foreign language teaching.

For fuller discussion of this subject in the English schools, see PUBLIC SCHOOLS, ENGLISH, also GRAMMAR SCHOOLS.

*United States* — Until the Revolutionary war, American colleges, as a rule, followed about the same course of study as was found in the universities of the mother country. Latin and Greek, Hebrew, some logic and philosophy, rhetoric, elementary mathematics, and physics were regarded as ample. French is recorded as an extra study about the middle of the century at Harvard. The program of senior study of 1756 at the Academy at Philadelphia (later the University of Pennsylvania), permitted French to be studied at leisure hours. The first professorship of French seems to have been established at the College of William and Mary in 1779, with the radical reorganization of the curriculum brought about by Thomas Jefferson. Students at Harvard, not preparing for the ministry, could substitute French for Hebrew in the 80's of the eighteenth century. But for a good many years the advance made by French and, later, German, in the colleges was ex-

tremely slow. It was an extra subject, occupying an inferior position in the same list as music, fencing, etc., to be paid for extra, and not permitted to interfere with the stated academic duties. George Ticknor was made Professor of French, Spanish, and Belles Lettres at Harvard in 1816. With his name is closely associated the term "elective system," which much later came to play such a rôle in the organization of the work of all higher education in America. The modern languages acted as the first entering wedge in the attempt at breaking up the rigid curriculum of the past. Ticknor organized his department on the elective basis, but his attempts to develop and extend the elective system met with severe opposition at every turn. In 1825 the University of Virginia opened its doors, and modern languages formed one of the ten schools comprised in the plan. In six months the modern language school was second in numbers after mathematics, and larger than the school of ancient languages. In the same year, due to the influence of Ticknor, Carl Follen was appointed Professor of German at Harvard. In 1828 Henry W. Longfellow began, as instructor at Bowdoin, to teach French, Spanish, Italian, and German, to members of any of the four classes who chose to elect the courses. The position of the modern languages in other colleges at the time is very similar.

Very little progress was again made for over a generation in modern language studies until, in fact, the idea of elective studies again rapidly spread during the period of the presidency of Charles W. Eliot at Harvard. At present, the modern languages are among the largest departments in the Colleges of Arts. The more important universities maintain large staffs of instructors. At such universities, for example, as Harvard, Columbia, Chicago, and Wisconsin there are twenty-five or more giving instruction in the Germanic and Romance departments.

At the present time many colleges demand a ready knowledge of French or German, or both, for the several degrees, although there is by no means uniformity except in colleges exclusively for women. As late as 1896-1897, of 432 institutions only 14 per cent required a modern language for the B.A. degree, of 123 institutions 41½ per cent required a modern language for the Bachelor of Philosophy, the modern language being in lieu of Greek. Similar percentages are shown in the requirements for the degrees of B.S. and B.L.

The present high school course usually equips the pupils with a knowledge of Latin and one modern language, French or German according to choice or environment. Large numbers, therefore, take as prescribed work in their freshman year, the modern foreign language required for the degree which they did not offer for entrance. This elementary work

in modern languages has become a great burden for the colleges to bear. Particularly in the smaller colleges there is neither time nor opportunity for the staff to offer much beyond what might well have been done in high school classes. Even in the larger universities the beginning classes contain a large percentage of the total number of students in the department.

Still, in a few colleges that require French or German, or both, for the B A degree, the student can prepare himself by private study if he so chooses. At Bryn Mawr, for example, five-hour courses throughout one year are provided, but until the junior year attendance is not obligatory, the student being free until then to complete the work by herself. Harvard also allows the student to pass off any deficiency in French or German before the opening of the second year in college.

For undergraduate students wishing to specialize in modern languages, there is given considerable range of opportunity in the large institutions of the country, either through the system of majors and minors, the group system, or honor degrees, etc. To obtain honors in Romance languages and literatures at Harvard, for example, the student "must have taken five courses in the department, only one of which may be of an elementary character. He must be able to read two of the Romance languages and to write one of them with readiness and correctness. He must present a thesis and pass an examination orally and in writing on the general field covered by the studies."

At the University of Chicago, the student interested in German must take, for the degree of Ph B, "at least nine coherent and progressive majors (a major being a course which meets four or five hours weekly throughout one quarter year)."

At Bryn Mawr, the special work in modern languages must include two major courses of five hours a week for two years in any one of the fifty-five groups. By taking "any language with any language" the student is offered a wide field of choice. It is also possible to combine one foreign language with some other field, such as history or comparative literature, etc.

At Columbia, candidates for the A B degree who wish to specialize to a certain extent in German, for example, can elect this language as one of the two sequences required for graduation. They would then take courses in the department for a period of three years "aggregating at least eighteen points beyond the elementary requirement for admission. (A point is credit for satisfactory completion of work requiring attendance one hour a week for one half year)." Honor students must have high standing in two or three sequences and also do considerable supplementary reading. A final examination, both written and oral, is set, covering the

entire field of honor work. Honor students would, after the three years, have gained a knowledge of the history of German literature and have taken general and special courses dealing with the classical period and later writers of the nineteenth century. The collateral and supplementary reading at present required consists of above 5000 pages of literary texts representative of the different periods of the literature.

In the elementary work of the colleges the same textbooks are generally used as in the high schools, and doubtless the same variety of method employed. The maturity of the students, many of whom are already too old to begin a modern language, and the fact that it is often prescribed and dropped at the end of the year, probably force college instructors to follow traditional lines of teaching. The lack of uniformity in the preparation given to the students in high school also makes for conservatism in college methods of instruction. The so-called higher courses are very often largely translation courses combined with some literary interpretation. In recent years, however, much more attention has been given to the practical side, and in most of the better colleges there are courses in oral and written composition, either given as separate courses or in connection with some literary course. In a number of institutions, notably in colleges for women, almost all the work of the department is carried on in the foreign language. In still others some of the staff regularly give their lectures in German or French. The undergraduate work is largely literary in character. In the courses primarily for graduates there are in addition to the more specialized literary courses a number which aim to give the student some knowledge of philology and historical grammar. Stress is also laid upon the older periods of the language and literature, and in some institutions modern related languages are taught. The group, Scandinavian languages, for example, is often included in the work of the Germanic departments, although in a few institutions a separate department for these languages has been created.

The more important universities have well equipped libraries, both general and special, for advanced students.

The following is a list of undergraduate courses given by the Romance Department of Adelbert College, Western Reserve University, for 1911-1912, though not all are given in any one year.

In French: Elementary Courses; The Classic Drama (Corneille, Racine, Molière, Voltaire); Prose Writers of the Seventeenth Century (Pascal, La Bruyère, Bossuet, Sévigné); Prose Writers of the Eighteenth Century (Montesquieu, Voltaire, Diderot, J. J. Rousseau); Drama of the Eighteenth Century (Marivaux, Le Sage, Regnard, Beaumarchais); The Ro-

mantic School (one of above four sections given each second half-year) Literature of the Sixteenth Century (Montaigne, Rabelais); Outlines of the History of French literature to the end of the Sixteenth Century; Historical French Grammar, French Grammar, History of French Literature

In Italian. Elementary Course; Dante

In Spanish. Elementary Course; Reading of Modern Prose and Plays; The Classic Drama, Cervantes

The following is a list of graduate courses offered by the Romance Department of Harvard University for the year 1911-1912, or alternate years

French (for undergraduates and graduates) General View of French Literature; Literature in the Nineteenth Century; Literature of the Eighteenth Century; Literature of the Seventeenth Century; Literature of the Sixteenth Century; The French Drama in the Nineteenth Century; Literary Criticism in France, with special reference to the Nineteenth Century; Rousseau and his Influence

(Primarily for graduates) Old French Literature; French Literature in the Fourteenth and Fifteenth Centuries, Historical French Syntax; French Prose in the Sixteenth Century, Studies in the French Drama of the Seventeenth Century, Studies in French Drama of the Nineteenth Century

Italian (for undergraduates and graduates) General View of Italian Literature, Modern Italian Literature; Italian Literature of the Fifteenth and Sixteenth Centuries, The Works of Dante (Primarily for graduates) Italian Literature of the Thirteenth and Fourteenth Centuries; The History of the Novel and Tale in Italy and Spain from Beginning of Medieval Period to the Eighteenth Century.

Spanish (for undergraduates and graduates) Spanish Composition and Conversation; General View of Spanish Literature, Spanish Prose and Poetry of the Eighteenth and Nineteenth Centuries; Spanish Literature of the Sixteenth and Seventeenth Centuries; Spanish-American Poetry. (Primarily for graduates) Early Spanish

Romance Philology (primarily for graduates) Old French; Provençal; Low Latin, Portuguese; Anglo-French and the French Element in English. Course of special study. Investigation of Special Subjects in Romance Philology

Seminary Meetings every three weeks, for the discussion of theses, etc. In 1911-1912 attention will be given to the history of French words in English.

**Secondary Schools.** — The study of modern languages in the schools was largely developed during the nineteenth century. Before that period school instruction was not very widespread, nor were the foreign languages given anything but a very minor place in the school program

*Germany* — Although Germany was much in advance of other countries, the introduction of French into the schools did not begin to make any headway until the eighteenth century. Before that time its study was confined to private instruction or to the schools attended by the upper classes (*Ritterakademien*) (See ACADEMIES, COURTLY) By the beginning of the nineteenth century, however, most Prussian gymnasiums offered French as an optional subject. Owing to patriotic reasons, it was banished from the schools in 1816, to be taken up more vigorously a few years later. In 1831 French became obligatory in Prussia, beginning in *Tertia*. Other states followed later, Saxony in 1846, Bavaria in 1854. The study of English was much slower in its development. The relations between the countries were in earlier times not strong, but were kept alive by trade, traveling, and, notably, beginning with the middle of the eighteenth century, by the increased interest in English literature. It was, however, not until as late as 1859 that English was made obligatory in the *Realschulen* of Prussia, although of course it had been gradually introduced in the schools during the first half of the century. Since the refounding of the German Empire, and particularly during the last two decades, the study of English has made rapid advances. In 1900 an imperial edict allowed the substitution of English for French in the three upper classes of the gymnasium (OII, UI, and OI), French remaining an optional subject. It also made possible the substitution of other subjects for Greek in UIII, OIII, and UII, in which case three of the six hours are given to English, and the other three are distributed between French and mathematics and the sciences.

The method of modern language instruction in Germany has, from early times, swung between two poles, — the synthetic and the analytic. Both types of instruction have existed at all times side by side, although, during the first half of the nineteenth century, the method employed in the schools was on the whole synthetic, and a close imitation of the severely grammatical procedure employed in the teaching of Latin and Greek. This was due in part to a great lack of properly trained teachers, for the universities were late in establishing chairs of French and English, the majority coming after 1850. The new facilities for study produced in time an organized and well-schooled body of modern language teachers. Particularly during the last generation have great changes and progress been made toward better ways and means of teaching the subject, so that at the present time no country equals Germany in the excellence of its modern language instruction. The method now widely employed, often called the direct method, is analytic in character, and is a revolt against the older formal grammatical procedure. The

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chief points are as follows. Reading occupies a central position in the work in place of grammar, and is selected so as to give pupils a clear idea of the life, thought, and civilization of the foreign people. In all stages, but particularly in the earlier, great emphasis is laid upon oral practice. Indeed, the emphasis upon the spoken language and upon written exercises growing out of the oral work is a salient characteristic of the method. Translations from and into the vernacular cease to be any longer a regular exercise. Grammar study is reduced to essentials, and taught largely inductively. This, in general, represents the plan of the more radical reformers. The more conserva-

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tive, forming probably the majority, still favor the retention of translation, and greater emphasis upon the grammatical course.

The work, particularly of the more advanced reformers, has been the subject of much criticism, especially in the last decade, partly because of its too utilitarian tendencies, and partly because of the general instability of pupils' knowledge, mainly on the formal side. The movement, however, represents a great step forward both in aim and practice. Modern language method has never been as efficiently and rationally organized with the idea of giving power to the pupil to use the foreign language either in reading, writing, or speaking.

FRENCH INSTRUCTION IN PRUSSIAN SCHOOLS

	VI	V	IV	UIII	OIII	UII	OII	UI	OI	TOTAL
Gymnasium	—	—	4	2	2	3	3	3	3	20
Realgymnasium	—	—	5	4	4	4	4	4	4	29
Oberrealschule	6	6	6	6	5	4	4	4	4	47
Realschule	6	6	6	6	6	5	—	—	—	35
Reform Gymnasium	—	—	—	—	—	2	2	2	2	32
and Reform Realgymnasium with common foundation	6	6	6	3	3	4	4	3	4	39

ENGLISH INSTRUCTION IN PRUSSIAN SCHOOLS

	VI	V	IV	UIII	OIII	UII	OII	UI	OI	TOTAL
Gymnasium	—	—	—	—	—	—	2 <sup>1</sup>	2	2	6
Realgymnasium	—	—	—	3	3	3	3	3	3	18
Oberrealschule	—	—	—	5	4	4	4	4	4	25
Realschule	—	—	—	5	4	4	—	—	—	13
Reform Gymnasium	—	—	—	—	—	—	2 <sup>1</sup>	2	2	6
and Reformgymnasium with common foundation	—	—	—	—	—	6	4	4	3	17

GIRLS' HIGHER SCHOOL	X	IX	VIII	VII	VI	V	IV	III	II	I	TOTAL
French	—	—	—	6	5	5	4	4	4	4	32
English	—	—	—	—	—	—	4	4	4	4	16

<sup>1</sup> Optional

*France* — German and English are the modern languages most studied in the French public schools, instruction in Spanish and Italian being confined almost exclusively to places near the borders of the respective countries. Of the two languages German is chosen more frequently in the boys' schools. This is partly due to the fact that it is required for entrance to the military school at Saint-Cyr and the *École Polytechnique*. English is more favored in the girls' schools.

Instruction in the modern languages was made optional in *lycées* and colleges in 1821, though but little weight was attached to their study, and but meager time allowed. In 1838 the study became compulsory in the classical course, and in 1847 in the "modern" course. In 1880 modern languages were studied in every class, with a total of twenty-nine hours per week. The kind of instruction, and the results obtained were, however, unsatisfactory. Translation from and into the foreign tongue,

and much formal grammar were the chief means employed almost everywhere, even as late as 1896, although the ministerial instructions of 1890 were in theory in advance of any of the German official regulations of about the same time. The provinces in particular were very backward. The reform, which had already been in progress a dozen years or more in Germany, had as yet made scarcely any impression upon the work in France. In 1902, however, the whole subject of modern language instruction was radically changed. The aims and practices of the advanced German reformers were taken over, stock and barrel, and formulated in the instructions of the 15th November, 1901. Since that time most earnest attempts have been made by the government and the teachers to carry out the new radical program, and apparently with considerable success.

After six years' trial it was found necessary to be more conservative in the work, particu-

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larly in the upper classes. The new instructions of 1908 confirm and strengthen the plan of work done in the lower classes. For the fifth and fourth classes translation into the mother tongue, not mentioned in the earlier instructions, is suggested as a means of control in addition to the study of the reading text by exercises in the foreign language. The chief changes, however, are made in the instructions dealing with the work of the second and first classes. The earlier program emphasized reading material dealing with the life, civilization, and history of the literature of the foreign people, the new lays stress entirely upon literature, pure and simple. Moreover, one of the chief exercises of the last period is the cultivation of the art of translation into the mother tongue. These changes, however, are very slight on the whole. France leads the world, officially, in the advocacy of the radical direct method of modern language teaching.

Modern languages may now be studied for eleven of the twelve years in the French *lycées* and colleges for boys. In the second year of the preparatory division and in the eighth and seventh forms of the elementary division the subject is very inadequately represented by two hours for each. Attempts to eliminate the study and to defer the regular instruction until the sixth form have thus far failed. In the following four forms, constituting the first cycle, one modern language is studied five hours per week in each of the four years. In the first two forms of the second cycle the number of hours devoted to modern languages depends upon which of the four possible groups of courses or sections the pupils elect to pursue. The following is a table for these two years —

	SECTION A	SECTION B	SECTION C	SECTION D
	Latin and Greek	Latin and Modern Language	Latin and Science	Science and Modern Language
Modern Language	2	3 4 <sup>1</sup>	2	3 4 <sup>1</sup>

<sup>1</sup> Second language begun and continued

In the highest form there is a twofold division into the philosophy and mathematics forms, each with two sections, A and B

	PHILOSOPHY		MATHEMATICS	
	Section A	Section B	Section A	Section B
Modern Languages	2 <sup>1</sup>	{ 1 2 <sup>1</sup>	2	{ 1 2 <sup>2</sup>

<sup>1</sup> Optional

<sup>2</sup> Pupils have the right as to distribution of these hours

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The modern language course in girls' secondary schools is begun in the infant class and continued as an obligatory study throughout all the nine years. In the last two years a second modern language may be taken. The following is the number of hours per week in each of the classes: 2½, 2½, 2½, 2½, 3, 3, 3, 3 (2)<sup>1</sup>, 3 (2)<sup>1</sup>.

The following is the number of hours given to modern languages in the usual three classes of the French higher elementary schools, the *écoles primaires supérieures* and *écoles pratiques de commerce et d'industrie*

BOYS' SCHOOL	I	II	III
General Course	3	{ 3 4 6	2
Commercial Course ( <i>école supérieure</i> )			4
Commercial Course ( <i>école pratique</i> )			6
GIRLS' SCHOOLS			
General course ( <i>école supérieure</i> )	3	3	3
Commercial Course ( <i>école pratique</i> )	4½	4½	4½

*United States* — The modern languages were late in getting a foothold in the program of studies of schools in the United States. There were sporadic attempts at teaching French in the East during the early nineteenth century; but it was not until the second half that its study was at all general. The first mention of German in a Massachusetts' high school is in 1854. German, however, appeared in the Cincinnati public schools as early as 1840, and in general thrived, particularly in parts of the Middle West and other centers where a large German population had settled. It was not until 1875 that a modern language was required for admission to college. Since then the growth in the study of the modern languages has been steady, so that in the period 1890-1910 no subject showed such a high percentage of increase. The study of French advanced in the public schools from 5.84 per cent in 1890 to 9.90 per cent in 1910, German over the same period from 10.51 per cent to 23.69 per cent. The study of Spanish is confined largely to the Western Division of states. In other parts it is pursued only by a few pupils in the larger cities. Statistics were first given for 1909-1910 in the *Report of the United States Commissioner*. The percentage for the whole country is .65 for the combined statistics of public high schools and private high schools and academies. Colorado and California lead, with 17.67 per cent and 8.49 per cent respectively.

In the country at large the study of modern languages is restricted to the secondary school, with courses of one, two, three, and four years' duration. The two-year courses are probably by far in the majority, to meet the college admission requirements, although in the larger

<sup>1</sup> Second language optional

cities and towns three- and four-years' courses are very common. The Ohio statistics for 1910 show that of 312 high schools reporting German 60 offer a four-years' course, 29 a three-years', 120 a two-years', and 6 a one-year course.

The geographical distribution of pupils studying French and German in secondary schools shows remarkable variations. In general, the North Atlantic Division leads in the percentage of pupils studying both French and German in 1909-1910, with 27.56 per cent as against 11.50 per cent for the rest of the United States. Again, the New England states lead in the percentage of those pursuing French, with 41.21 per cent as against 6.44 per cent for the rest of the United States. On the other hand, the same states are below the average for the United States in the percentage of pupils studying German, 17.21 per cent as against 23.69 per cent for the country as a whole. As an example, also, of the great variation in the study of the two languages in different states, 49.09 per cent of pupils in the New Hampshire secondary schools study French as against 0.69 per cent in Indiana. New Jersey leads in percentage of pupils pursuing German with 41.39 per cent, while the percentages for South Carolina, Louisiana, and Mississippi are 0.34 per cent, 0.72 per cent, and 1.69 per cent, respectively.

It is only in some few centers of the Middle West that there is at present any serious attempt at maintaining the study of German in grades of elementary schools. Milwaukee and Cincinnati are the two great strongholds. In the latter city, if the parents wish it, one half of the time of instruction may be given in the German language up to the fourth grade. The study is then continued throughout the eight grades, but with a reduction in the amount of time.

On the whole, modern languages were, and are still, taught in schools to far too great an extent in much the same spirit and manner as Latin. But owing to ill-equipped teachers and to the shorter length of the courses, the work done in modern languages was only a poor imitation of the kind of work done in the traditional Latin course. Standards were either lacking or were to a large extent controlled by the requirements for admission to college. The course consisted of formal drill in grammar, though lacking in real thoroughness, followed or accompanied by hasty translation into and from the mother tongue, of material often badly graded as to difficulty.

The *Report*, published in 1898, of the Committee of Twelve, appointed by the Modern Language Association, has been of great assistance in fixing standards of modern language instruction in the schools. The method favored by the committee was on the whole the so-called reading method; that is, copious reading of graded texts hand in hand with

the study of grammatical essentials. But the committee also advised, particularly in the longer courses, the introduction of some oral work, and other practices of the German direct method. Three grades of attainment were defined in the *Report*, and reading texts for each suggested. The elementary grade, reached normally after two years of study, represents the minimum requirement now usually set for entrance to college. The work of the two higher grades, the intermediate and the advanced, is intended to take one and two years' longer study than the elementary. (See COLLEGE ENTRANCE REQUIREMENTS IN MODERN LANGUAGES.)

Within the past few years, the more progressive teachers, stimulated by the results obtained by the Reformers in Germany, have been trying to adapt to local conditions some of the aims and methods employed abroad. More attention has been given to oral work, and to teaching pupils freer and better control of the language in general. The greatest obstacle to rapid progress, however, is bad teaching, for outside the large city systems there are far too few special teachers possessing adequate knowledge of the subject, and specially trained in methods of presentation.

**Aim and Methods of Teaching** -- Modern languages are studied in the secondary school primarily for their practical value. Through the choice and study of material a cultural value is added. Moreover, the processes involved in learning a foreign language are conceded to be disciplinary in their effect, they serve to clarify, deepen, and broaden one's knowledge of language in general as a vehicle of thought. The practical goal sought in the course may be regarded from at least two points of view. We may stress the utilitarian side, the practical oral control of the language, allowing the reading of books to appear as a natural outgrowth, or we may make reading the chief aim. The first way might seem upon the surface both a desirable and a logical one to pursue. Yet experience teaches us that the school is not a favorable place for the acquisition of a language technique commensurate with the energy that would have to be expended and for which there is not sufficient time. The field of reading, on the other hand, is not only broad and cultural, but the kind of work required to teach pupils to read successfully, is quite in keeping with school conditions. Moreover, the ability to read a language is more likely to be of permanent practical value than any conversational knowledge that might conceivably be gained in school classes.

**Pronunciation** -- The importance of teaching the foreign sounds correctly in the early weeks of the modern language course cannot be too strongly emphasized. The work should largely be upon an imitative and oral basis, the teacher acting as model. It is also important that he possess a working knowledge of phonetics. This will insure the right attitude toward this element of the course, and

enable him to diagnose and correct mistakes wherever imitation is insufficient as a guide. Whether the pupils themselves shall be taught phonetic terminology and the foreign sounds at first by means of transcribed texts is a moot question. There are good arguments both for and against, particularly when dealing with a language like French. In any case, it is fundamental that there should be abundant practice in hearing and uttering the sounds of the new language.

*Oral Practice* — Although intelligent reading is the chief end sought, a great deal of attention ought to be given to work in hearing and speaking, because of their very positive value in classroom procedure. In general, emphasis upon the spoken word makes for greater flexibility in the treatment of the material. It is stimulating both to teacher and pupil. Imitation and repetition are fundamental means of acquiring a new language, and if oral exercises in the foreign tongue are employed with judgment, there is no kind of work which allows and suggests to the teacher greater abundance of repetition, and hence tends to make right associations habitual. Moreover, the constant use of the foreign language in the classroom in the form of commands and well-directed questions and answers, favors the formation of a *Sprachgefühl*, or language sense, an indefinable though undoubtedly a potent factor in the acquisition of a foreign language. The amount of time to be devoted to work in speaking cannot readily be determined. In general, however, practice seems to favor greater emphasis proportionally during the elementary stage, at a time when a great deal of drill is necessary to acquire the grammatical forms and a working vocabulary. But throughout the course it should be the rule to have regular oral practice carefully graded and coordinated with all other elements of the course. Only in this way can we be assured that it shall be beneficial in the work. The scope of work in speaking and its distribution in the different years of the course, its relation to other elements such as reading and grammar, have not as yet been satisfactorily worked out, particularly for the later stages. Adequate books and specially trained teachers are still lacking.

The earliest material will probably best be selected from objects in the immediate environment; and wall pictures, if judiciously employed, will be of great assistance in planning the elementary work. The bulk of the material for the secondary school, however, should be chosen from connected reading texts. In the elementary stages these will consist of simply constructed texts or natural texts that are rich in certain grammatical forms or vocabulary. Later the regular annotated stories, etc., may be made the basis for conversational practice. Still, for many reasons, chief among which are that the reading texts may not lend

themselves to conversational treatment, that the vocabulary may be too uncommon or too highly literary in character, and above all, that the selections may be too difficult, it would seem advisable on the whole to have separate texts for conversational practice, carefully organized as regards vocabulary, content, and form. Graded material dealing with foreign life and customs is suggested.

Work in speaking may be roughly divided into two kinds: (1) highly formal in character, (2) a more natural kind, which emphasizes the thought as well as the form side of the material. The first kind will consist of various changes in the sentences read, in person, number, tense, voice of the verb, and substitutions of pronoun for noun, etc. Questions may be put in such a way as to force the pupil to employ the desired grammatical form. The second type will consist largely of rapid questions and answers upon the day's reading. In the earlier stages the questions and answers would closely follow the printed text, later the text might be used merely as a starting point for conversational practice, the pupils drawing their answers from their general knowledge of the spoken language. From time to time the class would be encouraged to relate the contents of a part or the whole of the material thus intensively studied. Success, however, in the later stages depends upon the thoroughness with which the so-called question and answer work is done. In any high school course simple questioning on a suitable connected text should occupy the major portion of the time in oral practice. It is only in this way that fluency and the requisite accuracy are assured.

*Grammar* — Whatever other value the study of grammar may have in the mental training of the pupil, its immediate value is to enable him to acquire the foreign language on the form side systematically and intelligently. Only essential forms and usages should be selected, and these should be taught by constant practice rather than by drill upon rules. Correct habits of use should be regarded as of more importance than the mere learning of paradigms. In general, the treatment of grammar should be at least inductive in spirit. Traditional grammar teaching regards the translation of a number of detached sentences from and into the mother tongue as the chief exercise for clinching the previously studied formal rules. More recent teaching, however, lays great stress upon exercises planned to give a great deal of oral and written practice carried on in the foreign language itself. Some of these exercises have been suggested under the preceding topic, such as changes of tense, number, and person, etc., based upon disconnected sentences or connected reading material. The filling out of appropriate endings and a large variety of exercises all serve to give more copious and quicker drill than the older translation method. Of greater importance than



these, however, are the more or less formal question and answer drills, in which the teacher's questions force the pupil to employ the new grammatical principle or form. Many of these questions will be type questions, that is, one question will admit of a comparatively large number of answers, each one of which, however, will contain the required principle or form. The judicious employment of this so-called living grammar teaching is of great advantage in giving quick, definite, and withal interesting drills which to a large extent are wanting under the still widely prevailing plan of translating detached sentences into the foreign tongue.

In a course lasting four years it seems highly desirable, in German at least, to have the first grammatical course extend over two years. The last two years might then be spent in giving richer practice and somewhat broader treatment. This plan, however, is not practiced in the majority of schools, with the result that pupils in the higher classes are often weak both in knowledge of forms and in the ability to use them accurately for the expression of simple thoughts in the foreign language.

*Written Work* — Work in writing should accompany at every step the oral work in the German classroom. As a rule, it should follow directly the oral development of, and drill upon, the grammatical topic. After the material has been first threshed out orally in the classroom, it should then be put into writing, for the time being the final form. As everything cannot be written, the work should represent that which is typical and essential in the lesson or series of lessons. The results obtained from writing are fairly obvious. Hand and eye serve to fix the oral impressions, and it checks up the work on a given topic. Further, it makes for greater definiteness and flexibility in the work done outside of class. In the early stages, however, it is better to have much of the written work done in class, and thus controlled and corrected at every step. But wherever done it is a wise procedure to ask of pupils that they shall employ in their written exercises only the materials, vocabulary and principles, with which they are quite familiar through previous study.

Work in writing may be of two kinds: (1) exercises largely imitative in character, (2) exercises in translation, involving comparison between the mother and the foreign tongue. The latter type is still largely employed in all stages of the course. Latterly, however, teachers have found that written exercises, similar to, and in fact growing out of, the conversational practice, are productive of better results. In addition to the more formal exercises which emphasize a certain grammatical fact, the simple narrative of the day's lesson, and the introduction in the upper classes of the letter form of composition, offer a rich field for development. Over against this

rather modern procedure, we find a large proportion of teachers still faithful to exercises in translating from the mother into the foreign tongue. In the early stages the exercises consist of detached sentences arranged under the appropriate grammatical headlines in the textbook. Later, a graded composition book, containing various styles of writing, is employed. As this kind of work prevails, often to the exclusion or at least only fitful use of free reproduction and other nontranslation kinds of exercises, it is well to point out some of the weaknesses of the practice. (1) Pupils are made to learn the foreign language by comparison before they have sufficient knowledge of its vocabulary and principles. (2) The composition books are far too ambitious in character. The acquisition of speed and accuracy should be regarded more highly than the ability to translate difficult material inadequately. Written work of all kinds ought largely to consist of material that the pupil can readily do at sight.

*Reading* — Since reading is the chief aim of the modern language course, great care should be exercised not only in the selection, but also in the treatment of the material. It should be interesting, possess literary merit, and be well graded as to difficulty and the maturity of the pupils. At present, the general tendency is to read stories, and in the later years some poems and plays of classical writers. Unity and point of view are lacking in the course. It is organized only as to general amount and difficulty required for entrance to college. It would seem desirable to increase the kind of reading dealing with facts, particularly with those that give an insight into the life, customs, and history of the foreign peoples. In a four-years' German course we might, for example, group the reading material around some definite points such as these: first year, a general introduction to German life; second year, legends and sagas and the *Marchen*; third year, some few facts of history as illustrated by the lives of great personalities; fourth year, at least one literary masterpiece and brief sketches of the lives of such men as Goethe, Lessing, and Schiller.

The traditional treatment of reading is that of translation into the mother tongue. More recently systematic attempts have been made, notably in Germany, to reduce the amount of time spent upon this exercise and to increase the ability of the class to study and understand the foreign text without the aid of habitual translation. Clearness of understanding in the early stages is effected by selecting simple, objective material and teaching it by means of close questioning in the foreign tongue, by explaining new words by the use of objects, pictures, gesture, by opposites, by the study of word formation, by definition in the foreign language, or even by translating troublesome words and phrases. If the work is systematic

cally done from the outset, translation may be limited largely to the more difficult passages, and the time usually devoted to it be employed in various exercises carried on within the language being taught. How much shall be translated is a question, however, which individual teachers will always have to decide for themselves. Length of course and the equipment of the teacher are the controlling factors. It is obvious that translation is the quickest apparent test of the pupil's understanding of a passage, although where it is used to the exclusion of all other exercises upon the text, some of its weaknesses may be summed up as follows: —

In general, translation is largely an exercise in the use of the mother tongue. As an exercise for the teaching the foreign language, it is wasteful of time as a vocabulary builder. Since the pupil exchanges symbol for symbol, it neglects almost wholly the acquisition of the form side of the foreign language, and as usually carried on, it lays but little stress upon the thought side. It has little or no influence upon the growth of language sense (*Sprachgefühl*). The foreign language is kept in the background, and is used as a mere vehicle for exercising the mother tongue.

*Results of School Work.* — What, briefly, should be the outcome of a four years' high school course in modern languages? The pupils should be able to read ordinary prose or poetry suitable in range of thought to their years of understanding. By far the greater proportion of the materials should be selected from modern authors. While there can be no objection to the appreciative study by the pupils of one or two of the classic dramas or other forms of literature, the reading of the classics in general should be deferred to the college period of modern language instruction. By the selection of reading material and by all other means that the teacher can devise, the pupils should be taught some elementary facts regarding the life and customs of the foreign peoples. They should have obtained by careful teaching an accurate working knowledge of the essentials of grammar in order that their growth in knowledge of the language shall always be upon a solid foundation. In addition, the pupils should have acquired the power to use a small stock of common words in speaking or in writing. They ought, for example, to be able to answer questions based upon an easy story read to them, or to give its contents in simple language either orally or in writing. Finally, they ought to have some facility in conversing about simple matters of daily life, and be able to express their doings in letter form. E. W. B-C.

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#### MODERN SCHOOL (*Escuela Moderna*) —

The term given to the school established by Francisco Ferrer (q.v.) at Barcelona and imitated now in urban centers in many countries

by groups holding radical social views. These schools are generally projected by the so-called philosophical anarchists, and are extremely rationalistic toward religious ideas and influences.

The *Escuela Moderna* of Barcelona is summed up by its motto "Scientific and rationalist teaching." This does not mean that rationalist schools in Spain started with Ferrer or that the principles enshrined in the *Escuela Moderna* originated at Barcelona. As a matter of fact, Ferrer only gave fresh vitality and a more distinctly scientific rationalist tone to a more or less non-religious movement in popular education that seems to have been racy of the soil of Spain for several decades prior to the founding, in 1901, of Ferrer's *Escuela Moderna* (Cf. Heaford's *L'École Moderne*, ed. 2, *passim*, and Archer's *Life*, etc., p. 31.) This early movement has an interesting and hitherto unknown history. On the fall of Isabella II in 1868 from the throne of Spain, a ferment of liberal ideas stirred the Spanish mind, a craving for education seized the masses, and secular schools arose in many parts of the Peninsula (*L'École Moderne*, pp. 11 sq.).

The schools grew out of the enthusiasm of the various political, industrial, and rationalist groups that sprang up throughout Spain. The schools were admittedly ill-equipped and deficient in methods, most of the teaching being undertaken by untrained enthusiasts consisting of a Bohemian set of intelligent artisans, journalists, and social outlaws of all kinds. These were mostly Freethinkers, and some—notably Clemencia Jaquinet, afterwards the first Directress of the *Escuela Moderna*—were natives of France. (For her career see *L'École Moderne*, p. 17, Archer, *Life*, p. 34 sq.)

In 1883 the new schools had so much grown and multiplied that a federation—for some time controlled by Bartholomeo Gabarro, an ex-priest—was founded for their protection. Long prior to Ferrer's initiative, the Spanish Freethinkers had recognized the necessity of safeguarding and spreading their ideas by means of schools run under Rationalist auspices. One such school, founded as far back as 1885—that known as *La Verdad*, at San Feliu de Guixols—was still flourishing in connection with the *Escuela Moderna* in 1907.

When, therefore, Ferrer founded his Modern School he was not launching a new movement, he was only cultivating with improved processes a ground already plowed and sown. Nor is it true to say that the *Escuela Moderna* was the Aaron's rod that swallowed up the hitherto existing secular schools in Spain. The fact is that many of the old schools, and others formed later, were autonomous bodies existing independently of the *Escuela Moderna*, though all became more or less imbued with its principles by adoption of its educational program and textbooks.

Ferrer's Manifesto (*L'École Moderne*, p. 31) on starting the Modern School stated its object to be the progressive education of the child, without superstition (he meant, Catholicism) or mysticism (Protestantism). He specially sought to avoid the awakening of what he termed the atavistic instincts of religion, race hatred, the military temper, and the spirit of revenge.

His whole school curriculum and its auxiliary publications were inspired throughout by this ideal, and Ferrer's prevision of a new social order explains why he did not accept the pedagogic doctrine that the child's school-books should be silent concerning God, religion, and similar burning questions. On the contrary, his avowed aim was to enable the child to render to himself a faithful account of the source and origin of the varied social evils that afflict humanity.

The Modern School was opened in the Calle Balén, Barcelona, on the 12th September, 1901, with twelve girls and eighteen boys. At the conclusion of the first year the scholars totaled some sixty-six in all. In June, 1905, after four years of activity, there existed forty-eight schools, of which fourteen were at Barcelona, two at Carthagena and La Unión, and one in Algeciras, Cadiz, Granada, Mahon, Malaga, Saragossa, etc. In 1906 the number of schools was about fifty. Early in the same year the movement had so well succeeded that Ferrer was able to invite 1700 students of the schools affiliated to the *Escuela Moderna* to a rationalistic Good Friday banquet—a celebration which gave great offense to the Catholic party in Spain (Archer, p. 61, cf. *L'École Moderne*, p. 30).

When, in June, 1906, Ferrer was put under lock and key for thirteen months (see FERRER), nothing could arrest the torrent of the movement in Spain for the establishment of rationalist schools. New schools arose on every hand, and fresh educational centers sprang into being. Of these, one of the most successful was the *Escuela Moderna*—*Humanidad Nueva*—at Valencia. Founded by Dr. Samuel Torner in July, 1906, in December, 1907, it numbered 150 scholars of both sexes. The repression in 1909 closed this school, after eight others had formed around it.

Elsewhere in Spain some fifty new schools had been founded by February, 1908. Exact statistics as to school attendance at these several foundations are not available, the particulars, however, as to ten of the schools in Barcelona indicate that these latter served a total of 1000 pupils. Moreover, it is estimated that the government closure in 1909 of the rationalist schools in different parts of the country deprived more than 10,000 children of their usual and only means of education.

The school hours at the *Escuela Moderna* were from nine in the morning to 5.30 in the afternoon. The school was open from Monday

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to Saturday inclusive, the Sunday being devoted to lectures on scientific subjects. Boys and girls were taught together. Ferrer speaks from experience of "the brilliant result, I may even say the triumph, of mixed teaching."

The scholars were grouped only under three sections: Infants, Elementary, and Higher Elementary. In each section the first ten minutes of the school day were devoted to hygienic inspection and gymnastic exercise. The following briefly describes the curriculum under each section:—

**Infants** Exercises in observation on familiar objects and knowledge of life

Reading (the *Salbario*, — described and Ferrer's view thereon cited, in *L'Éc. Mod.*, pp 32-33) and writing

Grammar (Span)

Arithmetic its operations illustrated by the combination of objects

Geometry knowledge of lines according to their nature, position, etc.

Physical geography

Object lessons based on animal, vegetable, and mineral objects, and on industrial, etc., products.

Familiar scenes animal life

Manual labor

Gymnastics without appliances.

Hygiene

**Elementary Section**

Amplification of above lessons

Reading, with explanation of word meanings

Books used *Adventures of Nono* (Archer's description, p. 39), *Leon Martin* (by Malats), *Estevanez's History of Spain*, and the *First Manuscript Book*, a collection of extracts from best authors, used as an exercise in reading various kinds of script

Writing from dictation

Drawing plain and decorative

Physical, agricultural and industrial geography of Europe generally and of Spain and Portugal in particular Needlework, and carving

**Higher Elementary**

Reading, with comments

Texts Patriotism and Civilization, Malvert's *Origin of Christianity*, *The Second Manuscript Book*, Paraf-Javal's *Substancia, Universal* (for Ferrer's view of this see *L'Éc. Mod.* p 39), Jacquinet's *Historia Universal* (3 vols. See Archer, pp 49-51)

Writing Composition exercises, comments on the school texts, etc. These compositions, no doubt, gave birth to the remarkable school essays cited in the *Boletín* (Año III, p 1, Año IV, pp 1-6, cf Archer, pp 54-58, and *L'Éc. Mod.* p 37)

History General idea of the history of peoples from the point of view of the development of civilization (Jacquinet's three remarkable volumes of history led the way for the student) (Now translated into Portuguese, Lisbon)

Shorthand classes twice a week

In addition, we must count to the credit of the *Escuela Moderna* the botanizing, geological, and natural history rambles in the neighborhood of Barcelona (descriptions and photographs in the *Boletines*), the visits of inspection to the factories and industrial hives of the Condal City and vicinity, in order to study the processes of production; the lectures on every branch of hygienics by Dr. Martinez Vargas those on physical geography, mineralogy and geology, etc., by the celebrated Dr. Odón de Buen, many volumes of whose works

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adorn the collection of Ferrer's publications. These lectures were delivered every Sunday to the students, their parents, and the general public at the school, and were deservedly popular. No elementary private school in Europe could boast of finer courses of lectures by professors of greater national and world-wide reputation.

By means of these popularizations of scientific knowledge and of the unique series of school texts and other publications (see FERRER), the founder of the *Escuela Moderna*, at the cost of his fortune, his liberty, and ultimately of his life, provided the neglected people of Barcelona, and, radiating therefrom, some hundred or more centers in Spain, with the nearest approach to the encyclopedic curriculum of a university *en règle* that probably any democracy in Europe has had placed within its reach. The students at the Modern School were demonstrably more fortunate in educational advantages than millions of children in more fortunate countries than Spain. Ferrer would have been the first man in the world to acknowledge the imperfections of his system, but, for all that, the schools were admittedly "very well managed and very well equipped."

See FERRER

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**MODERN SIDE** — A term applied to that division in English secondary schools in which the chief emphasis is laid on modern subjects, — language, science, and mathematics. Of the classical languages Latin alone is studied to a small extent. The modern side is intended for the preparation of boys for business, army, and civil services. In some schools commercial

## MODESTY

subjects are also taught in this department. As a rule boys do not proceed from the modern side to the universities. In addition to the modern side, it is not unusual to have other special divisions for science and mathematics. While modern subjects have been taught since the seventeenth century here and there in English schools, no value was attached to them either by the boys or masters. Since the passing of the Endowed Schools Act, however, the modern sides have sprung up to meet the increasing demand for a type of secondary education which did not aim at preparing for the universities. The modern side may on the whole be said to correspond to the German Realschule.

See **ENDOWED SCHOOLS ACT**, **GRAMMAR SCHOOLS**, **ENGLAND**, **EDUCATION IN**, etc.

**MODESTY** — This term is used to denote two quite different characteristics of the emotional life, which Darwin has pointed out have little in common except the blush as a distinguishing expressive reaction. In the first sense the term refers to that characteristic of some individuals which tends to make them hold a moderate opinion of their own worth and attainments. Used in the second sense, modesty is an attitude of mind which revolts against indelicacy of any sort, especially that involving sexual relations. From the psychological point of view, both of these forms of reaction are instinctive attitudes and accompanied by emotional feelings, and capable, like other instincts, of modification and training by the influence of environment. Development of modesty in the second sense does not properly take place until the time of puberty, though it is not always of sexual origin.

E. H. C.

See **ADOLESCENCE**, **EMOTIONS**.

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**MOERBEKE, WILLIAM OF** (d. 1281) — Archbishop of Corinth (1277-1281), and translator of Aristotle. He derived his name from a small town on the borders of Flanders and Brabant, whence he is also known as William of Brabant or William the Fleming (as he is called by Roger Bacon). He was chaplain to Clement IV and Gregory X, and acted as Greek secretary at the Council of Lyons (1274). He translated Aristotle's *Politics* and *Rhetoric* from the Greek, and also Hippocrates' *Prognostics*, Galen's *De Alimentis*, and Proclus' *Decem Dubitationes*, *De Providentia*, and *De Malorum Subsistentia*. The translations of Aristotle, though very literal, are of value as representing a text, now lost, better than any now extant.

## MONASTICISM AND EDUCATION

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**MOHAMMED IBN MUSA** — See **AL-KHOWARAZMI**.

**MOHAMMEDAN EDUCATION** — See **ARABIC EDUCATION**, **EGYPT**, **EDUCATION IN**, **INDIA**, **EDUCATION IN**, **PERSIA**, **EDUCATION IN**, **TURKEY**, **EDUCATION IN**, etc.

**MOLUCCAS, EDUCATION IN THE** — See **NETHERLANDS**, **COLONIES OF**, **EDUCATION IN THE**.

### MONASTICISM AND EDUCATION —

The vast subject of the relation of monasticism to education is treated from so many angles in various articles of this Cyclopedia that a special treatment is superfluous. Under this caption the only attempt will be to relate organically these scattered accounts. The fundamental problem, about which there is much controversy as to whether the more important and general educational activities during the Middle Ages were carried on by monastic bodies or by the secular organization of the church, is discussed under the titles **ABBNEY SCHOOLS** and **CLOISTER SCHOOLS**, these being the general terms used for monastic schools in England and Germany, respectively. The general conclusions of these discussions, contrary to the commonly accepted views, is in favor of the regular church hierarchy, and adverse to the claims of the monastic organization. A similar view is expressed in the general article on **EDUCATION DURING THE MIDDLE AGES**. Here the relation of the monastic organization and theory to the general intellectual and educational conditions is discussed. On the other hand, the actual educational work of the leading monastic organizations is presented in the separate articles on the leading monastic bodies, such as the **BENEDICTINES**, **FRANCISCANS**, **DOMINICANS**, **CISTERCIANS**, and others. The relation of these bodies to the education of women and girls both during the Middle Ages and the modern period is presented in the articles on **CONVENT SCHOOLS** and in the historical section of the article on **HIGHER EDUCATION OF WOMEN**. The educational work of the post-Reformation period, and of the monastic orders having education as one of their chief functions, is presented in the articles on the **JESUIT SYSTEM OF EDUCATION**, the **PORT ROYALISTS**, the **ORATORIANs**, the **PIARISTS**, and the **TEACHING ORDERS OF THE ROMAN CATHOLIC CHURCH**. The philosophical aspects of monasticism are considered under **MYSTICISM**, **NEO-PLATONISM**, and related topics, **SCHOLASTICISM AND SCHOOLMEN**. For noted monastic educators, see the articles on the

special orders. For the bibliography of the subject, see the reference lists in connection with the articles mentioned above

**MONGE, GASPARD, COMTE DE PELUSE** — Was born at Beaune, May 10, 1746, and died at Paris, July 28, 1818. He was one of the leading mathematicians of his time, and is known for his work in descriptive geometry. In the history of education he is worthy of recognition as being one of those most active in promoting the *École Polytechnique*. He first taught his descriptive geometry in one of the military schools (1768) as a secret of the service. He later taught it in the *École Normale* at Paris (1794), and still later in the *École Polytechnique*. Politically his life was one of turmoil. Although an ardent revolutionist, he barely escaped the guillotine. He was in great favor with Napoleon, but on the restoration he was deprived of all his honors and offices, and died soon after as a result of his disgrace.

D E S

**MONEYS, SCHOOL** — See APPORTIONMENT OF FUNDS; SCHOOL FUNDS

**MONISM** — The name for the philosophical theory which holds that there is but one ultimate substance or reality. The term is quite formal in character, connoting nothing about the nature of the one ultimate being. Thoroughgoing materialism, absolute idealism, panpsychism, pantheism, are alike monistic. The vagueness of the term is enhanced by the fact that the motif of some monistic systems is opposition to dualism, while that of others is opposition to pluralism. Consequently, some contemporary theories are monistic in their denial of dualism (*q.v.*), especially as relates to any final cleavage between mind and matter, and yet are pluralistic in holding that the various forms in which the one ultimate reality occurs do not form an interdependent necessary whole, but are relatively independent of one another, or form real individuals.

J D

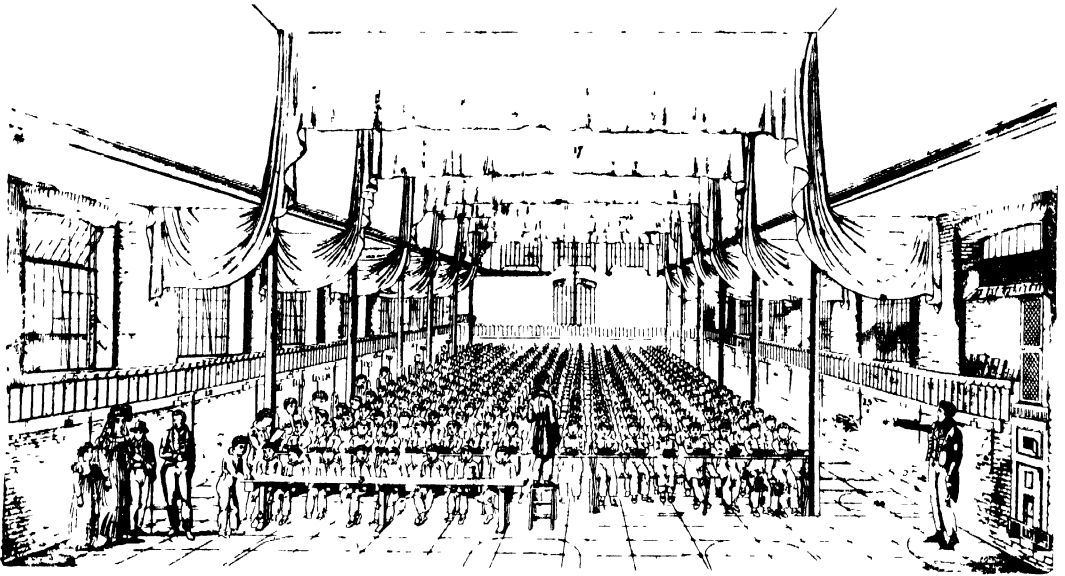
**MONITORIAL SYSTEM** — In one of the *Arabian Nights* a scamp who could neither read nor write opens school and conceals his ignorance by setting the children that knew a little to teach those that knew less. His plan has often been tried since. It is prescribed by the ordinances of a sixteenth-century grammar school, a Portuguese traveler saw it in India in 1623; Comenius (*q.v.*) suggests it in the *Great Didactic*; Mme. de Maintenon (*q.v.*) introduced it at Saint-Cyr, Rollin (*q.v.*) mentions it as a useful expedient, Herbault applied it in the Paris Hospice de la Pitié in 1747 and the Chevalier Paulet in an orphan school at Vincennes in 1772, and the Abbé Gaultier, a refugee from the Revolution, practiced it in the capital of the only country where it was ever employed on a large scale.

Its spread in the United Kingdom was facilitated by a combination of causes. Long and acrimonious disputes in the press, on the platform, and even from the pulpit as to the rival claims of Bell (*q.v.*) and Lancaster (*q.v.*) to the honor of inventing it, made it generally known, its cheapness rendered the establishment of schools possible just when the public conscience was awakening to the need of them, and two great educational societies (see BRITISH AND FOREIGN SCHOOL SOCIETY and NATIONAL SOCIETY) were founded to establish schools in which it could be applied to teaching children to read the Bible or the Church Catechism.

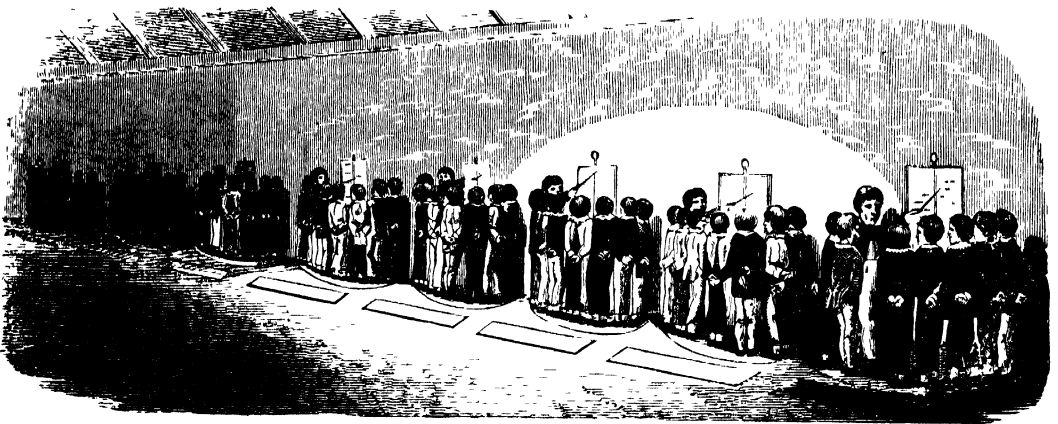
Bell was led (in 1791 or 1792) to employ monitors because the masters of a school at Madras of which he was superintendent offered a passive resistance to his efforts to introduce the native method of teaching the alphabet by writing on sand. In 1797, after his return to England, he published an account of his *Experiment*, but the book attracted no attention, and the author, who had settled down in a snug rectory, allowed it to be forgotten till Lancaster began to excite public interest. Lancaster began (about 1801) to employ monitors because his school had grown too large for him to teach alone and he could not afford to pay for help. There is no doubt that the idea occurred to him independently, but before he had worked it out in all its details he came across a copy of the *Experiment*. He closes the account of his *Improvements* (published in 1803) with an acknowledgment that he had "adopted several useful hints" from the *Experiment*, and with an expression of regret that he was not "acquainted with the beauty of" Bell's plan "till somewhat advanced in" his own.

That Lancaster could be accused (with that appearance of truth which even a false accusation requires) of counterfeiting Bell shows that there must have been a considerable resemblance between the two systems. An account of the differences between them would occupy more space than the importance of the subject warrants, but it may be stated generally that Lancaster's was far more elaborate than Bell's. Bell held that for a class "the best number" was "from twenty-four to thirty or in large schools to forty", Lancaster thought ten the ideal number for a "draft". For teaching alone therefore he required far more monitors, and he employed them for many other purposes. "When a child was admitted, a monitor assigned him his class, when he was absent one monitor ascertained the fact and another found out the reason, a monitor examined him periodically and when he made progress a monitor promoted him, a monitor ruled the writing paper; a monitor made or mended the pens; a monitor had charge of the slates and books; and a monitor-general looked after all the other monitors." Bell expected his masters to exercise initiative and





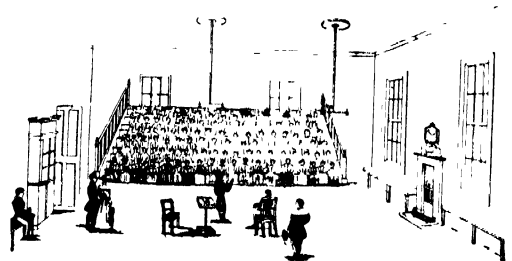
Interior of the Central School of the British and Foreign School Society, London.



A Monitorial School in Operation, from a Manual of the British and Foreign School Society



The Outdoor School of the Stow Monitorial System



The Covered School of the Stow System.

# MONITORIAL SCHOOLS.



judgment; Lancaster expected his to do little more than watch and admire the "system" working almost automatically. Beyond the adoption of sand-writing Bell made hardly any change in the old methods of instruction, Lancaster, who (with proper acknowledgment) copied the sand writing, used wall sheets instead of books for reading, and slates instead of paper for writing, invented dictation, and a method (now happily forgotten) of teaching arithmetic. Bell's rewards and punishments were few and simple, Lancaster's rewards in practice and punishments on paper were many and curious.

The fact that the monitorial system, so often abandoned elsewhere after a brief trial in one or two institutions, should have flourished throughout the British Islands for some forty years may be attributed to its cheapness and its (comparative) effectiveness. (1) The initial cost was small, as neither Bell nor Lancaster required more than a bare room, which was often found ready to hand, and neither required much furniture, the pupils standing at most of the lessons. The cost of maintenance was greatly reduced by dispensing with assistants, Lancaster boasted that in his schools it did not exceed "seven shillings each child for twelve months, and probably may be reduced by the perseverance of the inventor under unmerited opposition to four." In days when the establishment and maintenance of schools depended entirely on enlightened benevolence, Bell and Lancaster made their establishment and maintenance possible.

(2) In the old schools the method of teaching was individual, hence the children, except during the few minutes that they were "saying their lessons" to the master or mistress, were generally wasting their time. In a monitorial school, divided into classes, with an abundance of teachers of a sort, there was no idling. One of Lancaster's maxims was "Let every child at every moment have something to do and a motive for doing it," and Bell would not have disclaimed it, if any one else had uttered it. Another cause of comparative effectiveness was that, while none of the old teachers had been made and few of them had been born, Lancaster's and Bell's teachers had all been trained, after a fashion. Nobody may have seen the necessity for teachers to be taught the principles of education, but everybody could see the necessity of studying a new machine before being placed in charge of it. Lancaster began training apprentices in 1805, and adults were admitted to "learn the system" from 1809 in the Central School of the British and Foreign School Society in the Borough Road (*qv*) and from 1812 in the Central School of the National Society in Baldwin's Gardens. Thus, though the best monitorial school may have been poorer than most of its successors, the poorest must have been better than most of its predecessors.

The inherent defects of the monitorial system are too obvious to need pointing out, but there was an economic consideration which told as potently as the educational considerations against permanence. The monitors were necessarily the brightest and most forward children, and parents who sent them to school to learn would be unwilling that they should remain to teach. The managers tried to overcome the parental unwillingness by paying the monitors a few pence a week, but the inducement was inadequate when a few shillings a week might be earned elsewhere. One consequence was the employment of a smaller number, another was the modification of the system. In 1839 the committee of the British and Foreign School Society reported that they were "by no means disposed to bind themselves exclusively" to it, and in 1841 they reported that "the British System as now practised in the Central School may properly be denominated mixed, simultaneous teaching being satisfactorily united with that which is monitorial." The mutation might have gone on indefinitely, if the system had not suffered transmutation. After the issue of the famous Minutes of 1846, the monitor receiving a few pence a week from the managers became a pupil teacher apprenticed for five years, receiving a fair wage from the government with the promise of a subsequent Queen's scholarship tenable for two or three years in a training college. Thus the monitorial system, besides giving England cheap schools which afterwards became good schools, led ultimately to her having a body of efficient teachers.

**Spread of the System** — Lancaster's English supporters saw in his plan not an end, but an instrument, — an instrument for teaching the children of the poor to read the Bible. That their purpose was not limited to their own country is indicated by the title which they deliberately adopted, — the British and Foreign School Society. The society had no paid agents abroad, but William Allen (*qv*) and other members acted as its voluntary agents in the course of their travels. It did not directly establish any schools outside the United Kingdom, but it was always ready to give information, it sometimes furnished teachers, and it often made grants of books and material.

*France* — France was the only foreign country in which the monitorial system was ever widely diffused. The first steps toward its introduction were taken by the Society for the Encouragement of National Industry. Having during the war heard vague reports of the extraordinary success of the system, the society, when the treaty of 1814 made peaceful intercourse possible, sent over four of its members to investigate — the Comte de Laborde, the Comte de Lasteyrie, François-Edmé Jomard, and Jean-Baptiste Say. They were present at the half yearly meeting of the British and Foreign School Society in Novem-

ber, and visited the Central School in the Borough Road, the Central School of the National Society in Baldwin's Gardens, and several other schools in various parts of the country. On their return Laborde and Lasteyrie wrote books on the system, and Jomard wrote a long report on it for the society, Say only describes its "admirable effects" in the book which he wrote.

The deputation having returned to Paris, the society which had sent them met on Mar 1, 1815, and resolved to form an independent association (the Society for Elementary Instruction). Napoleon landed on this very day, but the change of government did not impede the movement. On Apr. 27, Carnot, the new Minister of the Interior, presented a report to the Emperor, which was followed by a decree ordaining the minister to make inquiries as to the best methods of education and to establish an experimental school in Paris. This school was opened in an "apartment" in the Rue Saint-Jean-de-Beauvais on June 13, the master being the Rev Francis Martin, of Bordeaux, trained in the Borough Road. Although he was a Protestant, his employment was rendered possible by the liberal rule of the society. "All possible care shall be taken that the first principles of religion shall be inculcated, the developments of which shall be left to the ministers of religion." A minority of the committee considered that this did not involve the reading of the Scriptures, but the president, the Baron de Gérando, wrote to Martin on Aug 24, entreating him not to delay putting into the hands of his scholars the Bible of Royaumont, which was not a Bible at all, but a collection of scriptural pictures with explanations.

The government of the restored monarchy did not at first manifest any hostility. On Nov 3, 1815, the Prefect of the Seine, the Comte Chabrol de Volvic, appointed a board of primary instruction for the prefecture, and on Feb 29, 1816, a royal decree was issued granting fifty thousand francs a year to the Society for Primary Instruction, and appointing a primary education committee for every canton. Except for the grant, the decree was little more than a pious wish, as it provided no means for compelling the committees to act and no money for them if they did act; still it must have had some effect, for fifteen hundred monitorial schools were opened before 1820.

A heated polemic began in 1816. As in England Tories supported Bell and Whigs Lancaster, in France the clerical reactionaries advocated the simultaneous method employed in the schools of the Christian Brothers (*qv*) and the Liberals the method which, to avoid a foreign name, they called mutual. The reactionaries had sufficient influence to obtain a decree that all Protestant teachers should be dismissed, that the Roman Catholic reli-

gion should be taught in all schools, and that the Christian Brothers should have a monopoly wherever they chose to exercise it. Though the reactionaries failed in their effort to suppress the royal grant, they were on the whole successful, only six hundred monitorial schools remained open in 1828, and these continued only till the inherent difficulties of the system became manifest. The Society for Elementary Instruction is still in existence.

*Russia* — Alexander I was a religious and benevolent despot. He was considerably influenced by some Quakers settled in St Petersburg. It was probably from them that he heard of monitorial schools, and in 1813 he commissioned Joseph Hamel to report on them. On his own visit to England after the peace of 1814 his interest was deepened. He sent four youths to the Borough Road to "learn the system," and ordered its introduction into the military schools. Some of the nobles, from flattery or conviction, established schools on their estates. A few of these long survived the Czar.

*Norway and Sweden* — Accounts of the monitorial system were published in Sweden by the Count Jacob de la Gardie, who lived in London, by Mr Svensson, who was sent over by the King, and by J A Gerelius, one of the King's secretaries. These three were the leading spirits of a society established in 1822 to promote the establishment of schools. Some years later Parliament voted funds for the establishment of a normal school. In 1841 there were nearly five hundred schools on the plan, but the law of 1842 making education a national concern caused cheapness to be no longer the chief consideration, and monitors gradually disappeared.

*Denmark* — The prime mover in Denmark was the Chevalier d'Abrahamson, who wrote a book on the system and in 1819 established at his own cost the first model school. Encouraged by the King and Queen, the new plan made rapid progress; by 1831 it was used in nearly 3000 schools, and a knowledge of it was one of the essentials of the teacher's diploma.

*United States* — Monitorial methods of instruction were introduced into the United States through the Lancasterian System as first embodied in the work of the Public School Society of New York City from about 1809. This system spread very rapidly throughout the country, especially in urban communities, and its popularity and cheapness did much to further the interest in popular education. Monitorial methods were not limited to elementary schools, but academies, indeed whole state systems of academies as in New York and Indiana, were organized, at least ostensibly on the basis of these methods. The Lancasterian plan had lost its vogue by 1840, but monitorial methods both in organization and in teaching were popular and widely used for more than a generation later. They have sur-

## MONITORS

vived into the more recent generation however only in a very subordinate rôle in schoolroom management. The extent of the influence of the monitorial system is treated somewhat indirectly in the articles on New York City School System, Public School Societies, and on Joseph Lancaster.

*Other Countries* — In European countries (such as Germany and Holland) which had a good system of education the monitorial system had no acceptance, in backward countries (like Italy and Spain) its acceptance was sporadic. Missionaries used it in the West Indies, and under the direction of James Thomson, an agent of the British and Foreign Bible Society, it achieved a remarkable success in South America. D S-N

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**MONITORS** — See MONITORIAL SYSTEM, PREFECT AND PREFECTURAL SYSTEM

**MONMOUTH COLLEGE, MONMOUTH, ILL** — A coeducational institution opened as an academy in 1853 and chartered as a college in 1857 under the control of the United Presbyterian Church of North America. Preparatory, collegiate, and musical departments are maintained. The entrance requirements are fifteen units. The degrees of A B and B S are conferred. The enrollment in 1910-1911 was 451 in all departments.

**MONOMANIA** — See ABNORMALITY.

**MONROE, LEWIS BAXTER** (1825-1879) — Author of a series of school books and professor of elocution. He was educated in the common schools of Massachusetts and at the Castleton (Vt.) Academy. He taught in the public schools of Massachusetts and New Hampshire, organized a school of elocution and oratory in Boston, and was professor of elocution in Boston University. He pub-

## MONTANA STATE COLLEGE

lished a series of school readers and spellers and numerous works on elocution. W S M

**MONTAIGNE, MICHEL EYQUEM DE** (1533-1592) — French essayist, moralist, educational theorist, and man of affairs. A student of law, courtier, councillor in the Bordeaux parliament, and twice mayor of Bordeaux, his claim to renown rests upon his essays. Although his ideas upon education are found scattered through many of his essays, the particular one entitled *Concerning the Education of Children* contains his chief contribution in the field of educational theory. While Montaigne has points in common with Rabelais, Bacon, Comenius, and Rousseau, it is by no means easy to classify him as an educational theorist. Dr Monroe's expression "social-realist" is probably the most satisfactory to apply to him. His appreciation of the significance of the educational problem is expressed in his own words: "The greatest difficulty with human learning seems to be in the field where it treats the care and instruction of children." One of his most pregnant and oft-quoted comments on education is the following: "To know by heart is not to know at all, it is merely to retain what one has entrusted to his memory." He is seeking rather training of the judgment than mere "bookish education," as he characterizes it. The first edition of the *Essays* appeared in 1580. Of the modern editions that of Courbet et Roger (Paris, 1872-1900) is probably the best.

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**MONTANA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS, BOZEMAN, MONT** — An institution established in 1893, in pursuance of the Morrill Acts, by the legislature of Montana. College courses leading to degrees are offered in divisions of agriculture, engineering, and science, which includes home science. In addition, there are courses not leading to degrees in the schools of agriculture, pharmacy, art, music, preparatory, and other special courses. An experimental station is also maintained. The entrance requirements to the college courses are fifteen units. The enrollment in 1911-1912 was 595. The faculty numbers forty-four members.

**MONTANA, STATE OF** — First organized as a territory in 1864, and admitted to the Union in 1889 as the forty-first state. It is located in the Western Mountain Division, and has a land area of 146,201 square miles. In size it is about three times as large as the state of New York, larger than Prussia, and nearly as large as California. For administrative purposes the state is divided into twenty-eight counties, and these in turn into school districts. In 1910 Montana had a total population of 376,053, and a density of population of 2.6 per square mile.

**Educational History** — The first school report was made in 1868, though never printed. This showed a total of 2000 children, 25 school districts, 15 schoolhouses, and 27 teachers in the territory. The series of printed annual reports begins with 1879, at which time the school system had grown to 130 districts, 119 schoolhouses, and 161 teachers. The revised school law of 1879 contained the essential outlines of that in use at present. One provision of the law required separate schools for negroes, though there must have been very few in the territory at the time. In 1881 the first uniform textbook law was enacted, providing for a uniform series of textbooks, to be adopted for four-year periods. In 1882 the Territorial Teachers' Association held its first meeting. In 1883 a permissive town and city library law, with a permissive library tax, and the first compulsory education law, were enacted. In 1885, at the time of the new textbook adoptions, a Territorial Textbook Commission was created. In 1886 Congress passed the temperance physiology bill, making such instruction mandatory in all the territories. In 1889 a uniform course of study for all of the schools of the territory was first issued.

In February, 1889, the enabling act was passed by Congress, a constitution was adopted in August, and the territory was admitted as a state in November of that year. At this time there were 344 school districts, 419 schoolhouses, and 507 teachers in the new state. The new constitution made definite provision for "a general, uniform, and thorough system of free schools" for the state, provided for the election of a State Superintendent of Public Instruction, for four-year terms, and county superintendents of schools for two-year terms; made women eligible for any district or county school office, defined the public school fund, provided for additions to it, and for the apportionment of the net income on the census basis; authorized taxation for education, prohibited local and special laws for schools, any aid to sectarian or private schools, religious or partisan tests or instruction, and any discrimination at the university on the basis of sex; created a State Board of Education, to which was given the control of all of the state higher and special institutions, and a State Board of Land Commissioners to look after, lease, and sell

the school and other educational lands; exempted school and library property from taxation, limited school district indebtedness to 3 per cent, and provided that district school elections must be held at a different time from state and county elections. The Code Commission, in 1891, proposed a new school law for the state.

In 1893 the State Board of Education, provided for in the constitution, was created by law, and the establishment of the State University at Missoula, the State Agricultural and Mechanical College at Bozeman, the State School of Mines at Butte, and the State Normal School at Dillon, were authorized. In 1895 a recodification and revision of the school law was adopted by the legislature, to which only minor amendments have since been made. The law of 1895 does not differ greatly from the old law of 1879. A school library law was also enacted. In 1897 the state textbook law was revised to provide for six-year adoptions, and optional free textbooks for any districts voting to provide them. In 1899 the free county high school law was enacted. In 1903 the old compulsory education law, which had remained almost a dead letter for twenty years, was revised and strengthened, the education of poor children was provided for, and industrial schools, for the better enforcement of the law, were authorized. In 1909 the State Board of Education was given somewhat larger authority in the management of the state institutions, and instruction as to dangerous and communicable diseases was required in the schools. In 1911 graduates of the University of Montana, when recommended by the university, were to receive five-year high school teachers' certificates, exchangeable after twenty-seven months of teaching in the state for life diplomas. An Educational Commission to revise and codify the school laws was created in 1911, and a bill requiring elementary manual training in all grades, manual training in the upper grammar grades in all large towns, and direct vocational training in the cities, with state aid of \$10 per year per pupil attending such courses, was adopted.

**Present School System** — At the head of the present school system of Montana is a State Board of Education and a State Superintendent of Public Instruction. The State Board of Education consists of the Governor, State Superintendent, and Attorney-General, *ex officio*, and eight others appointed by the Governor with the concurrence of the Senate. They are appointed for four-year terms, two being appointed each year. This board possesses rather unusual powers in that it has supervisory control and acts as a Board of Regents for all of the higher and special state institutions (university; agricultural and mechanical college; school of mines; state normal schools, orphans' home; reform school, and state school for the deaf, blind,

and feeble-minded), as well as acting as a State Board of Education in the usual sense for the schools of the state. Acting as a board of control for the higher and special institutions, it appoints the president and faculty of each; grants all degrees and diplomas, as recommended by the different faculties, controls the land funds, and the general expenses of each; adopts rules and regulations for their government, and appoints an executive committee of three to manage each institution, and to report back to the board. Acting as a State Board of Education it adopts rules and regulations, not inconsistent with law, for the administration of the schools of the state, grants state certificates and life diplomas to teachers, appoints and commissions experienced teachers to act as institute conductors, and may accredit other institutions (colleges and normal schools) within or without the state. A State Board of Land Commissioners, consisting of the Governor, State Superintendent, Secretary of State, and Attorney-General, has control of the leasing and sale of the university, school, and other educational lands of the state, and the investment of the accumulated funds. A State Textbook Commission, consisting of seven persons appointed by the Governor for five-year periods, five of whom must be experienced educators, adopts a series of uniform textbooks for the schools of the state, for five-year periods, and contracts with the publishers for the same.

The State Superintendent of Public Instruction is elected by the people for four-year terms. He must hold the highest grade of Montana state teachers' certificate, or be a graduate of a university, college, or normal school. He is paid a salary of \$3000. Except as specified for the State Board of Education, he has general supervision of all of the schools of the state, preserves all records, and furnishes all blanks, keeps a record of all of his official acts, prepares lists of books suitable for school libraries, and prescribes rules and regulations for their government, prepares all questions for the examinations for teachers' certificates, makes rules and regulations for the management of the same, and for cause may revoke state or life diplomas, prepares and publishes a course of study for the schools of the state, issues rules and regulations for the holding of teachers' institutes, and visits the same, advises county superintendents, hears and decides appeals, and makes rules and regulations governing appeal cases, apportions the school fund to the counties, and makes a biennial report to the Governor.

For each county there is a county superintendent of schools, elected by the people for two-year terms. Women are eligible for this office, and nearly all of the positions are held by them. Each county superintendent has general supervision of the schools of the county, under the direction of the State Superintendent,

must visit each school at least once a year, and advise with teachers and trustees, decides district controversies, administers oaths to all subordinate officials; apportions the school money to the districts, selects institute instructors, from a list submitted by the State Board of Education, presides at the county institutes, may issue temporary teachers' certificates, on evidence of fitness, keeps a record of all district boundaries, and may adjust them, acts as one of a board of trustees for any county high school established, makes an annual report to the State Superintendent, and acts as a member of the county board of examiners. The other two members of this board are appointed by the county commissioners, and must hold high-grade teachers' certificates, or be graduates of a normal school or college. The board conducts all examinations within the county for teachers' certificates, and all examinations for graduation from the eighth grade.

Each county is divided into a number of school districts, for each of which a board of school trustees is elected. Three classes of districts exist, according to population, with from three trustees in all districts having less than 1000 to seven in cities of over 8000. The school election takes place at the schoolhouse the first Saturday in April, and women may vote and are eligible for the office. Vacancies are filled by the county superintendent, by appointment. New districts may be formed when ten or more children are over two miles from a schoolhouse. Each board must follow the instructions of the State Superintendent, see that the schools are taught in the English language, employ teachers for the schools, repair, insure, and care for the schoolhouse; may suspend, expel, or exclude undesirable children, must supply books to indigents, and, on vote of the district, must supply free textbooks, may add additional branches of instruction, may establish kindergartens and a high school, and may grade the school into departments, and must make an annual report to the county superintendent. If their funds exceed \$25,000, they must print a financial report, and if a less sum, the clerk must make a financial statement annually. If deemed best, trustees may close a school and transport the children to another school, paying tuition for them. An annual school census must be taken by the clerk of each district. From 5 to 10 per cent of the county school fund must be spent each year for school libraries, which are to be kept in the schoolhouse, and their condition reported annually to the county superintendent. Cities of 4000 population may employ a city superintendent, for four-year terms.

**School Support** — Montana received 5,112,035 acres of land from the sixteenth and thirty-sixth section grants. As late as 1908 some 2,000,000 acres were as yet unsurveyed,

and about 1,500,000 acres were under lease. The permanent fund at present amounts to about \$6,000,000. A number of miscellaneous sources of income are specified to be added to the fund. The income from this fund is apportioned to the counties on the basis of the school census. The County Commissioners of each county must levy a four-mill county tax, which, with the net proceeds of fines, is added to the state school money and apportioned to the different districts on census also. Any district board may levy up to ten mills for maintenance, and in first and second class districts (over 1000 population) up to an amount sufficient to maintain a nine months' school. After an eight months' school has been maintained, if the district so votes, surplus funds may be used for building purposes. County high schools may levy a county tax up to three mills for maintenance, and up to ten mills, if erecting a building. The county treasurer is the custodian of all funds for all kinds of districts, paying out the funds only on orders from the district school authorities.

In addition to common school lands, the state also received two townships of land (46,080 acres) for a state university, and 90,000 acres for an agricultural college. At the time of its admission as a state Montana also received further special grants of 50,000 acres for the agricultural college, 100,000 acres for the school of mines, 100,000 acres for the normal school, 50,000 acres for the reform school, and 50,000 acres for the school for the deaf and dumb.

**Educational Conditions** — Considering the sparse population, educational conditions in the state are very good. The population is about 70 per cent native, 95.9 per cent white, and less than 1 per cent negro. The remainder is Oriental, mostly Chinese. The schools are well supported, and the per capita expenditure is very high. About 30 per cent of the districts supply free textbooks. The school libraries average over 100 volumes to the building. The schoolhouses are good, averaging about \$3500 in value. More than one half of the counties have established county high schools, and a number of district high schools are maintained. So much have the high schools developed within recent years that the university has been able to dispense with its preparatory department. There are as yet only about 1000 school districts in the state, and trustees often live twenty miles apart. The school term throughout the state averages nearly eight months (7.9), and nine months in the cities and towns. The state has a fairly good compulsory education law, but the machinery for enforcing it is weak. Teachers in private and parochial schools must cooperate in enforcing the law, and private schools must make reports to the public school authorities. No distinctions based on race or color are allowed.

**Teachers and Training** — The state employed 2250 teachers in 1910, of whom 12 per cent were men, 11 per cent were college graduates, and 26 per cent were normal school graduates. The salaries paid were fairly good, averaging about \$900 for men and \$600 for women. For the training of teachers the state maintains a good state normal school at Dillon, and graduates of the university may also be certificated, if they have taken the required work in education. The state is very liberal in the matter of accrediting normal schools and colleges in other states, as well as the state certificates and diplomas possessed by new teachers coming to the state. This has enabled the state to attract to it many well-trained Eastern teachers. A county teachers' institute of from three to ten days is held each year, and all teachers except high school teachers are required to attend. They receive full pay while attending. The amount to be expended for the institute varies, in different counties, from \$100 to \$300.

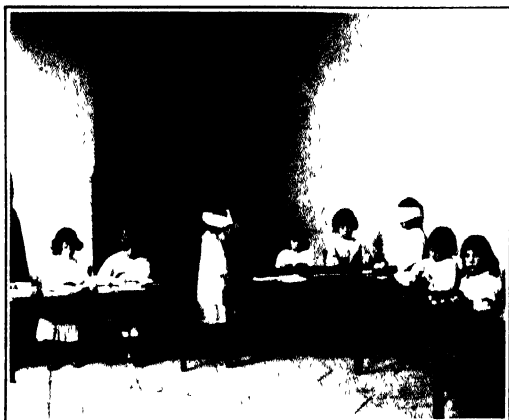
Four grades of teachers' certificates are issued on county examinations, based on questions prepared by the State Superintendent. The examinations form a good graded series, and in granting certificates the county superintendent and the examiners are authorized to take into consideration the candidate's teaching experience and success, as well as aptness, knowledge, and personal character. High school teachers and principals of schools of three or more teachers must hold the highest grade of county certificate or a state certificate, or be graduates of a university, college, or normal school. The two highest grades of certificates are valid in any county. Normal school and university graduates may be certificated without examination. State diplomas and life diplomas are granted by the State Board of Education, and these involve still further advanced examinations.

**Higher and Special Education** — The University of Montana, at Missoula, opened in 1895, the Montana College of Agriculture and Mechanical Arts, at Bozeman, opened in 1893, and the Montana State School of Mines, at Butte, opened in 1900, stand as the culmination of the public school system of the state. The state also maintains a number of experimental substations in horticulture and agriculture. The Montana Wesleyan University, at Helena (M. E.) organized in 1888 and opened in 1890, and the College of Montana (Presby.), at Deer Lodge, organized in 1878, are the only other institutions of collegiate rank in the state.

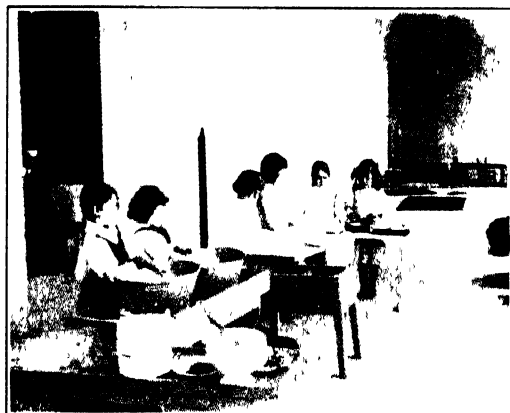
The state also maintains the State Orphans' Home, at Twin Bridges (a state home and public school for orphans, foundlings, and destitute children), the Montana School for the Deaf, Blind, and Feeble-Minded, at Boulder, and the Montana State Reform School, at Miles City.

E. P. C.





Blindfold Work with the Didactic Materials



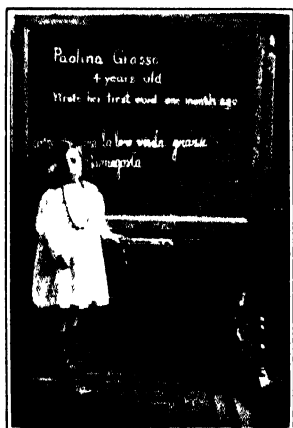
Washing Dishes after the Noonday Meal



Working with the Didactic Materials



The Midday Meal



Learning to Write



Learning to Write



**References. —**

- Montana. *Reports of the Supt of Public Instr., Montana. Annual, 1879-1889, Biennial, 1890 to date Annual Reports, State Board of Education, Montana, 1894 to date*  
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**MONTANA STATE SCHOOL OF MINES, BUTTE, MONT** — A state institution provided for in the enabling act of 1889. It is maintained by biennial appropriations made by the legislative assembly. Fifteen units are required for admission to the courses, which are purely technical and lead to the degree of Mining Engineer. The enrollment in 1910-1911 was fifty-nine. There is a teaching staff of eight members.

**MONTANA, UNIVERSITY OF, MISSOULA, MONT** — A coeducational institution founded in 1893 by legislative act and placed under the State Board of Education. The university was opened in 1895. There is a campus of forty acres, and at present there are six buildings used for instructional and other purposes. The university is maintained by the income from a university fund, annual appropriations, tuition and matriculation fees, and public and private contributions. The requirements for entrance are fifteen units, two of which may be carried over under conditions for one year. The degrees of B A, B S, and B S in Engineering with the corresponding master's degrees are conferred after the completion of the appropriate courses. The university has power to grant legally recognized certificates of qualification to teachers. The enrollment in 1910-1911 was 220 students, and the faculty consisted of twenty-seven members.

**MONTESSORI METHOD, THE** — This method of teaching children of the kindergarten or early primary school age is the work of Dr. Maria Montessori of Rome. For several years prior to 1900, Dr. Montessori was assistant at the Psychiatric Clinic in the University of Rome. This position brought her in close touch with the defective children who were at that time confined in the insane asylums. Thus it was that she became a close student of the methods of Itard and Séguin. Guided by the work of these two men, she devised a large amount of didactic material and began the teaching of these unfortunates. The results were so satisfactory that these children were able to pass the examinations required of the Roman children in the elementary schools. These positive results brought her to the attention of the school authorities, and she was invited to deliver lectures before the teachers of Rome. Eventually these lectures led to the formation of an institute which continued under her direction for several years.

It was a conviction with Dr. Montessori that methods which were so effective with

defectives would be correspondingly effective with normal children. The opportunity to try the method with normal children came when the Director General of the Roman Association for Good Building invited Dr. Montessori to organize infant schools in some of the model tenements which the Association owned. These tenements were for the most part located in the poorest parts of Rome. Each was built about a court and occupied an entire block. Rooms opening out into this court were set apart for schoolrooms, and these were furnished in accordance with Dr. Montessori's plans. There was little of the conventional school equipment. Small tables and chairs took the place of the fixed desks and seats. The didactic material which had been used with the deficient was modified and here took the place of the usual kindergarten and elementary school apparatus. The schools were called the *Casa dei Bambini*, or The Children's Houses. The first one was opened in January, 1907. The methods which were used in these schools have been adopted by many of the schools in Italy and Switzerland and in several of the larger cities elsewhere.

The essentials of the system advocated by Dr. Montessori may be considered under two general headings. The first is a strong emphasis on sense training. This sense training is first of all for general development. For this purpose there are many different pieces of apparatus designed to train the several senses. In order that the child may gain perception of form, there are various wooden insets similar to those used by Itard and Séguin. The child learns to recognize the form by passing the fingers around the edges of the insets and then putting them in their proper places. Perception of dimensions is secured through the use of blocks in which cylinders of various dimensions are set in holes. There are also blocks of various sizes from which the child may make stairs, thus gaining a perception of size and length. Perception of color is secured by using silk bobbins of different colors and shades. In each case the material is so planned that the child may correct his own errors. If he fails to put the cylinders in the proper holes, he cannot get all of them in. If he does not place the blocks in proper order, they do not make stairs. Some of the material is planned to serve as a preparation for the school arts. Letters cut from sandpaper are pasted on cards. The children by passing their first two fingers over these are supposed to gain such muscular control that they are better able both to write the letter and to associate the sound. Other letters are cut from cards, and with these the children build up words and sentences.

In addition to this somewhat formal sense training for general development, there is a large amount of incidental sense training which is gained through such activities as

## MONTESQUIEU

buttoning and lacing cloth or leather fastened on frames. Further, the courts or gardens connected with these schools are also used in training children to observe flowers and plants as well as birds and small animals kept as pets.

The second essential feature of the Montessori method is the great stress laid on the freedom of the child. This means that the teacher is expected to observe and direct the activities of the children rather than to control them. To accomplish this the teachers or directors are expected to measure the child's growth, record any significant fact regarding his development, and at different times test his advancement in order that they may know how best to deal with him. The large degree of freedom allowed and the individual treatment are features which differentiate these schools markedly from what one customarily finds elsewhere. This principle of freedom is carried out in the theory of discipline. The materials and exercises are of such a nature that the child is led to correct himself. If, in moving about, the child upsets a chair, the noise at once makes him understand what his error has been, and it is expected that the annoyance to others will cause him to avoid such mistakes in the future. In this way self-control is to be secured. As so far used the method has been applied only to children of the kindergarten and early elementary school age. There is promise, however, of experimentation looking to its extension into higher grades.

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**MONTESQUIEU, CHARLES LOUIS DE SECONDAT, BARON DE LA BRIDE ET DE** (1689–1755) — French philosopher, statesman, and scholar. He was educated at the Oratorian school at Jully, and served as counselor in the parliament of Bordeaux for twelve years, the last ten years as president. Subsequently removing to Paris, he was elected a member of the French Academy (1728). His principal writings are *Lettres persanes* (Amsterdam, 1721), *Considérations sur les causes de la grandeur et de la décadence des Romains* (Amsterdam, 1734), *L'esprit des lois* (Genève, 1748). Book IV of the last work contains several chapters on education, one of the striking statements found therein, though it is by no means peculiar to Montesquieu, being "The laws of education vary as the government" — a truth that gives us the keynote to the kaleidoscopic transformation in the educational system of France during the revolutionary period, and that goes far toward explaining the different national educational ideals. F E F

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**MONTVIDEO, UNIVERSITY OF.** — See URUGUAY, EDUCATION IN.

**MONTHLY JOURNAL OF EDUCATION** — See JOURNALISM, EDUCATIONAL

**MONTPELLIER, UNIVERSITY OF, FRANCE** — One of the earliest of the medieval universities, a medical school being referred to in 1137. It is doubtful how the institution originated, but it is certain that the population was mixed, and Saracen, Arabic, or Jewish influences may have been strong, although this view is balanced by the great power which the Church always enjoyed. The medical school was certainly free and unrestricted about 1180, but the organization of other universities was soon imitated, but side by side with the strong old principle went the authority of the Bishop of Maguelone. The earliest definite mention of a university at Montpellier is found in statutes of 1230, when a chancellor is nominated by the bishop. The growing democratization of the student body led to constant opposition to episcopal authority, which was only settled in 1340. The Montpellier medical school was for long the center of the cult of Hippocrates and Galen. The study of law, civil and canon, was also pursued at Montpellier from the twelfth century, and before a university is heard of, well-known jurists like Placentius (author of a *Summa Codicis* and *Summa Institutionum*) and Bassianus taught there and intimate relations were maintained with Bologna. A *Studium Generale* was formally established in 1289, and, as in the medical school, a struggle went on between the bishop and the *studium* until an arrangement was reached about 1340. In 1421 the faculty of theology, which subject had been studied in connection with the Carthusian monastery, was added to that of law, while the faculty of arts which had existed certainly since 1242 was also attached to the legal faculty. For many reasons — war, plague, and the rise of the university at Perpignan — Montpellier declined in the fourteenth century. The medical faculty, however, enjoyed a renewed period of prosperity as a result of the Renaissance and the revived interest in Hippocrates and Galen (Rabelais, *q.v.*, lectured there on the former) and through the patronage of Henry IV and the excellent work in surgery it acquired a considerable reputation. In 1572 a college of pharmacy was established in the town. In 1593 a botanical garden was laid out, and the first chair in botany was established in 1597. In the seventeenth century chairs were founded in chemistry, physics, mathematics and hydrography, and French law. The arts school was under the control of the Jesuits from 1629 to 1762. During the Revolu-

tion the university with the exception of the medical school suffered the same fate as the other higher institutions. With the reorganization effected in 1808 separate faculties of science and letters were established, the medical faculty had been reorganized in 1803, in 1840 the school of pharmacy became a part of the university, in 1878 a faculty of law was revived. Other institutions connected with the university or located in the town are an agricultural school, a forestry laboratory, a meteorological laboratory, a school of commerce, a school of fine arts, a conservatory of music, and an institute of historical science. Special provision is made for foreign students to study the French language, literature, history, and national institutions. The student enrollment in 1909-1910 was 1958 (law, 744, science, 282, letters, 134, medicine and pharmacy, 798).

See FRANCE, EDUCATION IN

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**MONUMENTA GERMANIÆ PÆDAGOGICA** — A comprehensive publication modeled on the *Monumenta Germaniæ Historica*. The work was conceived by Dr. Karl Kehrbach, and is now published under the auspices of the *Gesellschaft für deutsche Erziehungs- und Schulgeschichte*, founded by Kehrbach in 1890. As originally planned the work was to cover all aspects of education in German-speaking countries from the humanistic period. On further consideration it was decided to begin with the early medieval period. The first volume appeared in 1890. The work deals with education in its broadest sense. It is divided into four departments: (1) School ordinances (church, state, and municipal), including school regulations, visitations, constitutions of orders, letters of appointment, synodal acts, and salary scheme, oaths of office, statutes of hostels, dormitories, etc. (2) School textbooks. (3) Educational treatises and systems; biographies, school addresses, table manners, regulations for education, poems dealing with education, and colloquies, correspondence of schoolmen, school plays. (4) Dissertations dealing with the place of the above in education. The school ordinances are treated from historical, bibliographical, and textual viewpoints; the textbooks from the viewpoints of subject matter and history, pedagogy, text, and bibliography. The work is necessarily not published at regular intervals or in any defined order. Up to the present there have appeared forty-eight volumes, the general contents of which are given in the following list:

- Volume I, VIII Brunswick School Ordinances up to 1828  
Volume II, V, IX, XVI Ratio Studiorum et Institutiones scholasticæ societatis Jesu per Germaniam olim vigentes  
Volume III History of Mathematical Instruction in Germany up to 1525  
Volume IV German Catechisms of the Moravian Brethren  
Volume VI, XIII The Transylvanian-Saxony School Ordinances  
Volume VII Philip Melancthon as Preceptor of Germany  
Volume X, XI, XV, XVII, XVIII History of Military Education and Training in German-speaking Countries  
Volume XII The *Doctrinale* of Alexander de Villa Dei  
Volume XIV History of Education of the Bavarian Wittelsbachs up to 1750  
Volume XIX History of Education under the Wittelsbachs of the Palatinate  
Volume XX, XXIII, XXXIX Evangelical Catechisms before Luther's *Enchiridion*  
Volume XXIV School Ordinances of Baden  
Volume XXV, XXIX, XXXI Pestalozzi Bibliography  
Volume XXVI, XXXII The Educational Reform of Comenius in Germany up to the End of the seventeenth Century  
Volume XXVII, XXVIII, XXXII School Ordinances of the Grand-Duchy of Hesse  
Volume XXX Austrian Education at the Time of Maria Theresa  
Volume XXXIV Youth and Education of the Electoral Princes of Brandenburg and the Kings of Prussia  
Volume XXXV Commercial Education in Berlin in the Eighteenth Century  
Volume XXXVI, XXXVII, XL Youth of Frederick William IV of Prussia and of Emperor and King William I  
Volume XXXVIII, XLIV, XLV Education in the Grand-Duchies of Mecklenburg-Schwerin and Stréhlitz  
Volume XLI, XLII Documents on Secondary Education in Bavaria, including Regensburg  
Volume XLIII Andrea Guarneri's *Bellum Grammaticale* and its Imitators  
Volume XLVI, XLVIII Higher Education in Prussia under the Superior School Council (1787-1806) and the Abiturientenexamen  
Volume XLVII Documents on the History of the Humanistic Schools in the Bavarian Palatinate

**MOOD** — The general emotional tone of one's consciousness is sometimes pleasurable or unpleasurable for a considerable period of time. Under such circumstances, the individual is said to be in a pleasurable or unpleasurable mood, as the case may be. The mood does not consist in a single emotion, but rather in a persistence of a general type of emotional attitude. On the other hand, mood is to be contrasted with temperament as a relatively transient phase of experience. A person who is of a sanguine temperament will continue day after day to be in an optimistic state of mind. One may have an optimistic mood for a period of time without having the general temperament characteristic of the optimist. The control and education of an individual so that his mood may be developed into a permanent temperament is desirable, provided the mood is of a favorable type.

For a discussion of this topic, see EMOTIONS.

C. H. J.

### MOOR'S INDIAN CHARITY SCHOOL

— The name given by Rev. Eleazer Wheelock to his Indian school, which he opened in 1754, in recognition of a request by Mr. Joshua Moor of Mansfield, Conn. The school was first established at Lebanon, Conn., and in 1785 was moved to Hanover. When the institution was chartered as Dartmouth College, the education of Indians gradually became secondary, the school being chartered as a separate institution in 1807. It continued until 1849.

See DARTMOUTH COLLEGE; INDIANS, EDUCATION OF

### MOORE, ZEPHANIAH SWIFT (1700–1823).

— College president. He was graduated from Dartmouth College in 1793, was for thirteen years pastor of a church at Leicester, Mass., four years professor at Dartmouth College (1811–1815), six years president of Williams College (1815–1821); and two years president of Amherst College (1821–1823).

W S M

### MOORES HILL COLLEGE, MOORES HILL, IND.

— A coeducational institution founded in 1853 and opened in 1856 under the auspices of the Methodist Episcopal Church. There are maintained an academic, collegiate, agricultural, commercial, music, and art department. The college entrance requirements are sixteen units. Classical, scientific, and literary courses are offered, leading to their respective degrees. The enrollment in 1911–1912 was 270. The faculty numbers twenty-one members.

**MORAL CHARACTER** — See CHARACTER

### MORAL EDUCATION

— The problem of moral education in the schools is very complicated. First of all, the present status of the teaching of morals is the result of a long and varied history, the phases of which are reflected in many of the problems of to-day. Again, the nature of the moral sense, and the relation of morality to the general aim of education are both matters upon which a variety of opinions are held. These different views have given us antithetic practices, and to-day the educational world cannot be said to show any marked agreement as to the general place of morality in the educational scheme, the method of moral culture, or the subject matter of moral instruction. An exposition of the situation at present in regard to moral education requires as an introduction a consideration both of the main trend in the history of moral culture and of the various philosophical and psychological theories concerning the development of the moral sense.

**Four Historic Movements in regard to Moral Culture** — The history of moral culture presents among others four issues which

are to-day especially fruitful of difficulties to the school that engages in this task. These issues concern (1) the progress from customary to reflective morality, (2) the association of morality with religion, (3) the evolution of academic from utilitarian morality, (4) the variety in moral standards among different peoples and in different ages.

(1) In primitive society morality is wholly a matter of custom. Indeed, the word "morality" is derived from *mores*, or customs. These mores controlled the moral sense of early man. Even to-day they are, perhaps, the dominant factor in the moral life. Whatever is in the mores, the sociologist Sumner declares, is felt to be right. These customs constitute the social adaptations that society has established as a result of blind and uncomprehended experimentation. However, with the progress of time men get a wider outlook, which reveals to them the mechanical foundations of much that had seemed like the sacred utterance of an inner voice. Some mores come in conflict with others as people migrate and get into contact with strangers. Other mores are outgrown, and history preserves for our amazed study the intense moral allegiance of our forefathers to practices toward which we feel only indifference or contempt. Thus man advances toward an age in which morality is no longer merely a matter of the mores, but seeks a rational foundation in some universal laws of social and individual life.

Morality tends to become reflective by yet another process. The mores find substantial help in such specific instruction as can be added to supplement the cultural effect of imitation. This instruction tends to become generalized in rules of practice. These are at first mere summations of existing mores, but with the progress of time they come to include reasons and to strive to reconcile inconsistencies that are laid bare as various principles are drawn into a system. Thus instruction in morality constantly tends to make it reflective, critical.

But the tendency to make morality reflective weakens the implicit faith in the mores. What is consecrated by habit and feeling is desecrated by reason. Habituation in the mores, which we may call moral training, and reflective criticism of them, which is almost a necessary implication of moral instruction, do not always support each other. In this emergency we find a gradual differentiation of two parties. One consists of those who reverence the mores and would limit moral culture to habituation in them, possibly supplementing this by such dogmatic instruction as can be made to strengthen their grip on conduct. The other comprises those who would make all morality of the reflective critical type. Such was the view of Socrates and of Plato in his earlier years. Their notion that virtue is knowledge, and can be taught, may be regarded as essentially an abandonment of the mores in favor

of a reasoned course of conduct. There is yet a third party, in which we may group those who hold, as did St Paul, that we may know the better, yet do the worse. On this view, while morality should be based on reflection, it must be ingrained in character before it becomes effective. This result can be reached only by habituation, by will. Thus moral training is again invoked, not as the basis of the moral life, but as the only agency by which the dictates of reason and conscience can be put into practice.

It is evident that these various points of view are implicated in the attitudes taken to-day toward moral instruction in the schools. Those who feel that morality is a matter of the mores, if they want moral culture in the schools, have in mind, as the substance of this, habituating training plus a little instruction preceptive in character. Some, however, think that this dogmatic instruction will take the spirit out of the habits that it is designed to aid. They hold that moral culture should be indirect, that we get it best by growing into it, rather than by having it preached to us, that to state in rules the principles that should constantly be exemplified in habits is to deal in platitudes. There is life in such precepts when we live them, not when we merely talk about them.

On the other hand, those who would found morality on reflection may hold that it is beyond the reach of children, and so exclude it from the studies of the elementary schools, or if they have a more favorable notion of the capacity of the child, they may wish the classes seriously to discuss the vital problems that constitute mooted issues in the life of the day. It is evident that instruction in morals does not go far before it reaches the plane of reflective morality, and that this is critical, interested only in that which is not yet a matter of habit or in that habit which is questionable. It tends to disintegrate and to reconstruct the mores. Otherwise it has little ground for being.

(2) The association of religion with morals is very largely responsible for the situation to-day in reference to moral instruction. In the very beginning of conscious endeavors to supplement the mores by direct teaching, religion played a prominent part. The customs that society was most anxious to emphasize involved as a rule individual self-restraint, often individual sacrifice for community welfare. In making a conscious appeal on behalf of such mores the belief in the supernatural was of the greatest help. Instruction appeals here, as always, to the reason, but to a reason uncritical of the products of its imagination. In religion instruction found something new and fresh that could be used to reinforce the mores rather than to cause one to grow weary or skeptical of them. Moral instruction in the guise of religion can interest and inspire. The mind is lured away from the commonplaces of everyday life and invited to speculate about the

rewards and punishments of the invisible powers that preside over the destiny of man. The glory and the terror of such unexplored experiences are a never failing stimulus to the imagination.

In modern times the struggle over freedom in religious matters has resulted in the removal of much or all religious instruction from the national schools in democratic communities (see RELIGIOUS EDUCATION). The historic association of moral and religious instruction has caused the latter to carry the former with it out of the curriculum. France after the Revolution and the United States illustrate this tendency best among the larger states. In many cases such religious organizations as possessed a more or less adequate system of schools under their own control resisted the development of the national schools, holding them to be Godless institutions, calculated to sharpen the wits rather than to cultivate the conscience. It has even been urged that non-sectarian education produces crime, and in proof thereof shown that the amount of crime as indicated by the statistics increased with the development of state schools. A more careful examination of the data made clear, however, that the apparent increase of crime was due to the addition of new causes of arrest, such as drunkenness, or to the more accurate keeping of records of arrests, or to the greater vigilance of the officers of the law. In point of fact, the data seem to indicate that education, even though it does not include specific moral instruction, tends to reduce crime by increasing efficiency, and so diminishing in a measure the incentive to crime.

However this may be, there has seemed much reason to deplore the lack of more positive instruction in morals in the schools. In order to make up this deficiency and yet keep out instruction specifically religious, efforts have been made to develop a system of morals not based on religion. Here some have dissented and maintained the inseparability of the two. Especially in England this view has found many supporters. Since the public elementary system there was until 1870 entirely in the hands of the voluntary associations of either the Church of England or Dissenting Denominations, religion has had in them a prominent place. When schools were later established independently by the public authorities, a little undenominational religious instruction was given in them, and moral teaching was connected with it. In France, where, perhaps, religion has been more completely excluded from state schools than in any other European country, we have the most definite attempt to develop moral instruction independently. The law of 1882 required a certain amount of moral and civic instruction. At the same time, one day a week in addition to Sunday was allowed the children that the parents might, if they would, provide religious

instruction outside the schoolhouse. In Germany religious instruction is regularly given in the state schools by or under the supervision of the pastors of the various churches in the localities. To-day not only Catholics and Protestants, but also Hebrews, have a chance to determine this religious instruction. Moral instruction is closely connected with the religious teaching. The German plan prevails, in general, in Switzerland. In European countries where one denomination is not only the state religion, but is also in control of the situation, the religious and moral instruction in the school centers about the ideas and practices of that denomination. Thus, so far as the connection between religion and morality is concerned, we have five types of schools, as follows: (1) Those schools in which there is neither specific religious instruction nor *set* lessons in morals. Such are most of the public schools in the United States and many of the private schools as well. However, almost, if not quite, invariably the public school regulations in the various states enjoin the teachers to provide *incidental* moral instruction as well as to care constantly for moral training. (2) Those schools that provide no religious instruction, but have developed a special course of study in morals and civics. This type is illustrated in the state schools of France, where, although a general recognition of a Deity is approved, very little, if any, religious instruction is given. (3) Those schools in which undenominational religious instruction has been made a feature of school work, and the moral instruction associated therewith. This method may be said to be that aimed at in the English elementary schools established by the public authorities. The parents may, if they wish, withdraw the children from the periods devoted to religious instruction. (4) Those schools in which religious and at least partially denominational instruction is given under the control of the various denominations in the locality. Here moral teaching springs out of the religious teaching. This system is illustrated in Germany and Switzerland. (5) Those schools in which religious instruction according to one faith is given, and moral instruction made largely dependent thereon. Such a system prevails in the state schools where one faith, as the Roman Catholic or the Lutheran, is in control, or in the schools maintained by the various denominations.

In general, it may be said that moral instruction receives most attention where there is enough religious study to give it large foundations and emphatic attention, as in the denominational schools of the fifth type, or where it is developed independently of religion, as in the schools of the second type. The attempt to make moral instruction dependent upon undenominational religious instruction, or upon such denominational instruction as may be given by officials not in the regular teaching

force, or in periods sharply separated from the rest of the program, does not yield vital results, inasmuch as a broad enough religious basis cannot thus be given to interpenetrate very thoroughly the moral life. In consequence, those who hold that moral instruction should be founded on religion are likely to advocate much more religious teaching in the secular schools, or to propose to base moral instruction largely, if not wholly, on religious agencies outside of the school.

(3) The historic movement from utilitarian to academic morality has been a factor in determining the present nature of the problem of moral education. When men began first to reflect upon the reasons for the prevailing mores, they searched for utilitarian ones. The customs must be upheld, they thought, because only thus can the prosperity of the individual be assured. This springs from the fact that the mores are founded either upon natural law or, as is usually the conception, upon the supposed will of the supernatural powers. Especially such practices as may make for the welfare of society rather than for that of the individual are found to take refuge behind the theory of authorization by a divinity. When, however, long experience reveals no demonstrable connection between self-sacrificing obedience to divine law and personal prosperity as an ultimate reward for such service, men seek another justification for it. They rise from the notion of prudential morality to the Stoic conception of "right for right's sake." They find in conscience the only guide, and regard the conduct that has for its motive hope or fear of consequences as not genuinely moral. If they associate happiness at all with moral conduct, it must spring from the consciousness of duty done rather than from the worldly success thereby achieved.

However, when men reflect further, they may conclude that after all the happiness of the individual is the only justifiable end of moral conduct, that morality is merely the highest sort of prudence. The utilitarian finds his explanation of the altruistic conduct of man in his social nature, which cannot be happy when surrounded by unhappy companions. He would, therefore, make moral education consist largely in the study of consequences and such culture of habits and will as enables one to carry into practice the bidding of the knowledge thus acquired. Here we have the conception of moral culture entertained by Rousseau and Herbert Spencer. The child is to be subjected to the discipline of natural consequences.

Opposed to the utilitarians are the rigorists like Kant, who maintain that morality is a matter of obedience to absolute law and cannot be based on the calculation of consequences. Hence, in their view, moral culture consists not in any revelation of relations between cause and effect to be derived from experience,

but rather in rousing to free utterance an inner voice. On the question of the nature of this inner insight we have the rationalism of Kant opposed to intuitionism. Kant founds morality on reason, — not empirical reason, which investigates consequences, but pure reason, which reveals the right in itself. Such rightness, he holds, consists in conformity to the absolute moral law, the universal categorical imperative. One may act rightly and yet apparently bring disaster to himself and others. True moral culture consists, therefore, in endeavoring to rouse the attitude of good will which considers only the form of the act, and is careless of consequences. The intuitionists hold that the awareness of the right is not even reasoned out, but is a matter of direct perception. To teach morality becomes, on their view, analogous to teaching one to use his eyes. We do not learn a moral law and then apply it, as Kant supposes, but we simply look steadily at what we think of doing, and its rightness or wrongness becomes immediately apparent.

(4) Finally, among the historic facts that have entered in to determine the character of the problem of moral instruction to-day is that of change and variety in the moral codes. The notion that in morality we have something which differs from religion in that there is universal agreement as to its nature and rules is evidently erroneous. Historically the views of mankind in regard to the rightness of acts have changed quite as much as their notions of religion. For example, infanticide and cannibalism and harlotry have been held to be sacred when properly carried on. To-day the common judgment of the enlightened seems to be united in abhorrence of them. Yet many among the so-called enlightened feel no horror at some sorts of infanticide or of sexual intercourse not recognized by law, indeed, they justify them. And while the exceptions to those who to-day concur in regard to these fundamental matters are, perhaps, few, the unanimity in regard to just what is permitted in the matter of the relations of the sexes, just what is involved in veracity or business honesty or intemperance or in proper service to the state or proper regard for parents, for servants, or for charity is certainly very scant. If the school is to keep to the universally recognized in morality, it seems to be confronted with the necessity of dealing only in generalities and platitudes. Among the special bits of ethical instruction to be found in textbooks widely used in the French schools is this in regard to the attitude of children toward parents: "Do not be familiar with them as you are with your companions." The interpretation of this principle by different households, and especially in America, would evidently vary greatly.

**Various Views on the Psychology of the Moral Sense** — The problem of moral culture to-day is further complicated by conflicting views as to the psychology of the moral sense. Funda-

mental among the issues involved here is that between those who regard moral development as essentially a negative, inhibitive process and those who hold that it is at bottom positive, constructive. According to the first party moral education is a purging away of original sin, a purification of the spirit from the taint of flesh, a war against selfishness, or a curbing of the brute that we inherit in the interest of the higher civilization of to-day. This control of our baser nature may be conceived to be dependent upon the influence of the rewards and punishments established by the temporal and the spiritual rulers who determine our fortunes here and hereafter, or upon the wisdom that has come to perceive the penalties that nature visits upon those who permit their appetites and passions to control them, or, finally, upon the birth of an inner conscience, a spiritual quality, — the product, perhaps, of Divine Grace, by virtue of which one comes to despise his inferior self. In any event, the function of the teacher is held to consist in the task of getting the lower nature under control. He is a lawgiver, threatening and punishing, a prudent adviser, pointing out the folly of evil ways, or a preacher, shaming the self-indulgent, the dishonest, and the base by exhibiting their shortcomings to themselves and to others.

The advocates of the constructive ideal of moral culture maintain that all, or at any rate most, of the human desires have a function, that the task of self-control is not so much that of suppressing the evil as it is that of encouraging the good. Among the extreme advocates of this view is Rousseau, who held that man is born good and corrupted by education. Hence, with him the ideal education is to let the child alone, for in its natural development will be found the best culture. The more moderate conception is that, while the natural child or man is by no means morally perfect, yet he does have in him the qualities the right development and harmonization of which will make of him an ideal individual. Moral culture should, therefore, aim, not at suppression, but at an harmonious development of all the powers, at self-realization.

In addition to their view that all, or nearly all, the human instincts have a place in the properly trained man, the advocates of the constructive sort of moral culture hold that the control or the suppression of the undesirable can take place only by substituting something better. This substitute can, they think, be found only in the nature of the child. The negative discipline is, therefore, held to be faulty in that, in aiming merely to suppress the undesirable, it leaves to chance or to the undirected impulse of the child the selection of a substitute interest by the ascendancy of which alone control of the objectionable quality is made possible. Inhibitive education at best merely gets rid of an evil without assuring itself that something better takes its place.

A second issue in regard to the psychology of the moral sense is that between those who emphasize freedom and those who hold that cultural influences are essential to morality. The idea of transcendental freedom, advocated by the followers of Kant, led them to minimize the importance of circumstances in the development of morality. Kant's notion was that the one absolutely independent thing about the individual is the moral will. To make it depend upon educative influences seemed to be to take from it its unconditioned character. Herbart, on the contrary, held that from the point of view of the concrete problems of education transcendental freedom is a myth. All education, he asserted, aims at moral character, and to maintain that culture has no reference to the moral will is to deny that the teacher and the school have any serious value. Education, he claimed, should not passively wait for the moral nature to assert itself, but should continually endeavor by the presentation of appropriate experience, which he characterized as an "aesthetic presentation of the world," to stir up many-sided interest and to cultivate that union of judgment with desire which insures a comprehensive, just, and steady will. Both Herbart and Kant agree that morality is a matter of inner insight. To get this, one must have that in his nature which responds to and evaluates the moral situation. Kant, however, does not think that this moral judgment is *a posteriori*, or derived from experience, but rather *a priori*. Experience is moral because we make it so by judging it, and the judgment of conscience is not a result of instruction. Herbart, on the other hand, declares that it is to be evoked only by the continued presentation of phases of experience in reference to which it can express itself. The child becomes moral by constantly beholding and reacting to moral activity in others.

In more recent years this inner response to moral situations which Herbart held to result from familiarity with them has been traced to the ripening of certain instincts. The keener conscience of the older child is thus attributed not to his experience, but to his maturity. As to the character of the instincts that lie back of moral character, there is a difference of opinion. One school revives the conception of Rousseau, who held that up to adolescence the child is purely self-regarding and should be disciplined only through an appeal to his experience of the pleasant and unpleasant consequences of his acts. In the instincts of puberty, the interest in the opposite sex and later in one's children, he found desires that tend to break down the self-centered life and to create broader sympathy and an altruistic moral sense. President G. Stanley Hall agrees with Rousseau in emphasizing adolescence and the parental instincts. According to him the life of ideals is born and reaches its climax in the "storm and stress"

of youth. Kirkpatrick in his *Fundamentals of Child Study* includes among the instincts that have a bearing upon moral development not only the parental, but also the social and regulative instincts. Under the social instinct he ranges fondness for society, love of approbation, sympathy, and altruism. Under the regulative instinct he places the moral instinct proper and the religious instinct. The former he reduces to the tendencies toward self-control and toward evaluating conduct and developing ideals. Altruism, the genuine religious attitude, and the sense of independence and responsibility, he regards as not much in evidence before adolescence. The period before adolescence in his view is, therefore, merely preparatory so far as morality is concerned. The experience, the habits, and the knowledge of objective values to be gained in this preparatory period are, however, regarded by him as of the highest importance.

**Morality and the Aim of Education** — An important phase of the theory of moral culture is concerned in the relation of morality to the total aim of education. Liberal education has from time immemorial occupied itself with ethical culture, especially its civic and social phases. But the development of leisure led to phases of culture calculated to minister rather to individual gratification than to social service. In consequence, liberal education came to aim at knowledge and beauty as well as at strictly ethical qualities. Later, the development of unworldly religions with the attendant emphasis on the spiritual life as compared to the life of sense, led to the elevation of the religious above the moral aim of education. Still later, the Enlightenment of the eighteenth century found in personality its supreme concept. The struggle for the rights of the individual, for freedom, for self-realization, displayed itself in all phases of human life, — political, social, economic, artistic, and educational. In education the ruling notion of self-realization tended to draw all liberal culture into a unity. The religious, the scientific, the social, and the aesthetic interests were held to be mutually dependent phases of a developing personality. The goal of such development Herbart found in moral character, which to him meant volition controlled by the broadest insight into and sympathy with the various interests of men. In his system, therefore, morality is so broadly interpreted as to be restored to its ancient position as the sole aim of liberal culture.

The Herbartians regarded history, or the account of the human will in action, as the fundamental subject for the development of moral character. With it was closely associated literature. Science and mathematics and, indeed, all the subjects of the liberal curriculum were held to have an ethical bearing, and to justify their place therein because of this fact. Moral instruction, therefore, comes



to consist not in certain rules of conduct taught in connection with religion or separated from the rest of the course of study, but in all the studies of the school. It is then essence. Similarly, moral training was regarded as the whole of the discipline of the school.

The Herbartian conception united in the notion of moral culture all the various historic aims of liberal education. However, it held to aristocratic traditions in excluding the vocation from the liberal ideal. Thus vocational instruction was not regarded by Herbart as an essential phase of moral culture. The democratic and industrial movements of the nineteenth century have brought preparation for the calling forward as an indispensable factor in education. Those who agree with Herbart in regarding vocational education as not aiming at moral character, and at the same time sympathize with the modern demand for training to make a livelihood, are compelled to enlarge his statement of the educational ideal. The expression, efficiency, or in Spencer's phrase "preparation for complete living," has been the most generally current symbol for the aim of education. The extent to which human efficiency is a matter of social adaptation has led this ideal to be characterized as social efficiency. Put in this form, it is capable of a moral interpretation. If morality is character in action in a social environment, then social efficiency must be held to be an essentially moral aim. Indeed, Professor Dewey, in finding moral education to consist in making instruction live in the activities of the child, has defined it broadly enough to make it include all sound education. Culture that is the union of thought and action in a social world which reproduces the essential problems of human life and gradually approximates to the social environment of the adult is evidently both moral and vocational. Just as Herbart enlarged the notion of moral character to include all the products of liberal education, so our modern democratic education would seem to be widening it to embrace the vocational efficiency so much demanded to-day.

**Present Agitation in Regard to Moral Education.** — The issue of moral education is to-day rapidly forging to the front as one of the leading problems of the school. In France since 1882 specific moral instruction has taken a place in the curriculum. It must be said, however, that this has not always seemed either to French or to foreign observers entirely satisfactory. Especially has it been attacked by the clergy. Since the suppression of the religious associations and the consequent disappearance of nearly all the Catholic schools, the question of the adequacy of the moral instruction received by the French children has been very much in the foreground. In England the issue of moral instruction has also become prominent, stirred up especially by the struggle over denominational control in elementary education.

A commission on moral instruction and training, self-constituted, but containing many of the leaders in education, published in 1908 and 1909 an extensive and valuable report on conditions and opinions in reference to this matter in many counties. In the United States for many years the need of more attention to moral education has been discussed. In the convention of the National Educational Association held in Los Angeles, Cal., in 1907 a resolution was passed to the effect that "It is the duty of the teachers to enter at once upon a systematic course of instruction, which shall embrace not only a broader patriotism, but a more extended course of moral instruction, especially in regard to the rights and duties of citizenship, the right of property, and the security and sacredness of human life." A committee was appointed which made in 1908 and again in 1909 reports on various aspects of moral culture. At the latter meeting certain papers recommended special instruction in morals as part of the curriculum. The idea that this should take the form, not of dogmatic precepts, but of a rational attack on living issues with the aim of developing conscience through reflection was put forth. Experimental efforts in this direction have been made, as, for example, in the course designed by Professor Sharp of the University of Wisconsin, and tried in some of the high schools of that state, in the illustrated lessons prepared by the National Institution for Moral Instruction, through its secretary, Milton Fairchild, and in courses given in progressive schools, especially the Ethical Culture School in New York City. The Ethical Culture School (*q v*) owes its origin principally to the efforts of Professor Felix Adler, to whom is to be credited one of the earliest positive attempts to introduce the specifically moral element into American education. This movement led to the formation of a number of Ethical Culture Societies. Among the most influential agencies at present engaged in the movement for moral education in the United States is the Religious Education Association, a voluntary society founded in 1903. This organization held at Providence, R. I., in February, 1911, a convention especially devoted to the subject of moral education, and in its *Journal* for that date it gives one of the most comprehensive summaries of the conditions in the United States in regard to moral education that we possess. It reveals great diversity of opinion, but so far as practice is concerned the prevailing custom is to trust to other agencies than specific courses in morals. State laws or courses of study often emphasize the need of moral instruction, but they do not, as a rule, make such definite provision for it as to insure that the schools should give to it an assigned amount of time and attempt to cover a certain clearly defined field. Here and there where in counties, in cities, or in individual schools

the personal supervision of one superintendent makes possible unity of conception and practice, there have been worked out fairly definite schemes of moral instruction. Legislation has, in general, laid stress upon instruction in the duties of citizenship, on the bad effects of alcohol and narcotics, and occasionally on the humane treatment of animals. (See HUMAN EDUCATION.) It has required teachers to be of good moral character, and provided for the punishment of both teachers and pupils for immoral conduct. It is very rare, however, for licenses to be withdrawn for this cause. As for the preparation of teachers for giving moral instruction, the curricula of colleges and of normal schools provide, aside from a course in ethics, very little that has much bearing thereon.

**Various Views as to what should be done in regard to Moral Education** — When we come to the problem of providing adequate moral culture in the future, we find that the complexity of the factors involved results in a corresponding variety of opinions and suggestions. Five main opinions may be distinguished, although each of these may be subdivided according to particular views on minor points.

(1) A very considerable number hold that moral education requires no addition to the agencies at present at work in the schools. The chief forces in moral culture are, on this view, the personality of the teacher, the discipline of the school, the moral insights and ideals to be derived from the ordinary studies, incidental instruction in moral notions and practices by the teacher and by occasional speakers from outside the school, and intercourse of the children with each other on the playground and in school organizations. Of all these forces the personality of the teacher is usually held to be the most important. If it be of the right sort, it is trusted to inspire the pupils and to be a constant model for imitation that goes on in the main unconsciously. In this agency alone, many believe, lies the solution of the entire problem of moral culture, for, in the last analysis, character can be understood only in terms of the experience that comes from actual contact with it and practice in its ways. Moreover, the discipline of the school, the efficiency of which is so important an element in moral culture, depends upon the personality of the teacher. The sympathy and the justice, the patience and the firmness, the refinement and the strength, the ideals and the common sense of this individual find their expression in the rules of conduct of the school, and especially in the spirit in which they are enforced. Thus through the habituating effects of his steady supervision the momentary inspirations of the child are converted into the traits of a character.

The Herbartians value highly this personal contact, but especially do they emphasize the moral value of the course of study. The im-

portance of each subject is, they hold, in proportion to its reaction on character. This principle determines the selection and arrangement of the curriculum. History and literature show character in action, and thus create ideals and standards, i.e. moral intelligence. Other subjects are made contributory to these, completing the circle of thought and perfecting the sympathy and the judgment. While the Herbartians emphasized the moral value of the content of the studies, the Disciplinarians lay all stress on their form. In the preeminently formal work of the languages and of mathematics they find a discipline of the will to attentiveness, persistence, accuracy, love of truth, etc. When we add to these agencies for moral instruction the life on the playground and in the school societies, we are able, in the opinion of many, to cultivate adequately the additional virtues of courage, tact, self-control, regard for the rights of others, and sense of obligation for public service. Finally, unusual occasions in the life of the school, such as the celebration of an anniversary, the advent of a stranger who will address the pupils, or some crisis demanding an appeal to the spirit of the general body, for example, athletic contests or a reform in bad practices, such as cheating in examinations, — all these afford constant opportunity to promote and to revive healthy moral life.

Those who hold the present agencies to be adequate for moral culture may, and often do, feel a need for greater efficiency in regard to some or all of them. They frequently urge the need of better selection of teachers from the point of view of personal influence, of discipline that will be more effective in developing moral strength, of more careful selection of history and literature with a view to the ethical effect thereof, of such methods of instruction as will more successfully bring out ethical ideas, of more sympathy on the part of the teachers with the play of the child or with his social life and home conditions, of more careful supervision of such of these interests as can be influenced by the school, or of more frequent departures from the routine of the school work in order to introduce an exercise having ethical significance. The study of physiology and hygiene should, many think, include instruction not only in the effects of alcohol and tobacco, but also in matters pertaining to sex. Similarly, the work in history and civics should include more attention than is commonly given to the obligations of the individual in regard to public service. All these reforms involve no radical transformation of the school as at present organized.

(2) A second party consists of those who hold that the key to effective moral instruction is to be found only in religion. They would, therefore, either introduce more religion into the schools or look for the needed betterment of moral education largely to independent

religious agencies, which they would develop to greater efficiency in this field. The various solutions of the problem of the relation of moral and religious instruction have already been dealt with. In general, it may be said that, although the present movement in favor of more moral education has been greatly promoted by those interested primarily in the religious life, still comparatively few look for reform through an increase in the amount of religious instruction in the schools. (See RELIGIOUS EDUCATION.)

(3) A very considerable number hold that what we need is not more or different moral instruction, but rather the development of new and more effective agencies for moral training. Two plans are advocated, each of which has been experimented with. The one strives to develop the idea of student self-government (*q.v.*) so as to awaken in the child as soon as possible the sense of responsibility under the stimulus of sharing in the work of making and administering law. The George Junior Republic (*q.v.*) is, perhaps, as complete an illustration of this conception as we have. Although designed primarily for wayward youth living and working together in a small community, it embodies ideas of self-government that many think should be far more completely realized in every school than they are at present. By such methods it may be possible not only to turn the discipline of the school over largely to the pupils themselves, but even to give them considerable initiative and control in reference to their studies and occupations. The second plan addresses itself to a far more systematic organization of the games and recreations of the young. Children, it is thought, may, and should, be taught to play as well as to work, and through this agency the needed supplement to their present social and ethical training is conceived to be obtainable, for it is in the amusements rather than in the work that ethical degeneration is most to be feared and ethical advance most to be hoped for. Hence playgrounds and recreation centers with competent supervision are advocated for the cities. It is urged that the school should become the leading social center for the community, fostering athletic sports, literary, musical, scientific, and social entertainments, and in numberless ways contributing to the healthy interest of children and even of adults in a common life of voluntary yet incalculably beneficial diversion.

Both self-government and play have from time immemorial been to some extent utilized as educational forces in the great English Public schools, and there their value has been convincingly demonstrated. However, it is felt by many English observers that this Public School life with all its excellent features is too much a life by itself, interested too exclusively in its own affairs to constitute the best sort of a preparation for active participa-

tion in the social life of the outer world. This defect is one likely to be found in boarding school training everywhere, and it is undoubtedly desirable that the school in developing its own community life should keep in close contact with the family, the economic, the social, and the political interests of the wider public. (See ATHLETICS, EDUCATIONAL, PUBLIC SCHOOLS.)

(4) Of all the present-day advocates of radical changes in regard to provision for moral education, those who believe in direct and regular instruction in morals make up the most distinct and, perhaps, the most numerous group. They may be divided into two classes. First, we have those who hold that a graded course in morals should run through the school, beginning in the primary department. They insist that such work can be made intelligible, interesting, and practically effective, that it need not be mere preaching, nor be dogmatic, nor productive of pugnaciousness. Second, there are many who regard routine teaching of ordinary preceptive morality as, perhaps, unnecessary and a rather dry formalism at best, but who hold that the older children, especially those of high school grade, should take up the rational discussion of concrete ethical issues such as are creating the difficult problems in the life of the day. School instruction in morality is thus made rational rather than dogmatic and should, therefore, be for the most part postponed until ability to reflect becomes prominent in the child.

(5) Finally, we have many who believe that the failure of our schools in teaching morality is due not to the absence of direct moral instruction, but rather to the divorce between instruction and practice that is found to such an extent in school work. A school that constitutes a genuine life, that teaches through the solution of actual problems that confront the school society will, they think, have no need of special agencies to instruct in duty or responsibility or to train in right habits. The moral sense is born in the practical emergencies of life, and by confronting a child with these we may easily develop that sort of feeling, thinking, and acting which belongs to a strong and efficient character. We need not so much to expand the curriculum in order to include morality, as to reorganize it and the method of teaching it so as to make it stand for an inevitable progress of the child into the problems and the ideals of the social life of the time.

E N H

See CHARACTER, ETHICS AND EDUCATION; RELIGIOUS EDUCATION

#### References --

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**MORAL EDUCATION BOARD** — See MORAL EDUCATION

**MORAL IMBECILITY.** — See MORAL INSANITY

**MORAL INSANITY** — This term has been used to indicate an inability on the part of the individual to comport himself in accordance with the legal and moral standards of the community, and is not a disease in itself (although so considered by some English writers). It is a symptom to be found especially in the feeble-minded and in cases of paresis (*q v*). The condition is most clearly seen in those individuals who are known as moral imbeciles. These people steal, lie, and perform all kinds of immoral sexual acts to the exclusion of the normal. Such an individual may otherwise be normal mentally, but the moral sense appears to be lacking. The subject is one of considerable importance in dealing with school children, and especially with the so-called delinquent classes.

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**MORAL TRAINING.** — See MORAL EDUCATION

**MORALITY AND MORAL SENSE** — Morality in its objective meaning is the body of practices, habits, and beliefs which the prevailing enlightened judgment of a period regards as right, and which accordingly it strives to inculcate by all forms of education and tuition, and which, within certain limits, it strives to enforce against individuals who openly transgress. The various theories of morals or ethics arise partly from the efforts to criticize, purify, and systematize current morality in the objective sense, and partly in the effort to discover its ultimate basis and justification.

Moral sense, in its broader usage, denotes the body of judgments current in a community with respect to morality. It is called a "sense" to express its relatively unreasoned character; our more fundamental moral estimates and ideas have become ingrained in us by education and habit, and hence are identified with

## MORAVIAN CHURCH

our immediate emotional and practical responses rather than with consciously reasoned out conclusions. In its more technical meaning, "moral sense" denotes one variety of the theory about morality which holds that moral judgments are innate or intuitive, not the results of experience. The term "sense" is used to indicate the notion that the direct perception of right and wrong attaches to particular cases, not to general principles. In the case of its leading historic representatives, Shaftesbury and Hutcheson, it also connoted an assimilation of our moral to our æsthetic perception. Just as a man of good taste responds immediately to the beauty or ugliness of objects, so a man of moral sense appreciates at once the loveliness or baseness of character and acts.

J D

See ETHICS, INNATE IDEAS, INTUITION, MORAL EDUCATION

**MORAVIAN CHURCH AND EDUCATION** — The history of the Moravian Church falls into two parts, that of the Ancient Unitas Fratrum, extending from 1457 to the beginning of the eighteenth century, and that of the resuscitated church — variously known as the Unity of the Brethren, Brüdergemeine, Herrnhuters, but most commonly called the Moravian Church — reaching from the latter date to the present time. In both periods this church has been deeply interested and energetically engaged in educational work.

At a very early day the Ancient Unitas Fratrum, first established in Bohemia and Moravia and later in Poland, gave attention to popular education. From its famous precursor, John Huss, great reformer, but also the most popular professor of the University of Prague in his day, it had received inspiration to fight ignorance, the fruitful mother of sin and error. Free elementary schools were opened in all the villages where the Unity had parishes. In course of time they ranked among the best of the land. With the aid of friendly nobles, some fifteen higher schools were established at different points in Bohemia and Moravia, the fame of which attracted pupils from beyond the bounds of the church and the country, even sons of the nobility. In these schools the syllabus was much the same as in other schools of corresponding grade. Latin was taught in most, and in some dialectics, rhetoric, physics, astronomy, and geometry. The system of education was largely practical. Chief stress was laid on religious training. Among the textbooks were a catechism, a book of extracts from the Gospels and Epistles, a "Book of Morals," and the hymnbook of the church, the first edition of which appeared in 1501. A college was founded at Pibenschuetz for young noblemen in 1574. Ten years later a theological seminary was established in connection with this institution, and within the succeeding twenty years other

divinity schools were opened at Junghunzlau in Bohemia, Prerau in Moravia, and at Ostrorog in Poland. The ministers of the Umyt came to be among the most highly educated of the time. The famous college at Lissa, Poland, over which Comenius presided for some time, was begun in 1624. In Comenius (*q v*) all that was best in the educational experience of the Ancient Unitas Fratrum was embodied. Practically all of these schools were wiped out by the terrible anti-reformation of the seventeenth century, which well-nigh crushed the church itself, though not before they had given powerful stimulus to the revival of learning all over Europe.

Largely through the influence and almost prophetic provision of Comenius, the traditions of the Ancient Unitas Fratrum and the means for reconstructing its peculiar system were preserved against a possible resuscitation of the organization. In the event, this was brought about at the beginning of the eighteenth century, in Saxony, under the leadership of Count Zinzendorf. Thus the educational ideals of the Ancient Unitas Fratrum were transmitted under the most favorable auspices. They were, also, invigorated by an infusion of the best elements of the European culture of the time through Zinzendorf, of Halle and Wittenberg, as well as Spangenberg and Boehler of Jena, Pylæus of Leipzig, and many other university men who became identified with the Moravians and knew the value of liberal culture. Naturally, almost from the beginning of the Moravian settlement at Herrnhut, Saxony, attention was devoted to education, particularly because many of the Moravians were so occupied with the diversified missionary and evangelistic operations of the church, speedily and widely established, that provision had to be made for their children. Hence, boarding schools as well as day schools were started. By 1750 the church had established in Germany an infant school, two boys' schools and a girls' school, a *pædagogium* and a theological seminary, in England a boys' school, in America two girls' schools and a boys' school, besides day schools in each of these countries and elementary mission schools in various heathen lands. In them all the Comenian principles ruled. Great emphasis was laid on religious training, Moravian teachers aimed at well-rounded Christian character. Considerable attention was given to handwork, both for boys and girls. The schools came to enjoy a fine reputation for thorough training and strict moral discipline. Much stress was laid on individual attention. In consequence, the schools became widely popular, especially among the cultivated classes, and at an early day they were opened to other than Moravian children. Thus the church came to recognize in this direction an opportunity for widening its mission. Moravian educational theories were formulated by Bishop

P. E. Layritz in *Betrachtungen über eine verständige und chrisliche Erziehung der Kinder* (*Thoughts on a rational and Christian education of Children*, 1776), giving suggestions for education up to twenty-one.

Subsequently, the educational activity of the church was greatly developed. In Germany fourteen day schools, primary and more advanced, are maintained. In addition there are ten boarding schools for girls and six for boys. Recently much interest has been shown in industrial schools carried on for girls from fourteen to seventeen years of age, who are instructed in the womanly arts of handiwork, music, housekeeping, etc. There are fourteen such schools. For the furtherance of all this educational activity a teachers' seminary for men was established in 1872, at Niesky, and one for women, in 1875, at Gnadau. The secular instruction is kept well up to the requirements of the Imperial Department of Instruction. Besides, a college and a theological seminary continue their distinctive work, and a missionary training institute is in operation. In England and Ireland there are five day schools. Two boarding schools for boys and five for girls are maintained, which, as regards secular education, are recognized secondary schools, adapted to the requirements of the University Local Examinations. A theological college has been doing its work since 1860, and a missionary training school was established in recent years.

In America Moravians began their work in 1735, settling first in Georgia and a few years later transferring their operations to Pennsylvania and the neighboring colonies. In 1739 Spangenberg wrote to Count Zinzendorf from Pennsylvania (see PENNSYLVANIA, EDUCATION) that "almost no one made the youth his concern." Naturally, therefore, Moravians in this country included educational effort in their plans. Their special zeal and capacity for the training of the young blossomed out in schools of various kinds, particularly in Pennsylvania, where the provincial authorities, during the first three quarters of the eighteenth century, did next to nothing for the cause of general education. In 1742 Zinzendorf inaugurated a school for girls in Germantown, later this was transferred to Bethlehem, Penn., where it still continues as a seminary and college for women. A school for boys was founded at Nazareth in 1743, but was transferred, two years later, to Frederickstown, where it flourished for some years. Linden Hall Seminary for girls was founded in 1746, and reorganized in 1794, at Lititz, Penn. During the next three years more than a dozen day schools were opened in Pennsylvania and elsewhere, for it was the policy of Moravian leaders to organize schools wherever they established a congregation or posted a preaching station. Unfortunately, these schools ceased when Braddock's defeat

opened the floodgates and a turbulent stream of savagery poured into the back country beyond the Blue Mountains. Thus Moravian educational effort was driven back upon itself and confined to the parochial and boarding schools of the settlements. Yet at this critical time a boys' school was opened at Nazareth in 1759. After reorganization in 1785, this has continued to the present time. The Salem Female Academy and the Salem Boys' School, N. C., were established somewhat later. Both are flourishing at the present time, the former under the name and character of the Salem Academy and College for Women. At the present time in America Moravians are operating three boarding schools for girls, two of which are also colleges, one boarding school for boys, and three day or parochial schools. In 1807 a theological seminary was established, and reorganized in 1858 under the name and character of the Moravian College and Theological Seminary.

In subjecting to scrutiny the curricula of these schools in their early days, it should be remembered that textbooks were rare. The accessories of the modern schoolroom were mainly wanting. Nevertheless in some of them special attention was paid to English, French, and German. Mathematics, astronomy, and history find their places beside the more elementary branches. At Nazareth Latin and Greek were read. Instrumental and vocal music and drawing contributed pleasant accomplishments. The Bethlehem spinning, needlework, and embroidery were famous, fitting young women for life. In the boys' school at Latitz opportunity was furnished for learning various trades. Unobtrusively and free from sectarian bias, religion was imparted as a matter of course. Despite defects and crudities, here were the elements of a liberal education. At the present time these schools measure up to the standards of similar schools elsewhere in the land.

In colonial days the Moravians maintained mission schools among the Indians. Wherever it was possible in the Indian country, within and beyond the bounds of the Pennsylvania colony, church and school were established. Wickersham, *History of Education in Pennsylvania*, pays these Moravian mission schools the following tribute: "Even Carlisle and Hampton, with all their merit, have less to recommend them as schools for Indians, than had the old Moravian towns of Gnadenhuetten, Friedenshuetten, and Friedensstadt."

The mission work of the Moravians has been extensive, and has embraced the West Indies, Central and South America, Labrador, Greenland, Alaska, the North American Indians, South Africa, East Central Africa, Australia, and Tibet. In each case educational and evangelistic work went hand in hand, various grades of schools being established in many lands.

The present extent of all Moravian educational work may be summed up thus. The Moravian Church operates 409 schools, employs on their account 312 teachers, and imparts instruction to 36,101 children and young people either bearing the Moravian name or intrusted by those of other names to its educational institutions. Moravian schools embrace a wide range scholastically, from humble elementary schools to technical institutions of recognized worth. There are kindergarten and primary schools, parochial day and boarding schools, industrial, teacher training and missionary training schools, colleges, university affiliations, and theological seminaries. True to their international character, Moravian schools, of one or another of these types, are doing their work on every continent, in many lands, among diverse peoples, and through various tongues. W. N. S.

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#### MORAVIAN COLLEGE AND THEOLOGICAL SEMINARY, BETHLEHEM, PA. —

The theological seminary was established in 1807 at Nazareth, Pa., and removed to Bethlehem in 1837, when a regular college course was established. After an interval at Nazareth, the institution was permanently established at Bethlehem in 1858 and incorporated under the present title in 1863. The college offers classical, Latin scientific, and general scientific courses leading to the A. B. and B. S. degrees. The seminary confers the B. D. after a two years' course preceded by classical studies. The enrollment in 1911-1912 was sixty-seven and the faculty numbers six members.

**MORBID** — Used particularly in speaking of ideas, is the equivalent of abnormal (*q v*). Morbid states may be temporary or persistent, but in either case do not necessarily denote a condition of insanity. S. I. F.

**MORBID PSYCHOLOGY.** — See PSYCHOLOGY, PATHOLOGICAL.

**MORBIDITY IN SCHOOL CHILDREN** — This term is used to indicate the disease rate, usually estimated in percentage for school children. Many extensive investigations in

different countries have now been made. In 1881 Hertel published the results of his classic study of over 4000 school children in the higher schools of Copenhagen. The result showed that 31.1 per cent of the boys and 39.4 per cent of the girls were suffering from chronic diseases, not including defects of sight and hearing. This investigation was followed in 1882 by the appointment of commissions both in Denmark and Sweden to study the subject. The Danish Commission reported on the health of 17,595 boys and 11,646 girls. Of the total number of boys 29 per cent were found ill, of the girls 41 per cent. The report of the Swedish Commission concerned the health of some 18,000 pupils of the higher schools. Axel Key who prepared the report for this Commission gave for the largest group the following statistics. Of 11,210 pupils of the higher boys' schools, 48.8 per cent were afflicted with chronic disease, the largest percentage of illness being found on the classic side. Of 3072 pupils in the higher girls' schools the percentage of illness was 61.7 per cent. These investigations in Scandinavian schools raised grave questions in regard to the conditions of school life in general. How far the school was responsible was not evident, but it seemed clear that the conditions of school life together with home study and an inadequate supply of sleep were in large part responsible.

Since these earlier studies many investigations of the health of school children have been made in Europe and in this country. While the percentage of illness is not as great usually as found by the Danish and Swedish Commissions, it appears that everywhere there are a large number of children suffering from chronic disease. And if we add to this the number that suffer from contagious diseases, and from the various defects of sight, hearing, etc., the number of children that need special hygienic care is likely to be large in any school class.

Many investigations in different cities of this country have shown a large percentage of the school children with chronic disease or physical defects. While it is impossible to generalize from the statistics at hand, it is a conservative estimate that 25 per cent of the children in any school are likely to be handicapped by illness or defect of some kind. On the basis of the investigation of 275,641 children examined in New York City in the years 1905 to 1908, of which 71.9 per cent were found to have diseases or defects, Mr. Wm. H. Allen estimated that the number of school children in the United States needing attention would be over 14,000,000. It is to be understood, however, that these large percentages are due to the inclusion of defects in sight and hearing and diseases of the teeth. While in other parts of the country the percentage of disease may not be as great, it is probably true that if the above-mentioned defects are included, this

estimate would not be too large. Public alarm or ridicule, however, is often based on a misapprehension of the condition just noted.

These children are in every school, their presence cannot be ignored, they make up in large degree the army of laggards, they are apt to be the cases that require discipline, and the cause of most of the absence from school, they make the task of the teacher difficult, and special hygienic care and medical inspection are necessary. W. H. B.

See MEDICAL INSPECTION

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**MORE, HANNAH** (1745-1833) — English author and philanthropist, born at Stapleton, near Bristol, the daughter of a schoolmaster. She showed a ready ability and keen intellect, and studied Latin, modern languages, history, and mathematics. Although she began writing early, her first serious work was a pastoral drama, *The Search after Happiness* (1762), to be acted by the children at her sisters' school. From this time on she devoted herself with remarkable success to a literary career, and in London made the acquaintance of the leaders in the world of literature, being a favorite with Johnson and Garrick, who produced some of her plays. The death of Garrick (1779) marked a change in her career, and she devoted herself almost entirely to devotional and religious literature. In 1785 she settled in the Cheddar district, at that time notoriously vicious and neglected. Influenced by Wilberforce, Hannah More and her sisters devoted themselves to uplifting and improving the population for ten miles around their home at Cowslip Green. The girls were employed at spinning and weaving, with the boys they were taught the Catechism, Psalms, and the Bible. A Bible class was held for adults. The Mores trained teachers for this work, and Hannah wrote some books. Anxious, however, as Miss More was for the uplift of her neighbors, she considered that reading was a sufficient accomplishment for laborers' children,

but farmers' children might for an extra fee learn writing and arithmetic. Another phase of Miss More's activity was her work against the Jacobin influences of the time and the writings of men like Tom Paine. Of this type was her *Village Politics*, by Will Chip, 1793. In 1794 she commenced the issue of *Cheap Repository Tracts*, consisting of stories for the poor pointing the morals of contentment and loyalty. These appeared three times a month, and were continued until 1797. The circulation in the first year is said to have been over two million copies. In 1818 she published *Moral Sketches of prevailing Opinions of Manners foreign and domestic, with Reflections on Prayer*. In 1799 appeared her *Structures on the Modern System of Female Education, with a View of the Principles of Conduct prevalent among Women of Rank and Fashion* (1799), in which she criticizes the prevailing demand for external accomplishments and a multitude of knowledge without any depth. Religion, she maintained, should be the most prominent part of education, for "we have to educate not only rational, but accountable beings." At the same time the education of women should tend to make them fit companions and helpmates for men, and "the chief end to be proposed in cultivating the understandings of women is to qualify them for the practical purposes of life." Miss More also wrote *Hints towards forming the Character of a Young Princess* (1805), a book of advice on the education of Princess Charlotte, by some thought to have been written at the request of Queen Charlotte.

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**MORE, SIR THOMAS** (1478–1535) — English statesman and author, born in London, the son of a barrister. He attended St. Anthony's School in Threadneedle Street, where also were Colet and Latimer. On leaving school he was placed in the household of Cardinal Morton, Archbishop of Canterbury, who recognized the boy's ability and had him sent to Oxford (1492). More was entered at Canterbury Hall, which was later incorporated with Christ Church. Here he met Linaere and Grocyn (*qq v.*), and from the former learned Greek. He had broad interests, and besides his ability in Latin and Greek, he had a knowledge of French, history, mathematics, and music. In 1494 his father, fearing for his religious opinions, withdrew him from Oxford and entered him at New Inn, and later at Lincoln's Inn. In 1497 More met Erasmus (*q v.*), and the two became firm friends; and it is probable that through Erasmus' influence More continued his scholarly pursuits. For a time More had thoughts of retiring into clerical life, but setting them aside he devoted

himself to law with great success. In 1504 he entered Parliament, in 1515 he was sent on a mission to the Low Countries, and there he met many humanist scholars, chief among them Peter Giles, and began what was later published as the second part of the *Utopia*, in 1521 he was knighted, and, enjoying the favor of Wolsey, he was made speaker of the House in 1523, in 1529 he was created Lord Chancellor, retiring into private life in 1532. He joined Henry VIII in his early attack on Luther, but while the King broke away from the Catholic Church, More remained a staunch member, and this, combined with his opposition to the King's marriage to Anne Boleyn, brought him to the scaffold in 1535.

More was a keen man with a strong sense of humor; devoted to the Church, he was not blind to the defects of many of its ministers, with his piety he combined a great love of the liberal studies, to which he added a love of music and art. As an author he composed many poems in Latin and English, in prose his chief works were written in vigorous language, if clumsy in construction, in defense of Papacy against the reformers at home and abroad. His best known work is the *Utopia*, written in Latin and published in 1516 at Louvain, and frequently republished at other places. The earliest English translation was made in 1551 by Raphe Robinson, and has been reprinted by the Oxford University Press. The *Utopia* (Ὀὐ τόπος) is a description of an ideal country free from the abuses of the Old World. While More does not pretend to give an exposition of the ideal system of education, there is sufficient indication of his views on the subject. "Of all the pleasures," he says, "they esteem those to be most valuable that lie in the mind, the chief of which arises out of true virtue . . ." Higher education is only for those who have the ability and inclination, for these education is compulsory, and incompetence is punished by relegation to the class of laborers, the vacancy being filled from below. The studies are carried on in the vernacular, and include music, logic, arithmetic, geometry, and astronomy, while they show a ready ability in learning Greek. Strangely enough, More makes no reference to Latin. For the majority lecture halls are open daily, and they study according to their taste and the demands of their occupations. Moral education of children and youths is cared for by selected priests, who with the adults influence by force of example rather than by compulsion of rules. Importance is attached to physical exercise, which includes agricultural labor and handwork, riding and military exercises, sufficient sleep and moderation in eating and drinking. It must be said, however, that More, unlike other authors of ideal commonwealths, does not lay so much stress on a thoroughgoing system of education as might be expected. In his family life More



paid considerable attention to the education of his children, three daughters and a son, for whom he kept tutors. On the education of women he held that both sexes should be educated alike, for "I do not see why learning may not equally agree with both sexes," for the "true and solid fruits of learning" are primarily the virtues. If women are by nature mentally less able than men, then the aim of instruction must be to remedy the defect. Among the studies which, according to his letters, his children pursued were astronomy, Latin, declamation, composition of verses, exercises in logic, and philosophy. His favorite daughter, Margaret, wrote Latin with such force and purity of style that More's friends could not but believe that it was written by a man.

See further **UTOPIAS IN EDUCATION**

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**MORNING EXERCISE** — See **OPENING EXERCISE**

**MORNINGSIDE COLLEGE, SIOUX CITY, IA** — A coeducational institution, maintaining academic, collegiate, music, education, and summer school departments. The entrance requirements are fifteen units. The A B degree is conferred on students who complete certain courses which are arranged in five groups. The enrollment in the college proper was 283 in 1911-1912. The faculty consists of thirty-eight members.

**MORPHOLOGY** — See **BOTANY**.

**MORRICE, THOMAS** (fl 1619) — The writer of a pedagogical booklet, entitled *An Apology for Schoolmasters, Tending to the Advancement of Learning, and to the Virtuous Education of Children*, 1619. Morrice insists on the dignity of schoolmasters' work. Teachers must not make the profession of the liberal sciences servile. The schoolmaster is in the same case with the professors of divinity, law, physic. He must be learned, of ready utterance, and perfect pronunciation of speech. As to the subjects of instruction, first is "pure and perfect English, to be delivered with decent action and gesture, with a right accent and distinct pronunciation", next "pure and perfect Latin," and "perhaps" Greek. In any case it is the teacher's business to study the child's nature and disposition, and to frame

instructions and precepts thereunto, according to the child's capacity. Sports are to be introduced for recreation, and moderate exercise for health of the body. He particularly emphasizes the visualizing value of traveling for the youth. F W.

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**MORRILL ACT** — See **AGRICULTURAL EDUCATION, NATIONAL GOVERNMENT AND EDUCATION, TECHNICAL EDUCATION**

**MORRILL LAND GRANT** — See **AGRICULTURAL EDUCATION, NATIONAL GOVERNMENT AND EDUCATION, TECHNICAL EDUCATION**

**MORRIS BROWN COLLEGE, ATLANTA, GA** — A coeducational institution for colored students, founded in 1881 under the African Methodist Episcopal Church, and opened in 1885. Grammar, preparatory, collegiate, normal, musical, theological, commercial and industrial departments are maintained. Degrees are conferred. The enrollment in 1911-1912 was 851 in all departments.

**MORRISVILLE COLLEGE, MORRISVILLE, MO** — A coeducational institution chartered in 1872 under the control of the Methodist Episcopal Church, South. Academic, collegiate, music, and expression departments are maintained. The entrance requirements are equivalent to twelve points of high school work. The A B, P d B, and A M degrees are granted.

**MORSE, JEDEDIAH** (1761-1826) — Author of the first American schoolbooks on geography. He studied at the Woodstock Academy, and was graduated at Yale College in 1783. He taught school for a few years, and was one year a tutor at Yale. Engaging in the work of the ministry, he was pastor for thirty years of the First Congregational Church at Charlestown, Mass. He was active in the formation of the Society for the Propagation of the Gospel (1792), and he was the founder of the Association for the Reformation of Morals. But his most abiding labor was in the line of authorship of schoolbooks on geography. His *Geography Made Easy*, published in 1784, was the first American schoolbook on the subject. This was followed in 1789 by his *American Geography, or a View of the Present Situation of the United States*. In 1797 he published his *Elements of Geography*, and in 1814 his *Universal Geography*. For more than thirty years these were almost the sole textbooks on the subject used in American schools, and with the introduction of the study in colleges (Harvard, 1816) they also

found a place in American colleges. In connection with his son, Richard C., Mr. Morse published in 1823 a comprehensive *Universal Gazetteer*. He died at New Haven on June 9, 1826. His son, Sidney Edwards Morse (1794-1871), also attained some distinction as an author of school books on geography. Sidney was graduated from Yale College in 1811, and later studied for the ministry. He published several textbooks on geography, and invented a new system of printing maps in colors. With his brother Richard he established the *New York Observer* in 1823, which he continued to edit until 1858.

W S M

See GEOGRAPHY

### MORTALITY, RATE OF, AMONG CHILDREN

— In vital statistics, the rate of mortality, or death rate, is determined by comparison of the number living and the number dying at each age of life for a given area of country. Reliable statistics are obtainable only for certain restricted regions in the United States, owing particularly to the laxity of regulations governing the registration of births. The table reported here was prepared by the Secretary of the State Board of Health of Massachusetts for the years 1893-1897, and may be considered reliable for the region concerned and fairly typical of the conditions prevailing over the greater portion of this country.

DEATH RATE, PER 100, FOR BOYS AND GIRLS IN MASSACHUSETTS

YEAR	1	2	3	4	5	6	7	8	9	10
Boys	17.23	4.22	2.00	1.40	1.08	0.81	0.65	0.54	0.45	0.39
Girls	14.70	4.00	1.92	1.40	1.00	0.83	0.66	0.55	0.46	0.49

YEAR	11	12	13	14	15	16	17	18	19	20
Boys	0.33	0.29	0.28	0.40	0.36	0.43	0.49	0.53	0.58	0.62
Girls	0.35	0.31	0.31	0.44	0.40	0.47	0.54	0.58	0.61	0.65

Inspection of this table suggests the following inferences: (1) For both sexes the first year of life has by far the highest mortality. (2) Male children under three have uniformly a higher death rate than female children of the same age. (3) During the years five to twenty-one, inclusive, the female death rate is slightly higher than the male. (4) The year of minimal mortality is the twelfth for girls and the thirteenth for boys, or the year just at the dawn of puberty in each sex. (5) There is no evidence that attendance at school affects the death rate either favorably or unfavorably.

E. M. Hartwell's report, in 1894, on the mortality of children in the city of Boston alone,

which was based on data for the census years 1875, 1885, and 1890 shows, for each age, a higher death rate than that given above for Massachusetts as a whole. Hartwell found the year of minimal mortality in Boston to be the thirteenth for boys (0.34 per cent) and the twelfth for girls (0.32 per cent). Both distributions, however, concur in showing that "the period 10-15 is the half-decade in all human life in which fewest deaths occur to a thousand living," and that the minimal year is earlier for girls than for boys. It will be noted that the maximal resistance to fatal disease coincides with the maximal rate of growth in height and weight.

G M W

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**MOSCOW. UNIVERSITY OF** — See RUSSIA, EDUCATION IN

### MOSELLANUS, PETER (1493-1524)

— Humanist scholar, so called from the position of his native town, Bruttig, or Proteg, on the River Moselle. He became a student in the University of Cologne in 1509, and studied under the humanist Hermann von dem Busche, was fellow pupil with Erasmus at Deventer, and learned Greek from Johannes Cæsarius. He then studied at Freiburg and in 1515 went to Leipzig, and in 1517 he succeeded Richard Croke, the successor of Erasmus, as Reader of Greek at Cambridge. Mosellanus gave a notable inaugural address *de variarum linguarum cognitione*. Greek was still a "suspect" subject, and this, with his advocacy of the introduction of Hebrew gave color, at that time, to a twofold charge of "heresy" from ecclesiastics. Of frail body, enfeebled by sickness and privation, he bore himself bravely, a martyr to the humanities, and in a celebrated address given in 1528 won the audience of students as against his critics. In the year of his appointment, 1517, he was able to publish his collection of Latin Colloques, which he called *Padologia*, as to which he received a letter of congratulation from the great Erasmus. Forty-five editions of this work appeared by 1550, one of these in England, 1532, by Wynkyn de Worde. These dialogues graphically disclose the state of life in Leipzig University, as the *Manuale Scholarium* of 1480 had described the Heidelberg students. (See STUDENT LIFE.) Lily's *Latin Grammar* borrowed the plan of the verbal figures from Mosellanus, though with alterations. Malin's *Consuetudines* (1561) for Eton include the study of the Mosellan figures by Forms VI and VII.

Mosellanus died in 1524, at the age of thirty-one years. In 1528 in the *Ciceronianus* he received the high praise of Erasmus: "There is

nothing great which might not have been expected from him, had not a premature death snatched him from our midst in youth, scarcely entered into the arena of glory, to the great grief of all the learned and the no small loss of learning" F W

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**MOTHERGOOSE** — See NURSERY RHYMES, LITERATURE, CHILDREN'S

**MOTHER PLAYS** — See FROEBEL, KINDERGARTEN, INFANT EDUCATION

**MOTHERHOOD, EDUCATION FOR** — See PARENTHOOD, EDUCATION FOR

**MOTHERS' CLASSES AND MEETINGS** — See PARENTS' MEETINGS

**MOTIVE** — That phase of a volitional process which precedes in consciousness the decision or choice. Thus the motive for going to have a tooth pulled may be the pain which it causes. The motive for not having it pulled may be the thought of disfigurement. The motive has sometimes been treated as essentially an intellectual or cognitive process. Wundt recognizes, on the other hand, two aspects in every motive, an affective or feeling component, which he calls the impelling feeling, and the ideational element, which he calls the moving reason. Thus he says, "When a beast of prey seizes his victim, the moving reason is the sight of the victim, the impelling feeling may be either the unpleasant feeling of hunger or the race-hate aroused by the sight" (*Outlines of Psychology*, § 14, 4). It may be pointed out that even when there is an impelling feeling included in a motive, the feeling must be consciously recognized as a part of the situation before it can serve to determine the volition. It need not, however, be reduced to a cognitive process through this conscious recognition.

The educator is interested in the question of motivation of action from two points of view. First, in practical procedure the teacher must ask how can adequate motives be found to stir up activity of the right sort? Secondly, the teacher is concerned with the subsequent effects of the employment of motives. Thus the hope of reward or the fear of punishment may be practically effective, but may so sap the independence of the pupil as to render him incapable of intelligent self-guidance in later life. The problem of motives is especially important in school life, since the school environment is in a high degree artificial, and genuine motives are difficult to provide.

In connection with the training of the will, it is to be pointed out that the cultivation of clear, broad insight is the surest guarantee of correct behavior. In terms of the analysis of motive suggested in the above paragraph, this means the cultivation of clear intellectual insight into the needs of individual and social life as ground for action. C H J

#### See INTEREST

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**MOTOR ABILITY** — See MOTOR EDUCATION, MOTOR INSTINCTS, etc

**MOTOR CONTROL** — See HABITS

**MOTOR DEFECTS** — See MOVEMENT DISORDERS

**MOTOR EDUCATION** — See ACTIVITY, also MOTOR PROCESSES

**MOTOR INSTINCTS** — See INSTINCTS

**MOTOR PROCESSES** — The nervous system may be roughly divided into sensory and motor regions. The sensory regions are those which receive stimulations from the external world, and the motor regions are those which send out impulses to the muscles of the body. The relation of sensory processes to consciousness has always been fully recognized. Color and sound and the other sensations are all readily recognized as sources of conscious experience. The discussion of sensation has therefore always been an important chapter in any treatment of the relation between mind and body. On the other hand, the relation between the motor processes in the nervous system and conscious experience is much more complicated and obscure. Certain motor processes, such as those of reaching out the hand to grasp a desired object, are obviously related to the conscious processes of choice and volition. But it very early became apparent to students of human behavior that many of the contractions of the muscles are in no wise to be treated as voluntary processes. The contractions involved in respiration, in many of the instinctive activities, and in most of the emotional expressions are not matters of voluntary choice. There is, nevertheless, a traceable connection between all of these muscular activities and the general state of consciousness, even where volition is not involved. This is conspicuously true of the emotional reactions. These reactions have then conscious parallels in very pronounced states of feeling. Not only is feeling related to the muscular activities, but it has become obvious during the more complete analysis

of the perceptual processes that here also the muscular activities are of importance thus in describing the methods which we follow in visual perception, some place must be given to the movements Berkeley, Helmholtz, Wundt, and others have laid great emphasis upon eye movements as factors in the development of visual space perception Here again consciousness is not of the volitional type, but rather of the perceptual type Any defect in the movements of the eye will reflect itself in the change in the form of visual knowledge

So fully has the importance of motor processes come to be recognized in recent psychological discussions, that a number of theories have been propounded to explain their place in the general economy of mental life In a paper in the *Psychological Review* of 1896 Dewey criticizes that doctrine of the conditions of mental life which distinguished sharply between the motor processes and the sensory processes He holds that both of these processes are involved as necessary conditions of every state of consciousness, and that both contribute equally to the completed conscious activity This may be made clear by quoting briefly one of his illustrations "Take the withdrawal of the hand from the candle flame for example What we have is a certain visual-heat-pain-muscular-qualé, transformed to another visual-touch-muscular-qualé" That is, the reaction is just as essential to the complete recognition of the object as is the visual experience

The tendency to emphasize motor processes as equally significant with sensory processes appears also in the writings of MacDougall in a series of articles in *Mind* for 1898 MacDougall points out that consciousness is present only where muscular and nervous processes are being organized into new forms of behavior That is, consciousness would disappear entirely, if the nervous system were not involved in working out certain new connections

A third theory is that set forth by Munsterberg in his "action theory" Munsterberg holds that the motor processes in the nervous system condition the vividness and value of all experiences The more open the motor channels, the greater the vividness of the experience, thus when one is ready to act instantly upon the reception of a stimulus, the experience will be much more vivid than when he is unprepared for action The term "value" as used by Munsterberg differs very little from the general term "emotional tone" If the stimulus is discharged into certain sets of muscles, the emotional tone is pleasurable; if discharged in other directions, it takes on a different character

An older doctrine with regard to the motor processes was that defended in his earlier writings by Wundt, and known under the

name of "innervation theory" According to this theory, the outgoing motor processes, as they leave the cerebrum, are conditions for certain phases of experience which are co-ordinate in importance with the conscious elements aroused by incoming sensory processes

To the untechnical student of mental development the emphasis which psychologists lay upon the motor processes seems somewhat extravagant One reads with great reserve the statement that a very large part of mental life is drawn from muscle sensations or joint sensations The technical student of mental processes, on the other hand, finds himself constantly driven to the recognition of the fact that sensory qualities are bound together in space percepts through movement, and that the whole end of conscious activity is to be sought in some form of behavior Many students of psychology are prepared to use the word "behavior" as the most important general word in their psychological vocabularies The sensory stimulus is significant merely because it sets going some organized train of behavior The psychology of habit, in addition to the other topics above mentioned, immediately suggests itself as an important part of this general discussion

To the teacher the recent discussion of motor processes is significant because it draws attention to the fact that activity of some type is essential to all educational development There is no such thing, as William James points out in his *Talks to Teachers*, as "sensation without behavior" (page 26) "No truth however abstract is ever perceived that will not probably at some time influence our earthly action You must remember that when I talk of action here I mean action in the widest sense. I mean speech, I mean writing, I mean yesses and noes, tendencies 'from' things, and tendencies 'toward' things; and I mean them in the future as well as in the immediate present" James further summarizes his psychological view of education by defining education as training in behavior

All of the recent movements toward the introduction of constructive work into the school emphasize the practical importance of muscular activity for education So enthusiastic have some defenders of activity been in their advocacy of this type of school work that they have criticized the older forms of education as entirely devoid of motor processes Students of education should recognize the falsity of the criticism in view of the fact that speech is a form of motor process as well as is manual work Furthermore, some of the recent advocates of constructive work have stated that unless children are given something to do in the schools their motor organism is likely to atrophy We are told that the motor areas of the cerebrum will suffer if not properly exercised by school practice Here again attention should be turned to the fact that

## MOUNT ALLISON COLLEGE

some kind of motor process will always follow upon the stimulation of the nervous system. There will be inner organic movements if no other. The major need of the school is not activity on the ground that it was entirely absent in the earlier forms of education, but rather the selection of those forms of motor activity which are most likely to develop the individual. If manual training is a more satisfactory form of activity in order to produce certain types of perceptual recognition, it should be introduced, not because it is a form of motor process merely, but because it is a better form of motor process than verbal reaction for the purpose in hand. There may be certain cases in which verbal reaction is very much more economical and advantageous. In this case the verbal reaction will draw the attention of the learner to certain distinctions that could not be clearly marked in any constructive activity.

All forms of behavior, therefore, should be considered in any complete psychological discussion of education. Indeed, it is probable that the motor processes will receive increasing attention in future psychological analysis of children's consciousness and development. That expression as well as impression is important to the teacher is demonstrated beyond the possibility of any doubt, and the study in detail of the different forms of expression remains as one of the major lines for future educational investigation.

C H J

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**MOUNT ALLISON COLLEGE UNIVERSITY, SACKVILLE, N B** — Established in 1858 as Mount Allison Wesleyan College, the present title being adopted in 1886. The institution is owned by the General Conference of the Methodist Church of Canada. The following courses are given: arts leading to A B, divinity leading to B D., engineering leading to entrance on the third year of Applied Science at McGill University, and honor courses in classics, mathematics, science, philosophy, and English language and literature. The institution is coeducational, and is affiliated with McGill University. The faculty consists of eighteen members, and the student body 250 in 1912.

**MOUNT ANGEL COLLEGE AND SEMINARY, MOUNT ANGEL, ORE** — An institution founded in 1887 and conducted by

## MOUNT ST. MARY'S COLLEGE

the Benedictine Fathers. Preparatory, commercial, academic, and collegiate departments are maintained. Degrees are conferred in arts, letters, science, and music. The enrollment in 1911-1912 was 175.

**MOUNT HOLYOKE COLLEGE, SOUTH HADLEY, MASS** — An institution for the higher education of women chartered in 1836 and opened in 1837 as Mount Holyoke Seminary through the efforts of Mary Lyon (*qv*), who was president from 1837 to 1849. In 1888 the institution was chartered as Mount Holyoke Seminary and College, and in 1893 obtained the present title. The entrance requirements are fifteen units, students are admitted by certificate or examination. The A B degree is conferred on completion of a course of two years of prescribed and two of elective work. The enrollment in 1911-1912 was 771. The staff consists of 115 members.

See LYON, MARY, WOMEN, HIGHER EDUCATION OF.

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**MOUNT SAINT AGNES COLLEGE, MOUNT WASHINGTON, MD** — A Catholic educational institution founded in 1867 and chartered as a college in 1890. A high school and schools of art and music are maintained in addition to the college department. Requirements for admission are the completion of a classical high school course. The A B degree is conferred by the institution.

**MOUNT SAINT JOSEPH'S COLLEGE, BALTIMORE, MD** — An institution incorporated in 1876 and conducted by the Xavierian Brothers. Commercial, classical, scientific, and normal courses are given. Students are admitted to the college department on completion of a high school course. The college confers the A. B., B. S., and A. M. on completion of the appropriate courses. The enrollment in 1910-1911 was 169.

**MOUNT ST. JOSEPH COLLEGE, DUBUQUE, IA.** — An institution for the higher education of women, founded and maintained by the Sisters of Charity of the Blessed Virgin Mary. College, academic, commercial, preparatory, music and art departments are maintained. The entrance requirements are twelve units. The A B and B S degrees are conferred. The enrollment in 1908-1909 was 221.

**MOUNT ST. MARY'S COLLEGE, EMMITSBURG, MD.** — A Catholic college with a secondary school department founded in

1808 and conducted by secular clergy. A four years' course leads to the A B, degree, and the A M is also conferred. An ecclesiastical seminary is also attached to the college. The enrollment in 1910-1911 was 357. The teaching staff consists of eighteen members.

**MOUNT UNION COLLEGE, ALLIANCE, OHIO**—A coeducational institution established in 1846 as Mount Union Seminary, and chartered as a college in 1857. An academy, college, and conservatory of music are maintained. The entrance requirements are fifteen units. Classical and scientific courses are offered leading to the A B and B S degrees. There was in 1911-1912 an enrollment of 183 students in the college proper.

**MOUNT VERNON COLLEGE, MOUNT VERNON, OHIO**—A coeducational institution maintained since 1905 by the Seventh Day Adventists with college, normal, industrial, commercial, academic, music, and nursing departments. Four years of high school work are required for entrance; courses are given leading to the A B and B S degrees. The enrollment in 1911-1912 was 162. The teaching staff consists of nineteen members.

**MOVEMENT DISORDERS** — These are very varied and limit the ability of the individual to properly react through stimuli. They may be grouped as (a) slowings (see RETARDATION), (b) lessened power (e g paresis (*qv*), paralysis (*qv*), monoplegia, hemiplegia, paraplegia, diplegia, rigidities, and contractures), and (c) increased motility (e g tremor (*qv*), spasm (*qv*), tic (*qv*), and convulsion (*qv*)), see also APHASIA, ATAXIA; CHOREA, EPILEPSY, INTOXICATION, KATATONIA, PAROXYSM, SPEECH DEFECTS, STAMMERING, STUPOR, VERTIGO S I F

**MOVING PICTURES AS MEANS OF INSTRUCTION** — See VISUAL AIDS TO TEACHING

**MOVING SCHOOL** — The moving school was the first and the most distinctive step in the evolution of the district school (*qv*). The original town school of New England had been located in the village during the entire year and was taught (except in the largest towns) by a single teacher. The moving school was this school of one teacher located in various parts of the town during successive periods of the school year. It was most prevalent during the first half of the eighteenth century. The more remote conditions leading to its creation were (1) social disintegration, (2) dispersion of population, (3) decentralization of local institutions due to growth of democracy, (4) example furnished by the scattered private master and dame schools, (5) renewed interest in education, which

brought about the passage of laws imposing heavier fines upon towns for failure to maintain schools (in 1701 and 1718) and which secured, also, a rigid enforcement of such laws. The immediate reason for its establishment was the abolition of the tuition tax and the raising of the entire support of the school by the town rate. Many of the inhabitants throughout the town kept their children at home rather than pay the town tax, experience proved the impossibility of raising the master's salary by the combined town rate and tuition tax. On the other hand it cost little or no more to maintain a school by town rate than to pay a fine by town rate. At this juncture the people in the outer sections would not vote the town rate for a school unless they enjoyed its benefits equally with the inhabitants of the village. Thus the village was compelled to yield and the moving of the town school into the various outer sections resulted.

The next step in the evolution of the school district was the divided school (*qv*) H U

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**MUHLENBERG COLLEGE, ALLENTOWN, PA** — Formerly Allentown Academy, incorporated under the present title in 1867 and now under the control of the Evangelical Lutheran Ministerium. Academic and collegiate departments are maintained. The entrance requirements are fourteen units. The A B, B S, and Ph B are conferred on completing the appropriate courses. The total enrollment in 1910-1911 was 278. The teaching staff consists of thirteen members.

**MULCASTER, RICHARD** (c 1532-1611) — English schoolmaster and educational writer, born at Brakenhill Castle of a border family. He was educated at Eton under Nicholas Udall (*qv*) and in 1548 was at Cambridge as a King's scholar. In 1555, however, he is found at Christ Church, Oxford, where he graduated in 1556. He was appointed the first headmaster of Merchant Taylors' School (*qv*) and taught there successfully for twenty-five years. In addition to Latin, Greek, and Hebrew he devoted attention to vocal and instrumental music and drama. In 1573-1574 and 1575-1576 he presented plays before Elizabeth, who later appointed him rector of Stanford Rivers in Essex. Owing to a dispute with the governors of the school, he resigned in 1586, but again appeared at the school in 1588 as an examiner (See EXAMINATIONS). For several years he seems to have attended to his clerical duties, but in 1596 he was appointed headmaster of St Paul's School, where he remained until 1608. He died in

straitened circumstances in 1611. Whatever Mulcaster's claim to reputation as a teacher may have been, he will always have a place in the history of English education as the author of two works full of ideas and suggestions which were some three centuries in advance of his time. Unfortunately his style of writing was not one to command attention and although his works possess a richer educational content than those of his contemporaries, Ascham and Elyot, they remained neglected until they were restored by the revival of educational interest in the last century. In 1581 appeared *Positions wherein those Primitive Circumstances be examined, which are necessarie for the Training up of Children, either for skill in their Books or Health in their Bodie*. The work is dedicated to Queen Elizabeth. The *Positions* are the fundamental principles for an efficient system of education. The author gives his reasons for writing the treatise in English: those who know Latin will find just as much ease in understanding English, and generally that language is better understood which is used from childhood, "as our first impression is alwaie in English before we do deliver it in Latin. And in persuading a known good by an unknown waie are we not to call unto us all the helpes that we can, to be thoroughly understood?" Mulcaster begins with the earliest education of the child, whose individuality must be respected by teacher and parents. All classes of society are to attend the elementary school where reading, writing, drawing, and music are taught, the vernacular is always to precede a foreign language. Mulcaster is probably the earliest advocate of drawing "by penne or pencil, . . . verie requisite to make a man able to judge what that is which he byeth of artificers and craftsmen, for substance, forme and fashion, durable and handsome or no, and such other necessarie services, besides the delitefull and pleasant." In the teaching of music (singing) he emphasizes the value of proper breathing. A great part of the work is devoted to the value and character of physical training, for Mulcaster insists on the *mens sana in corpore sano*. This part of the treatise is based very probably on the *De Arte gymnastica* of Girolamo Mercuriale (1530-1606). Mulcaster not only gives a large number of exercises and games to train all parts of the body, but he suggests the proper seasons of the year and the time of day for the various exercises. In dealing with school buildings he emphasizes the importance of air, light, and playgrounds. The elementary school should be compulsory for all, rich and poor, boys and girls. Not all can be scholars or learned in the classics, but all should have the elements, and in higher education greater differentiation of courses is desirable. On the education of girls and women he takes up a very progressive position, he argues as follows: "Our country doth allow it, our duetie doth enforce it, their

aptnesse calls for it, their excellencie commandes it and dare private conceit once seem to withstand, where so great and so rare circumstances do so earnestly commende." But handwork for girls is not to be neglected. On the question of private tutorial education as opposed to public he ranges himself strongly on the side of the latter and overthrows all the traditional arguments in favor of private tuition. So, too, he is at one with Ascham in opposing the prevailing system of foreign travel. But it is on the question of teachers that Mulcaster becomes almost prophetic. Setting up high standards for the teacher (professional spirit, all-round knowledge, and discretion), he insists as strongly on their proper training. He recommends the establishment of training colleges at the universities parallel to other professional schools for divines, physicians, and lawyers, — an ideal only just beginning to be realized.

In 1582 appeared *The First Part of the Elementarie* which deals with the correct use of written and spoken English. This is one of the earliest as well as one of the strongest pleas for the cultivation of the vernacular. Mulcaster is opposed to the bondage to Latin. "I love Rome," he says, "but London better, I favor Italy, but England more, I know the Latin, but worship the English." He discusses the origin of language, orthography, and language reforms, and gives rules for orthography and composition. A *Second Part* was apparently contemplated, but never appeared. Mulcaster also wrote verses in Latin and English, indifferently in both, and was the author of a *Cato Christianus*. Much was done by Quick (*qr*) in drawing attention to the original and suggestive works of the practical schoolmaster who ruled over the two greatest London schools of his day.

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**MULLANY, PATRICK JOHN (BROTHER AZARIAS)** (1847-1893) — Educator of the order of Christian Brothers. He was educated in the colleges of his order in America and subsequently studied in England and France. He was president of Rock Hill College (1879-1886) and professor in De La Salle Institute

in New York (1889-1893) He was one of the founders of the Catholic Summer School at Plattsburgh, N Y, and wrote numerous papers on education and philosophy, as well as books on the philosophy of history, literature, and the relation of Aristotle to the Christian church.  
W S M

**MULTIPLICATION** — In its primitive form, the operation of taking one number as many times as there are units in another, or of folding a number on itself many times, from *multus* (many) and *plicare* (to fold) The word is related to the English *manifold*, and it appears in various languages with a similar kind of translation Thus it is found in the early printed books of Germany in the form of *manngfalten* and *vervielfachen*, as well as *Mehrung*

The idea of "leading" a number into this manifoldness is seen in such Latin expressions as this from Jordanus (1496 edition of his arithmetic) "Si aliquis numerus ducatur" Clichtoveus (1503 edition) says "Multiplicare, est ex ductu vnus numeri in alterum producere," and similar expressions are found in most Latin works This is the origin of our common expression in algebra, "*a* into *b*"

The definition of multiplication has always given trouble on account of the continual broadening of the idea. As soon as a fractional multiplier appears the primitive definition ceases to be valid For example, we do not look out of a window half of a time, and hence the expression " $2\frac{1}{2}$  times 4" is meaningless unless we extend the significance of multiplication and of the word "times" This has been done, and no one objects to saying " $2\frac{1}{2}$  times 4" at present, although many would still object to saying " $\frac{3}{4}$  times 4," which would be quite as justifiable if it were not that we have as short expression, and one that is more exact, in " $\frac{3}{4}$  of 4" There is no definition of multiplication that covers the cases needed in elementary and secondary classes, and that is at the same time simple enough for children It is doubtful if there is any advantage in learning a definition like the familiar one that "multiplication is the process of taking one number as many times as there are units in another" The important thing is that the term should be correctly used, but that a definition covering the case of  $-\frac{1}{2}\sqrt{3} \times (-\frac{2}{3}\sqrt{-1})$  should be learned by beginners is not at all necessary One of the best of the elementary definitions is the one that states that multiplication is the process of finding a number that is derived from the multiplicand in the same way that the multiplier is derived from unity; but this is open to the objections of difficulty as well as uncertainty It is, however, one of the oldest of our definitions, appearing in the works of Maximus Planudes in the fourteenth century and in many of the first printed textbooks

Of the terms employed, "multiplicand" comes from *numerus multiplicandus*, "Anglico ye nombur the quych to be multiplied" (as our earliest English manuscript on the subject translates it) It appears in this full form in most Latin arithmetics, but finally *numerus* was dropped, as in the writings of Licht (1500), Huswirt (1501), and Cirvello (1505), leaving only *multiplicandus* The word "multiplier" has had a varied career, appearing as *multiplicans*, *multiplicator*, *multiplicante*, and *multipliant*, besides having various other forms The word "product" is relatively modern as limited to multiplication It has as often been applied to the result of addition, meaning simply the outcome of any operation Instead of product, *factus* has been used by good writers, and there is some reason for this usage in view of the word "factor" This brief historical sketch is introduced to suggest a doubt as to the necessity for the difficult technical terms now taught to children The early writers spoke of the number to be multiplied, which in Latin is *numerus multiplicandus*, and there is no reason why we should not say "number to be multiplied" to-day, at least to primary children Neither is there any reason why we should not use "answer" or "result" for all of the operations In time it is probable that some such simple terms will be evolved

As to the operation itself, the history is very long. Bhaskara (*qv*) gives five plans, and

Pacioli (*qv*) gives eight One of these was known as the "grating" or "quadrilateral" plan, and is here shown from an Italian manuscript of about 1420 It was also known as the "gelosia" plan, because the Venetians called the gratings in front of their windows by this name, — whence the modern French *jalouse* for a kind of a

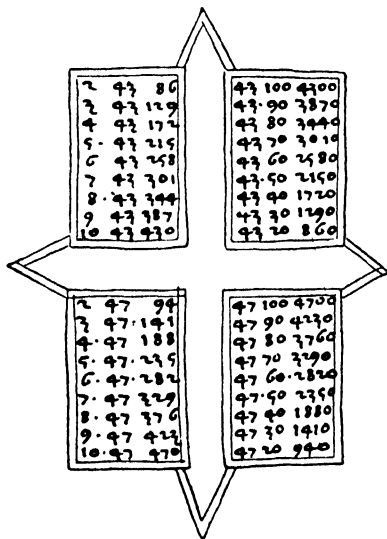


## MULTIPLICATION

blind Out of all the plans that have been suggested, only one remains in common use. This was invented by the Florentine business computers, and went by the name of the *bericocolo* method, because it represented the numbers arranged in little squares such as were found on a kind of cake (*bericocolo*) and used in Tuscany. The Venetians more commonly called it by the name *scachieri* (*scachiero*, and other variants) because the little squares resembled those on a chessboard. It was long after the time of the first printed books that the older methods were completely abandoned for this one. The object of this historical sketch is to suggest that it is quite probable that we have not yet settled upon the best method. The introduction of decimal fractions (see FRACTIONS) has made it often necessary to multiply to only a limited number of decimal places, and the ordinary method carries the work farther than necessary. It seems possible that we may soon be teaching in the schools some contracted process that will carry the result only as far as needed.

The multiplication table has had three general forms. Of these the column arrangement is the oldest, being found in the clay tablets of ancient Babylon, of the third millennium B.C. The column table was often very extensive, running up to factors in the hundreds. The products were not memorized, but the tables were used for reference, and when a product was found in this way, the multiplication was said to have been performed "*per-colonna*" (by the column). The following are parts of such a table taken from a Florentine manuscript of about 1450

1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	54
7	7	14	21	28	35	42	49	56	63
8	8	16	24	32	40	48	56	64	72
9	9	18	27	36	45	54	63	72	81
10	10	20	30	40	50	60	70	80	90



A second form was used by the more scientific writers. It was the square array, and was commonly called in Medieval and Renaissance

## MULTIPLICATION

times the Pythagorean table (*Mensa Pythagorica*, *Tavola Pitagorica*, *Table de Pythagore*). It first appears in print in an edition of Boethius, although Boethius probably never knew such a table, this being an interpolation of some later copyist. The following illustration shows the table as it appeared in the first edition

Teträgona.					Longuudo.					Scabidynas.												
Prima voces.	1	2	3	4	5	6	7	8	9	10	Longuudo.	1	2	3	4	5	6	7	8	9	10	Scabidynas.
1	*										1	*										
2	2	*									2	2	*									
3	3	6	*								3	3	6	*								
4	4	8	12	*							4	4	8	12	*							
5	5	10	15	20	*						5	5	10	15	20	*						
6	6	12	18	24	30	*					6	6	12	18	24	30	*					
7	7	14	21	28	35	42	*				7	7	14	21	28	35	42	*				
8	8	16	24	32	40	48	56	*			8	8	16	24	32	40	48	56	*			
9	9	18	27	36	45	54	63	72	*		9	9	18	27	36	45	54	63	72	*		
10	10	20	30	40	50	60	70	80	90	*	10	10	20	30	40	50	60	70	80	90	*	
	Scabidynas.					Longuudo.					Teträgona.											

The third standard form of the multiplication table is the triangular array, formed by cutting the square along the crossed diagonal in the preceding illustration. This was used by many early writers of mercantile arithmetics.

The question of learning the multiplication table as such has agitated some teachers in every generation. It is one of the most patent facts in education that children and adults are deficient in the combinations of numbers in addition and multiplication, and that, with all the time at the disposal of the schools these number facts should be more thoroughly known than at present. The tendency of a generation ago to let the child acquire these number facts as the need appeared, memorizing them as acquired, has happily been checked. Unless the table is learned thoroughly, as such, not all of the combinations will receive the requisite attention. It should be the subject of constant oral drill, and if possible it should be placed where it can also be seen. Besides the tabular drill there must be an equal amount of drill upon

the isolated combinations,  $4 \times 7$ ,  $9 \times 6$ , and so on. This learning of the table does not exclude the introduction of motive, nor does it in any way interfere with modern ideas as to how number facts should first be presented.

The explanation of the process offers few difficulties. In general, it is well to give the full form of any operation first, followed at once, and before the pupil acquires his habits of work, by the form to be used in practice. The explanations of the ordinary textbooks are generally quite sufficient for the purpose in view. D E S

See CHECKS ON COMPUTATIONS

**MUMPS.** — Mumps, more technically parotitis, or parotiditis, is an acute, highly infectious, febrile disease, characterized by swelling of the parotid gland. It breaks out in brief, but intense, epidemics, usually during cold and wet seasons. Though few not rendered immune by previous attacks escape infection, these epidemics bring little or no mortality. It is rare in infancy and after middle age and commoner in males than in females.

The cause of mumps is obscure, though probably a microbe present in the saliva and disseminated by the breath. The period of incubation is long, from two to three weeks, often nineteen days, and the disease runs its course in about a fortnight more.

As a rule, premonitory symptoms are absent or very mild. The onset is sudden, with pain and stiffness at the back of the lower jaw, followed in a few days by the characteristic swelling of the region just under the lobe of the ear, and extending forward and downward to a degree depending on the severity of the case. A moderate fever lasts for four or five days. The swelling reaches its height in from two to five days, is stationary for two days, then rapidly subsides. The inflamed region is painful and very tender. In some cases the skin may redden and even peel. Speech is difficult and muffled. Swallowing or mastication is painful and the diet must be exclusively fluid. The head is bent forward or toward the swollen side. There may be headache, earache, vomiting, and other symptoms of general ill health. In mild cases there may be but little pain or swelling, but these cases are as infectious as the severe ones.

The most common complications are swelling and pain in the testes, mammae, and ovaries, which may follow subsidence of the parotid inflammation, particularly in adolescents and adults. In rare cases the inflammation is transferred to the brain and death may result from meningitis. In any event, the patient, even in mild cases, should remain in bed until convalescence ensues. The disease is self-limited and the treatment consists primarily in insuring free action of the bowels and protection of the swelling from cold.

The period of infection extends from the

appearance of the swelling for some three weeks, or about two weeks after the fever subsides, though some authorities believe that infection is spread in school during the period of incubation. Children suffering from mumps should be excluded from school for at least four weeks after the swelling appears. Opinion differs as to whether other children living in the same house should also be excluded. In any event, it is rarely necessary to close the school as a precautionary measure.

G. M. W.

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**MUNICH** — See GERMANY, EDUCATION IN, INDUSTRIAL EDUCATION

#### **MUNICH, ROYAL BAVARIAN LUDWIG-MAXIMILIAN UNIVERSITY OF, GERMANY**

— The history of the present university at Munich dates back to the foundation of a university at Ingolstadt by Papal Bull obtained by Duke Louis the Rich in 1459. The opening, however, was delayed and took place in 1472, with faculties of theology, law, medicine, and arts. The university was modeled on the University of Vienna. Ingolstadt played a prominent part in the Renaissance period and numbered among its teachers Celtes, Reuchlin, and Aventinus. During the Reformation it became the rallying point of Catholicism, Dr. Eck, Luther's opponent, being then a member. From the sixteenth (1556) to the eighteenth century the university was under Jesuit control in all its faculties. In 1772 the Jesuits were removed from the university, and the theological faculty was placed under the Benedictines. Under directorship of J. A. Eckstätt in the middle of the eighteenth century much progress was made. In 1799 a *Kameral-Institut* was established, which developed into a faculty of political science and economics, and for a time included also technology, agriculture, and forestry. In 1800 the university was moved to Landshut, and received the present title in 1802. The transference to Munich took place in 1826, much to the advantage of the university, which was now practically amalgamated with the Academy of Science. The royal family were strong supporters of the institution. New buildings were provided in 1840, and a hostel (Maximilianeum) was established by Maximilian II. In 1868 a *Technische Hochschule* was established in Munich, and agriculture and to some extent forestry were provided for in separate institutions. Courses have been increased, the collections have been augmented, and institutes and seminars have been added. The following faculties are maintained: theology (Catholic), law, political science, medicine; and philosophy (section for philosophy, philology, and history, and section for mathe-

matics and science) The enrollment in the winter semester of 1910-1911 was 6905 matriculated students and 691 auditors, and in the winter of 1911-1912, 7579

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#### MUNICIPAL COLLEGES AND UNIVERSITIES - England --

As education became a function of the state, the tendency was to put the responsibility for elementary education upon the local communities. Gradually that responsibility has been extended to the post-elementary grades. And of late there has been manifest a disposition on the part of great cities to provide the means of higher education rather than to wait for private initiative and the sporadic philanthropy of personal generosity. The municipal colleges of England and the United States are expressive of this high purpose. It must not be understood, however, in speaking of municipal colleges in England, that they are established or maintained by the municipal authorities. In all cases these universities and university colleges have been established by private benefactions and are still maintained largely by private endowment. It is only since the beginning of the present century that the municipalities have been contributing gradually more and more to the maintenance of the institutions in their midst. Further, they take an active part by maintaining scholarships and prizes in the universities, and also have representatives on their governing bodies. The institutions are also civic in the sense that their success is more and more coming to be a matter of local pride, and many of the benefactions are inspired by civic spirit as much as by the desire to promote education. The local universities, chartered within the last few years, are Birmingham, Bristol, Leeds, Liverpool, London (reorganized), Manchester, and Sheffield (*qqv*). There are also a number of university colleges, which, however, do not grant degrees. Nottingham, Reading, Southampton (*qqv*). To these must be added the constituent bodies which make up the University of Wales (*qv*), and the new University of Belfast (*qv*), and the colleges of the National University of Ireland (*qv*), all of which have strong local affiliations. These civic institutions had their origin in an endeavor "to raise the intellectual level of the town" in which they were placed. But situated, as they are, in the center of England's commercial and

industrial life, and confronted by an intense desire of their students for greater efficiency in these activities, they immediately widened their scope of work and became strongly technological. The government commission, in its report of 1907, complains that it "cannot distinguish between the university and the technical work."

**Organization** -- The universities and colleges are organized into faculties; *eg* at the University of Manchester there are the following faculties: arts, science, law, music, commerce, theology, technology, and medicine, and a department of education. In each faculty ordinary and honors degrees (*qv*) are given at the end of a course of three years (except in medicine). While there is a system of election for the ordinary degree course, the subjects are taken in closely allied groups. Each of the universities has the power to inspect and examine schools on request. The northern universities, Manchester, Leeds, Liverpool, and Sheffield, have combined to form a Joint Matriculation Board, which holds a combined entrance examination for the universities and also inspects and examines schools, granting school certificates on the results. The universities are also represented, as a rule, on the governing bodies of local secondary schools and local education committees.

**Relation to the Community** -- These institutions justify their name, civic universities, because each makes a special effort to meet the economic problems of its city. In Sheffield, for example, the cutlery center of England, the local university has an excellent "School of Metallurgy." "No laboratory is better equipped than this. The manufacture of crucible, Siemens, and Bessemer steel is carried on, on a commercial scale." Leeds is England's textile center. The civic university of that city has a school of "Textile Industries" and another of "Dyeing and Color Chemistry." In Birmingham mining is prominent, and in Manchester "much research work has been done in chemistry and physics and their application to the Cotton City's industries." Industrial England is looking to these civic universities as agents in promoting her economic efficiency or supremacy.

No applicant is admitted to these schools unless he can meet the standards of general culture. These requisites allow a certain amount of election according to a student's previous training. Thus at Manchester English language or literature, English history, and mathematics are compulsory, while a choice of three other subjects (including a foreign language) out of nine is allowed. But there are no prerequisites according to the future work of the students, with the possible exception of medicine. An applicant for a certificate in any branch is not required to meet the same high level of preparation as the young man who seeks a degree.

## MUNICIPAL COLLEGES

**Financial Support** — The sources of income of these universities can be grouped under the following heads —

(1) Endowment fund (2) Private donations to the general fund (3) Private donations for specific endeavors Money is frequently given for a library, a special school, a new department, special research, new courses to train for efficiency in some industry The Clothworkers' Company of London gave the University of Leeds £4000 a year, revocable at pleasure This donation was made permanent upon the establishment of the "Department of Clothworkers" Such donations are typical of a large number (4) Student fees Though the fees are reasonable, an attempt is in process to reduce them further and make them uniform (5) National government subsidy allotted annually A regular commission on "Grants in Aid to University Colleges" decided upon a proportional allotment to each institution These subsidies are usually divided among the universities in proportion to the fund that each can raise from all other sources (6) The municipal grant The municipality or the county within whose limits the university is situated makes an annual grant In many instances the income from the municipal treasury is insignificant in comparison to the other sources

**Students** — These universities are coeducational Sessions are held at night as well as during the day, those in the industries are thus enabled to take the technical courses In no universities, however, do evening courses count toward a degree Many of these students come from distant cities and foreign countries to avail themselves of the specialties of the different universities No better index of the need of the work of these universities need be offered than their growing popularity Their influence is shown in the following table —

	TEACHING STAFF	DAY STUDENTS
University College, London . . .	134	1356
Bristol University . . .	123	700
Manchester University . . .	242	1557
Leeds University . . .	152	901
Liverpool University . . .	219	1078
Birmingham University . .	148	1017
Sheffield University . . .	150	885
		+ 1818 evening

**United States** — In the United States such civic institutions are in a stricter sense municipal colleges Every Western state maintains its university, which is, not only in its purposed service, but also in its support, public, and many other states contribute largely toward the support of such institutions But beyond this, cities have made provision of like character Charleston and Baltimore have for

## MUNSTER

many decades supported institutions known as "city colleges," but the two most notable examples are the University of Cincinnati (*qv*) and the College of the City of New York. The former, made possible by a large private gift, is a consolidation of an original college and neighboring schools of medicine, law, engineering, dentistry, and education Its student body of 753 college students and 709 professional students, its teaching staff of over 200, and its manifold activities are supported by the original endowment just referred to and in part by city contributions

The purest type of a municipal college is the College of the City of New York. (See NEW YORK, COLLEGE OF THE CITY OF) It is governed by trustees appointed by the city, and receives graduates of the city high schools upon certificate It is a municipal college in the truest sense of the term, for it is supported solely by the city; its unexcelled physical equipment, costing \$5,000,000, was paid for by the city, it is open only to residents of the city who meet the entrance requirements, and to them without fees In its development it is looking toward fitting young men for highest service to the city

**Germany** — While municipal universities as such have not been established in Germany, there is a tendency for the universities situated in the large towns to flourish in point of numbers at the expense of the small universities. This is further drawing attention to the fact that the largest and wealthiest centers of population are not provided with facilities for higher education A new era has been inaugurated in this field by the establishment of a university in Frankfort-a-M (*qv*), in which private munificence and the civic authorities had a large share It is very probable that before long a similar institution will be established at Hamburg

J H F

**MUNICIPALITY** — See CITY SCHOOLS; CITY SCHOOL ADMINISTRATION.

### MUNSTER, WESTFÄLISCHE WILHELMS-UNIVERSITY OF, GERMANY —

The present university, although one of the most recent of German foundations, has historical continuity with the Gymnasium Paulinum conducted by the Jesuits at Munster in 1588 Efforts were made to establish a university early in the seventeenth century, and although privileges were obtained from the Pope in 1629 and the Emperor in 1631, nothing more was done. In the next century, however, through the untiring energy of Electoral Prince von Fürstenberg, a Papal Bull and the Emperor's consent were obtained in 1773 for the erection of the university. But the endowments were so poor that the opening with faculties of theology (Catholic), law, and philosophy was delayed until 1780 Chairs in

medicine were added gradually. The numerous wars of the period, however, were a check on progress. Hopes for the future were entertained under Prussian rule, but they came to nothing, since the government decided to found a university at Bonn in 1808, and to close the faculties of law and medicine at Munster, leaving to it only theology and law and the title of *Akademische Lehranstalt*. The work of the institution was thus confined to training Catholic theologians and the few candidates for the higher teaching profession. In 1843 the title of Royal Theological and Philosophical Academy was granted, with university privileges. New chairs were added from time to time after 1858. After 1875 a further development took place; new chairs were created, seminars were added, an auditorium and chemistry laboratory were erected, and an archaeological museum, botanical institute, geographical equipment, and a museum of medical and modern art. In 1900 the Province of Westphalia and the city of Munster raised funds for the local institution, and in 1902 a faculty of law and political science was established and university privileges were granted. In 1907 the title Westfälische Wilhelms-Universität was adopted. A faculty of medicine has not yet been established, but five semesters toward a complete medical course can be completed at the university. The following faculties are now in existence: Catholic theology, law and political science, philosophy (philology-history, mathematics-science, and pharmacy). The enrollment in the winter semester of 1911-1912 was 2314.

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**MURMELLIUS, JOHANNES** (1480-1517) — A Dutch scholar and schoolman, was born in Roermond, Holland, and educated at the schools of Deventer, where he became a pupil of the famous humanist Hegius. From 1498 to 1513 he lived at Munster, Westphalia, where (1509) he was appointed rector of a Latin School. In 1510 he took a similar position in Olkmar, Holland. He was the author of many widely used textbooks, such as the *Pappae puerorum*, a beginners' book in Latin, also an anthology of Latin poets, and a textbook on versification. With Reuchlin (*q v*) he took part in the fight against the enemies of humanism. His life has been written by Reichling (Freiburg, 1880), who also published a selection of his Latin poems with a German translation. F M

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**MURRAY, DAVID** (1830-1905) — Educator. Graduating from Union College in 1852, served as instructor in Albany Academy (1852-1857) and principal of that institution (1857-1863), and professor in Rutgers College (1863-1873). From 1873 to 1879 he was adviser to the Minister of Public Education in Japan, and from 1880 to 1889 was secretary of the Board of Regents of the University of the State of New York. He was the author of *Land Surveying* (1869), *Japanese Education* (1876), and *History of Education in New Jersey* (1899). W S M

**MURRAY, LINDLEY** (1745-1826) — Author of Murray's grammars, readers, and spellers. He was educated in the schools of the Society of Friends, and taught for a short time in a boarding school at Burlington, N J, and later at Holdgate, near York, England. His *English Grammar* was published in 1795, his *English Reader* in 1779, and his *Spelling Book* in 1804. All these textbooks passed through many editions, with numerous "sequels" and abridgments. His *Autobiography* was published by Elizabeth Frank after his death. W S M.

See GRAMMAR; LATIN GRAMMAR

**MURPHY, JOHN J** (1844-1892) — Jesuit educator. He was graduated at Carlow College, Ireland, in 1862, and came to the United States and joined the Society of Jesus four years later. He was instructor and professor in several American Jesuit colleges, and was president of St Francis Xavier College (1885-1888). He wrote several philosophical papers. W S M

**MUSCLE READING** — See MIND READING

**MUSCLES, FUNDAMENTAL AND ACCESSORY** — In the course of animal evolution, the small fine muscles of the body have gradually been evolved by differentiation within the structure of the larger muscles. Thus, the muscles which control the lips of the human mouth have been evolved out of a relatively simple gross muscle, which in the lower forms of animal life controls the mouth opening. The muscles of the hand have become gradually differentiated from the gross muscles controlling the forward extremity of the lower animals. This fact of animal evolution has been cited by students of education as ground for the general principle that the child's muscular training should follow the same genetic order. The grosser muscles should be first brought into action, the finer muscles should be reserved to a later period.

of education. This statement with regard to muscular training has sometimes been put in a form which accentuates further the significance of the difference between fundamental and accessory muscles. It has sometimes been said that the finer muscles are immature at the beginning of individual life and unable to perform any work. Such a statement as this last overlooks the fact that even the relatively undeveloped movements of earlier infancy involve the contraction of the finer muscles. Thus the closing of the fist as it appears in every normal infant involves the contraction of all the finer muscles of the hand as well as of the grosser muscles. The contraction of the vocal cords in like fashion involves some of the most delicate muscles of the body. The rolling of the eyes depends upon the contraction of the fine muscles of the eye.

In the early stages, however, these fine muscles are not capable of acting in such a way as to produce complex or highly differentiated coordinations. Thus it is quite impossible to move one of the fingers at this early stage in a direction different from the general movement which is being made by all of the fingers of the hand. While the fine muscles are thus capable of contraction, they are not capable of highly differentiated movements. The distinction should be made, therefore, not between the small muscles and the large muscles, but between the fine differentiated coordinations and the grosser coordinations. The development of the fine differentiated coordinations is undoubtedly slow and requires sensory and motor control of a very highly organized type.

C H J

See COORDINATIONS

**MUSCULAR SENSE** — The organs of movement, especially the joints and muscles, are provided with sensory nerve fibers which send to the central nervous system sensory currents whenever the limbs or other muscular organs of the body are moved. The significance of motor processes for mental development has long been recognized in psychological writing. The muscle sensations have been described by such writers as Bain and Wundt as avenues through which bodily movements contribute to mental development.

C H J

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**MUSÉE PÉDAGOGIQUE** — See FRANCE, EDUCATION IN; MUSEUMS, EDUCATIONAL.

**MUSEUMS, EDUCATIONAL** — The educational museum may be defined as an institution to conserve and display collections which have an illustrative, comparative, or criti-

cal relation to the schools and to school work, or which are concerned with education as a profession, a science, or a social institution. The mention of a confusion in the use of the term "educational museum" will make its proper significance more clear. Museums located in a school or organized as an adjunct to a system of schools, and aiming to aid school instruction directly and immediately, are sometimes called "educational museums." Their contents are related to education, but since their collections are designed as a supplementary agency in instruction, they may better be called "school museums." They can be sharply distinguished from the "educational museum" the school museum is itself didactic, it exists for the pupil directly, it includes only the means of teaching, that is, the apparatus, appliances, and materials of teaching brought together for use in actual instruction. Distinguished from the school museum is the type of museum which is related to education as an institution, a profession, or a science, rather than to actual teaching, which exists not for the pupil, but for the teacher, the person interested in school administration, the student of education, and the general public, the collections of which illustrate not only the means and appliances of education (and these not to be used in teaching, but to be studied and considered for themselves), but in addition, it may be, the methods of education, its results, its organization and administration.

The function of the educational museum may also be defined by comparison with the educational library, the educational laboratory, the model school, and the school exhibit and exhibition. The educational library contains all printed material relating to education, the educational museum contains all objective collections, the museum, however, includes all printed material more properly treated as exhibits for inspection or as gross data for elaboration, than as books for circulation, namely, collections of school textbooks, teaching manuals, archives of school catalogues and reports, and perhaps bulky illustrated works, as on school architecture. The educational laboratory undertakes investigations in education, and gathers books and objective collections as demanded by these investigations; it has no function of public visitation, as the museum, or of circulation of its resources, as the library, its activities are centered in its scientific studies. The model school or practice school of an institution for training teachers might be called a dynamic museum of education. By the school exhibit is ordinarily signified a temporary display of the results of pupils' work, together with the school building and its equipment, usually opened to the public for one or more days at the end of the school year. The school exhibition or exposition is a centralized display of such exhibits, chiefly including samples of

pupils' work, brought together for a city or larger district for a longer or a shorter time, organized, it may be, independently or in connection with some industrial exposition. Such educational expositions often include manufacturers' exhibits of teaching appliances, school furniture, textbooks, and other materials. In so far as these exhibitions bring together displays which have been prepared disinterestedly, so far they do temporarily part of what educational museums do permanently. In so far as manufacturers' exhibits enter on a competitive basis, the exposition is of a different genus from that of the educational museum. (See EXPOSITIONS, INTERNATIONAL, AND EDUCATION, EXHIBITIONS, SCHOOL.)

There have been seventy-five or more educational museums projected in some twenty-five different countries since 1850. Credit for the first one is due to Egerton Ryerson, Provincial Superintendent of Education for Ontario, Canada, who in 1845 was granted £100 to purchase samples of school models, copies of which he had seen in American schools and which he thought Canadian manufacturers might duplicate. The collection of school aids became part of the Canadian Museum, opened at Toronto in 1856, and afterward known as the Educational Museum, until 1897, when the name Provincial Museum was assumed. At about the latter date the last purely educational exhibits were retired from the museum. The educational collections at Toronto realized certain important results: they distinctly improved the teaching equipment of the schools of the province both through force of example and by the direct agency of the government in selling to the schools duplicates of the exhibits shown; they led, within ten years, to Canadian manufacture of teaching materials, school desks, and other requisites, so that the depository and sales bureau of the government could later be dispensed with; they influenced American schools through the visits of various American teachers, especially through the stimulus given to Principal Sheldon (*qv*) of the Oswego Normal School, who inspected the Toronto collections about 1860 and as a consequence initiated the "Oswego movement" (*qv*) in American education.

Though the idea of a museum of education is claimed for the French school inspector, Jullien, who wrote about 1817, the Crystal Palace Exhibition in London in 1851 assuredly gave the stimulus to the first two European educational museums,—the Collection of Teaching Appliances of the Royal Bureau of Commerce and Industry for Württemberg, organized at Stuttgart in 1851 and still forming a section of the National Industrial Museum in that city, and the Educational Section of the South Kensington Museum, London, 1857–1888. Indeed, a large proportion of educational museums owe their beginnings to the

educational sections of international expositions. A survey of the educational museums of the world is the basis for the following statement of their usual collections and activities.

Such exhibits may be organized according to (1) the progressive stages of school work, the kindergarten, the elementary grades in turn, and higher education, or (2) the subjects of instruction, as geography, history, industrial arts, or what not. Both schemes of classification have been followed, each has its obvious advantages. These materials of instruction, including textbooks as well as "aids," appliances, illustrations, material, and teaching equipment of all sorts, the teacher's tools in short, form the item of first importance in a dynamic museum, one that seeks to improve teaching. It is significant that in the statutes of sixty-seven museums, assistance to teachers is mentioned by forty-two as their first aim, and the collection and exhibit of teaching appliances by fifty-seven as their most important work. The collection of teaching appliances is made vital by the effort to secure new and improved types as soon as they come upon the market, and by prompt criticisms in the educational press, while in a few cases museums have sent out traveling exhibits of new appliances that teachers may see the latest and best.

With emphasis upon new and improved appliances, one in five museums at least plans to include foreign exhibits, thus looking to that international exchange of ideas so important to educational progress. Some striking instances of this international movement in educational ideas are afforded by the Toronto, Tokyo, and South American museums. It might be urged that these museums all aided in the improvement of education in new countries, the French and German museums, however, show that the educational museum has still a function for progress even in advanced countries.

The next most common exhibits are those of the school building and its furnishings. The comparative study of architecture, or, to mention a more limited topic, the school desk, could be facilitated by the aid of the educational museum, and either topic is worthy of research. The school building itself forms a division in most educational museums, illustrated by architects' drawings and blue prints of floor plans, elevations, and then details. Such exhibits make possible a comparative study of the school plant, and may extend the adoption of good architecture. Such collections furnish the necessary foundation to treatises upon school architecture, which ought to be more than compilations of pictures, and should offer wise criticism based on wide comparisons.

Other exhibits mentioned in the plans of different museums are the following: those illustrating school organization as record blanks

and reports, samples of pupils' work, to illustrate the results of instruction, historical exhibits—a feature in one in four of the museums, an educational library, an historical library, archives of school reports, collections of textbooks, of children's literature, and of school and other pictures. Two or three of these items merit an extended notice.

Exhibits of children's work, the immediate material results of the teaching process, have had small place, usually, in educational museums. They have always been a large feature of temporary educational exhibitions. Usually regarded as of ephemeral value, these exhibits have in a few instances, notably the Paris museum, been created into permanent displays. Their utility resides in the possibility which they afford of comparisons of progress in the schools; to be reliable for this purpose, they must be originally compiled with accuracy and under known conditions. Limited in amount, and organized in albums, such exhibits of children's regular school work, or perhaps of the results of tests and examinations, might become educational records of great value.

Historical exhibits of various kinds have been made. Some of these are memorials of educators, as the collection in the *Deutsches Schulmuseum* in Berlin, and the collection of physics apparatus made and used by Professor Schaeffer at Jena, and now maintained there as a memorial to him. Most striking of all are the Pestalozzi memorials at Zurich and the Comenius collection at Prague, while the great educational library at Leipzig, the *Pädagogisches Zentral (Comenius-Stiftung)*, although not a museum primarily, is in itself a memorial of this type. Very suggestive as a type of possible historical exhibit is the Hamburg School-History Collection, which by means of prints, photographs, pupils' books, textbooks, old school reports, and the like represents the development of local education. Any community might in a similar simple way preserve within its main school building such memorials of its own educational history. Another type of historical exhibit is that illustrating the development of particular school subjects, as the Breslau museum display illustrating the evolution of charts and other appliances for religious education and for the teaching of mathematics. In this category, too, belong the unique historical collections of manuscripts and textbooks of arithmetic, grammar, readers beginning with hornbooks, penmanship, and other school subjects, in the private library of George A. Plimpton, Esq., of New York.

Special collections are features of some museums. Sometimes collections of local natural history or industry, often exhibits of school art and schoolroom decoration, school hygiene, pictorial collections, or teaching materials for individual subjects, as religion, arithmetic, or drawing. In a few in-

stances, educational museums devoted entirely to a limited field have been proposed as, the projected museum of Froebel memorials at Eisenach; the museum of industrial education at Frankfurt (1900-1902); and that of deaf-mute education at Leipzig.

The educational library is the natural adjunct to the museum. There is some sort of book collection with practically every museum. The Paris and the Berlin city museums have each a large library; and others have frequently 5000 or more volumes. These libraries comprise books on education, textbooks, teachers' manuals, and the archives of school reports, regulations, programs, and like invaluable documentary records. The possibilities of the last-named item are indicated by the collection of several thousand serial catalogues and reports, annually augmented, on file in the Educational Library of New York State. Special book collections are found with certain museums: catalogues and books relating to teaching appliances, children's books, in many cases, reading rooms with educational journals on file. (See LIBRARIES, EDUCATIONAL.)

Another view of the educational museum as an institution may be secured by observing its activities. Over half the museums loan out exhibits, in a few cases directly into the schools, in other cases to teachers and school officials for inspection and study. The St. Petersburg museum made a striking exhibit at the Centennial Exhibition in Philadelphia in 1876, the Rostock museum sends parcels of new teaching appliances over four different circuits, to forty-four different places of exhibit, and the Copenhagen museum has circulated exhibits and arranged accompanying lectures on school architecture, hygiene, etc. Lantern slides are loaned for purposes of instruction by several museums. The loan of books from the libraries is common. Temporary exhibitions are held by three fourths of the museums, and on such subjects as children's literature, history of schools or of education, pictures and school decoration, manufacturers' loan exhibits of teaching appliances in special subjects as geography and drawing, exhibit of pupils' work in manual training and other subjects. The Paris museum has a section for publishers' loans in each of its departments; the Amsterdam museum has definite regulations governing manufacturers' loans, the Rio de Janeiro museum has as one feature an annual exhibit of pupils' work. The number of visitors is another measure of a museum's usefulness, the "mean" attendance for forty museums was from 1000 to 1500 per annum. Especially significant are visits by teachers and pupil teachers preparing for examinations, and by members of seminar classes, as is common in the German museums.

Publications of some form other than catalogues are issued by many museums.



(a) a periodical, in some cases a separate paper or perhaps a supplement or page in an educational journal which reports accessions, exhibitions, criticisms, etc., (b) monograph studies giving historical material or the results of investigations have been issued by six museums at least; (c) school materials, whether books, new types of teaching appliances, or even, in one case, a school desk, have been brought out by certain museums in the effort to improve teaching equipment. The furnishing of information has been stated as the broad aim of these museums, and many serve as veritable bureaus of educational information for the territory they reach.

Finally, instruction for self-improvement, lecture courses, and even laboratory courses in natural science have been provided by some museums for teachers and pupil teachers, emphasizing that the museums exist for the teacher, and especially for the teacher in training. Significant to this same end is the tendency of educational museums to ally themselves with institutions for training teachers: the Toronto museum was connected with a normal school, the Tokyo museum has been annexed to the higher normal school, the director of the Paris museum has recently suggested affiliation with the University of Paris and the normal schools, in the university schools of education there has been a sentiment in favor of the organization of collections which may stand to educational research as do the natural history collections and historical archives to scientific and historical study. Herein, perhaps, lies the most promising function of the educational museum.

*List of Educational Museums.* The names are arranged by countries in alphabetic order. The first date indicates the year of opening, the second date, if given, the year of closing.

- Argentine Republic* — 1 Buenos Ayres *Biblioteca y Museo pedagógicos*, 1888  
*Austria-Hungary* — 2 Agram *Hrvatski Školski Muzej*, 1901 3 Bozen, *Ständige Lehrmittelausstellung*, 1889 4 Budapest *Országos Tanterm-múzeum*, 1877, 5 Graz *Permanente Lehrmittelausstellung*, 1882 6 Innsbruck *Ständige Lehrmittelausstellung*, 1888 7 Laibach *Schulmuseum und Ständige Lehrmittelausstellung*, 1898 8 Prague *Stálá školní výstava v Praze*, 1890 9 Vienna *Permanente Lehrmittelausstellung der Stadt Wien*, 1872-1892 10 Vienna *Ostereichisches Schulmuseum*, 1903 11 Vienna *Permanente Lehrmittelausstellung der Gesellschaft Lehrmittelsentrale*, 1905  
*Belgium* — 12 Brussels *Musée scolaire National*, 1880  
*Brazil* — 13 Rio de Janeiro *Museu escolar nacional*, 1883  
*Bulgaria* — 14 Sofia, *Učitelni Muzej*, 1905  
*Canada* — 15 Toronto *Educational Museum*, 1845-1881, now *Provincial Museum* —  
*Chile* — 16 Santiago *Museo de Educación Nacional*, 1911  
*Denmark* — 17 Copenhagen *Dansk Skolemuseum*, 1887  
*France* — 18 Chartres *Educational Museum and Library* 19 Paris *Musée pédagogique*, 1879  
*Germany* — 20 Augsburg *Die Schwäbische permanente Schullausstellung in Augsburg*, 1881. 21.

- Bamberg *Die Permanente Lehrmittelausstellung in Bamberg*, 1896 22 Berlin *Das Deutsche Schulmuseum in Berlin*, 1876 23 Berlin *Das Städtische Schulmuseum in Berlin*, 1877 24 Bremen *Das Schulmuseum des Bremischen Lehrerevereins*, 1902 25 Breslau *Das städtische Schulmuseum in Breslau*, 1891, 26 Cologne *Die städtische Lehrmittelsammlung in Cöln a Rh.*, 1901 27 Donauwörth *Die Permanente Lehrmittelausstellung des Cassianums in Donauwörth*, 1876 1884 28 Danzig *Die Danziger Lehrmittelsammlung*, 1904 29 Dresden *Das heimatkundliche Schulmuseum in Dresden*, 1905 30 Dresden *Das Schulmuseum des Sächsischen Lehrerevereins in Dresden*, 1904 31 Eisenach *Das Fraebel Museum (projected)* 32 Frankfurt *Das Frankfurter Gewerbeschulmuseum*, 1900-1902 33 Głowicz *Das Oberschlesische Schulmuseum in Głowicz*, 1905 34 Gotha *Das Gothaische Schulmuseum*, 1889 35 Hamburg *Die Hamburgische Lehrmittelausstellung*, 1897 36 Hamburg *Die Schulgeschichtliche Sammlung d. Schulwissenschaftlichen Bildungsvereins*, 1897 37 Hannover *Das Städtische Schulmuseum in Hannover*, 1892 38 Hildesheim *Das Schulmuseum (du Leckerhustiftung) in Hildesheim*, 1891 39 Jena *Das Thüringische Schulmuseum in Jena*, 1889-1897 40 Jena *Das Schaeffer Museum*, 1900 41 Kiel *Das Schleswig-holsteinische Schulmuseum in Kiel*, 1890 42 Königsberg *Das Schulmuseum des Königsberger Lehrerevereins, die Städtische Bibliothek für die Volksschullehrer*, 1881 43 Kolberg *Das Schulmuseum in Kolberg*, 1904 44 Leipzig *Die Permanente Ausstellung von Lehrmitteln in Leipzig*, 1865-1875 45 Leipzig *Deutsches Museum für Taubstummeneubildung*, 1895 46 Magdeburg *Die Lehrmittelausstellung des Lehrereverbandes der Provinz Sachsen in Magdeburg*, 1877 47 Munich *Das Königlich-Kritismagazin von Oberbayern für Lehrmittel und Schulrichtungsgegenstände in München*, 1875 48 Oldenburg *Das Schulmuseum zu Oldenburg i. Grossh.*, 1900 49 Posen *Das Posener Schulmuseum*, 1897 50 Regensburg *Die Oberpfälzische permanente Kreis-Lehrmittelausstellung in Regensburg*, 1880 51 Rixdorf *Das Naturhistorische Schulmuseum der Stadtgemeinde Rixdorf*, 1897 52 Rostock *Das Mecklenburgische Volksschulmuseum in Rostock*, 1888 53 Stuttgart *Die Lehrmittelsammlung der Königlich-Württembergischen Zentralstelle für Gewerbe und Handel in Stuttgart*, 1851 54 Wolfenbüttel *Das Landes-Schulmuseum für das Herzogtum Braunschweig in Wolfenbüttel*, 1892  
*Great Britain* — 55 London *Educational Section of South Kensington Museum* 1857-1888 56 London *Educational Museum of Teachers' Guild*, 1892  
*Greece* — 57 Athens *Ἑκπαιδευτικὸν Μουσείον*, 1905  
*Italy* — 58 Genoa *Civico Museo pedagogico e scolastico*, 1881 59 Rome *Museo d'Istruzione e d'Educazione*, 1874 1881  
*Japan* — 60 Tokyo *Kōiku-kakubutsukan*, 1878  
*Netherlands* — 61 Amsterdam *Nederlandsch Schoolmuseum*, 1877 62 Hague *Museum ten bate van het Onderwijs (Projected)*  
*Norway* — 63 Christiania *Skolemuseum for Kristiania Folkskole*, 1901  
*Portugal* — 64 Lisbon *Museu pedagógico de Lisboa*, 1883  
*Russia* — 65 St. Petersburg *Pedagogiceskij Muzej pedagogičeskich zavedenij*, 1864  
*Serbia* — 66 Belgrade *Školski muzej*, 1898  
*Spain* — 67 Madrid *Museo pedagógico nacional*, 1884  
*Switzerland* — 68 Bern *Schweizer permanente Schullausstellung*, 1878 69 Freiburg *Musée pédagogique suisse de Fribourg*, 1884 70 Lausanne *Musée scolaire cantonal Vaudois*, 1901 71 Lucerne *Permanente Schullausstellung*, 1905 72 Neuchâtel *Exposition scolaire cantonale permanente*, 1887. 73. Zurich *Pestalozzianum*, 1875.

*United States of America* — 74 New York Teachers College, Columbia University, 1899 75 Washington U S Bureau of Education, 1876 1906 In addition, museums or permanent exhibits of educational material have been contemplated or provisionally organized within the United States, by the city school systems of St. Louis, New York, New Haven, Connecticut, and Reading, Pa., by the state museums of New Jersey, Pennsylvania, and Louisiana, by the State Education Departments of New York, Massachusetts, and some other states, by departments of education in the following universities California, Clark, Harvard, Illinois, and Indiana, and by societies or associations a geography exhibit by the Brooklyn, New York, Institute of Arts and Sciences, and a religious education exhibition by the Sunday School Commission of the Episcopal Church Diocese of New York, and by the Religious Education Association

*Uruguay* — 76 Montevideo *Museo y Biblioteca pedagógicas*, 1889 B. R. A.

See also EXPOSITIONS, INTERNATIONAL AND EDUCATIVE, EXHIBITIONS, SCHOOL

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**MUSEUMS, SCHOOL** — Quite apart from formal laboratory equipment and materials on the one hand, and the usual school tools, as slates, books, pencils, on the other, there exists a broad field of illustrative materials, pictures, specimens, models, what not, used in instruction, the organization and care of which constitutes the province of the school museum. Its divisions may be as many as the subjects of instruction which are capable of objective illustration. American schools, while emphasizing laboratory methods and the use of textbooks and other tools of teaching, have done less than European schools to utilize illustrative materials.

The simplest "school museum" is the school-room collection made by the teacher or by the pupils themselves to illustrate the subjects of study, geography, history, or nature study.

The saying that the usefulness of the school museum is in its making, not in its use, refers to collections made by pupils, it is an axiom of partial application, however, for the room collection should grow from year to year and receive adult curatorship. The room collection merits suitable accommodation: a good-sized cupboard with glass doors above for display, a vertical-file drawer 11 by 14 inches at least in section, with alphabet guides for the picture collection, and other drawers both shallow and deep for the storage of objects. Such a room collection will furnish material of increasing value each year for illustrating topics in the course of study and for arranging occasional small exhibits by the pupils, who will get valuable training in its care as well as knowledge by its use.

Room collections may be brought together for a school building into a "school museum" proper, as books are centralized in a library. Indeed, the school museum is a "library of objects," and may be administered with the school library. The essentials are a well-lighted room with (a) a few exhibit cases of suitable height for changing displays, arranged now by the librarian or curator, now by the grade or that as illustrative problems for the enjoyment of the whole school, and (b) ample storage facilities for the systematic care of (1) pictures, photographs, magazine illustrations even, in properly indexed vertical-file drawers, (2) lantern slides arranged on shelves in long boxes which convert them into vertical-file records as easily classified as a library card catalogue itself, similarly, stereoscopic views, and a set of illustrations for the projector if the reflecting lantern is used, (3) a collection of objects, minerals, woods, and other nature materials, textiles and other industrial materials, models, maps, charts, etc., stored compactly and systematically in drawers and cupboards without display, and (4) living exhibits, a vivarium to include plants, animals, birds, fish, etc., especially in urban schools. For the objective collections there is perhaps no better method of classification than by general subject numbers, as, e.g., in the Dewey library classification, with sequence numbers 1, 2, 3 within groups, or sequence numbers alone may be used. In either case a card catalogue with direct and cross references will be useful, and in a large collection indispensable. Such a school museum is (1) a supply bureau for illustrative materials to be taken into classrooms and used in teaching, (2) a room where pupils may secure information at first hand from concrete materials, as in the library from books, (3) a display room for changing exhibits (the fixed unchanged exhibit, be it of ever so much initial interest, is soon dead material), and (4) an important avenue for the expressive activity of pupils in organizing exhibits for their own rooms, or within the museum itself.

The third stage in the school museum is the central loaning bureau of teaching materials for a system of schools, organized with or without exhibit rooms. The central depository and loan bureau is best illustrated by the "Educational Museum" so-called, the school museum of the St. Louis schools. Organized in 1905, this museum reaches by weekly wagon delivery and collection over 100 school buildings of the city, with selections made on previous order from its rich and varied collections. There are over 1000 separate collections (objects, mounted specimens, pictures, charts, lantern slides, stereoscopic views), many of them in duplicate so that several schools can have the same exhibit at one time, which furnish illustrations of "food, clothing, natural objects, industrial objects, animals, plants, minerals, national life, physical geography, physics, history, astronomy, physiology." Brief descriptions accompany the exhibits, with titles of reference books. A detailed catalogue of the museum is put in the hands of every teacher, and its service is regarded highly. Certain exhibits which cannot be transported to the schools are available for inspection by teachers and principals at the museum. A similar bureau, though more limited in scope, was organized by the teachers of geography in the Chicago schools a few years ago, and was then taken over by the Chicago Normal School. Similar foreign experience, for example the school museum conducted for many years by the School Science Education Association at Hamburg, and the circulating materials in the Liverpool schools, might be cited. The possibilities in a state bureau for circulating materials among schools are suggested by the activities of the New York State Education Department in loaning framed and unframed pictures and lantern slides, and in depositing slides permanently with school authorities. Similar slide loaning services have been organized elsewhere: the Musée Pédagogique in Paris, Teachers' Guild Museum in London, and Educational Museum in St. Petersburg are examples.

**Traveling Museums** — The museum which as an institution has its activities primarily limited by its own walls, has widely extended its usefulness by the development of circulating collections or traveling museums. The natural history collections which are sent out from the central museum and reach the children in their own schoolrooms is one example of the traveling museum, the great English loaning system centering in the Victoria and Albert Museum is another, with its traveling exhibits of woods, metals, textiles, science specimens, and apparatus, and samples of art and art industrial work. Commercial agencies have often employed the traveling museum: the school decoration movement in the United States received great impetus from the local display by publishing

houses of pictures and casts, the receipts of which went for the purchase of selections for the schools, the state governments have sometimes sent over the country samples of their products to attract settlers. The traveling exhibit has been found most effective in social education, the anti-tuberculosis crusade has possibly achieved as much by its exhibits as by any one agency. The New York State system of loaning photographs and slides, the art movement in certain states, taking the form of circulating art exhibits, and more recently the development of agriculture extension education by means of demonstration railroad trains are other examples of successful traveling museum work. The demonstration trains usually contain not only accommodations for lectures and demonstrations, but exhibits which enforce lessons in farm management, improved equipment, and other subjects by means of striking diagrams, models, charts, and other objective displays. Education itself has utilized traveling exhibits as a means of improvement and progress in teaching, as in the art and industrial art exhibits often circulated by state departments of education and by teachers' associations, for the benefit of local teachers. The influence of museum extension in schools is making itself felt, and a demand for exhibits is being made by rural districts. Thus in Illinois the Illinois Audubon Society has arranged to send out free of charge four traveling libraries, four bird picture collections, and two lantern slide collections, with accompanying lectures. Seeing is believing, and the effectiveness of objective examples is unquestioned as an aid in the learning process, whether with children or with adults.

#### **Relations of Public Museums to Schools.**

— Related in educational function to the school museum are the activities of general museums of art, science, and natural history in placing their resources at the service of schools, both in elementary and secondary education and in advanced technical education. The value of museums, whether of art or science, in education is a subject which has been receiving ever increasing attention during the past ten years by museum officials in Europe and in America, as may be seen by a reference to the bibliography. In England the large and varied collections of the Victoria and Albert Museum are lent to prominent museums, and to art and other types of schools. The first systematic attempt to bring about a recognition of the educational functions of museums was made in France in 1880, when a commission was appointed by the Minister of Public Instruction to take the necessary steps preparatory to the introduction of arts into schools. In Germany, according to David Murray, "museums are made the basis of instruction, and every subject which can be made intelligible by means of a museum is provided with a teacher." Excellent work is done in this field in the lower

grades of public schools in Hamburg through the influence of Dr A Lichtmark, director of the Kunsthalle. Other prominent leaders have been George Hirsch, author of *Ideas Concerning the Teaching of Drawing and Professional Art Education* (1887), and Professor Konrad Lange of the University of Königsberg and later of Tübingen. In the United States the question of the relation between museums and schools was not actively considered until the appointment of a Committee on the Utilization of Museums of Art by Schools and Colleges. The direct methods of the committee included formal lectures in museums, or peripatetic conversations, the employment of "docents" or trained guides, and traveling exhibits. Indirect methods include printed lectures, stereopticon illustrations, and photographic reproductions. This system, largely inspired by Mr M S Pritchard, was put into practice at the Boston Museum.

Another impulse toward the use of museums of art was given by the demand in most countries for better schoolroom decorations. Cheap casts, photographs, and lantern slides were placed in the schools, and the possibility of employing greatly improved illustrative materials became apparent. From these collections to museum collections was but a step, and now the stage where the difference between reproductions and originals is being understood has been reached.

The utilization of museums for the study of art has, however, not been so great as in the scientific lessons. The value of specimens in such studies as natural history and physical geography, and of laboratory practice, was encouraged by the Agassiz Association and certain modern textbooks. The new relation between schools and museums has led to the creation of a new office, that of the museum instructor who meets teachers and pupils and shows them the collections or instructs them in such subjects as may be desired. Special rooms have been provided for teachers and pupils for talks by the teacher or instructor, photographs and lantern slides are more widely used and lent out, special children's collections have been arranged, and special lecture courses intended for school pupils are given. Lastly, many museums cooperate actively with the school boards of their communities, and in return for financial support provide for the special relations with the schools.

Museum collections can reach the school child in two ways. Exhibits may be taken to the schoolroom, or the pupil may be taken to the museum. Both types of effort are admirably illustrated by work undertaken for the schools by the American Museum of Natural History of New York City. This museum circulates week by week, by messenger, nearly 500 small cases, each containing a unit exhibit illustrating birds, insects, woods, or minerals, which have been studied in a

single year by over a million children in 400 different school buildings; and fifty similar cases are rented to the schools of a neighboring city. Besides lectures given at the museum for the general public, a course of illustrated lectures is given for school children who come at stated times in groups with their teachers, forming audiences of 500 and upwards, special lectures are occasionally given by the staff at the request of teachers, who are also allowed to give lectures, illustrated with the museum's lantern slides, to their pupils. A "Children's Room" is provided, with a special instructor in charge, who also gives assistance to classes of children visiting the museum to study exhibits. Formal instruction is carried even further in the Milwaukee Public Museum, where a special teacher appointed by the board of education devotes her time to instructing classes of children coming in regular rotation from the schools. The "children's room," as a feature of museum work, with exhibits with special labels particularly arranged for children, was suggested first perhaps in the U S National Museum (*q v*) in Washington, where it had, however, no relation to school work, this idea finds its best expression at present in the Children's Museum, Bedford Park, Brooklyn, a branch of the Brooklyn Museum of Arts and Sciences which, while not under the direction of the schools, attempts to relate its work to that of the schools. Here is an institution with exhibits in various divisions of natural history, wholly devoted to children, its aim is to "stimulate the interest of young people," and specifically "to provide collections and working materials . . . to be immediately helpful to teachers who come to the museum with classes for the supplementary study of special subjects pursued in school." In addition to exhibits within the museum, and a limited amount of loan material, a library and reading room are correlated with the exhibits, and the museum provides a lecture room where teachers may present topics to their classes with lantern illustrations, and where lectures will be given by members of the museum's staff on request. The museum of the Buffalo Society of Natural Sciences and the Fairbanks Museum at St Johnsbury, Vt, have cooperated with the schools very successfully. The Philadelphia Museums, while encouraging systematic visitation by school classes, have distributed from their duplicate materials small exhibits to the schools as permanent teaching collections, a form of cooperation practiced by many other museums.

In Chicago, through the influence of Professor T C Chamberlain, the Academy of Sciences since 1909 has arranged one hundred museum loan collections for the use of public and private schools of the city. During 1911 279 loans were made to forty-four schools, and it is estimated that in this way 20,000 children have been reached. Free instruction courses are

offered to children, and many schools and classes send representatives who later report at the school. Courses are also arranged for teachers. Thus, the Woman's Club has installed civic and health exhibits, and work of a similar kind is being done by the School of Civics and Philanthropy, Municipal Art League, Council for Museum and Library Extension, and other bodies. In 1912 a bequest of \$250,000 was made to the Field Museum for the special purpose of museum extension in the public schools (See *Science*, Feb. 16, 1912, pp. 261-262.)

The simplest cooperation perhaps has been the encouragement of informal visitation by teachers and pupils whenever the museum promises to be of help in their work, thus the Metropolitan Museum of Art of New York has called the attention of teachers to possible applications of the collections in their language, art, and history instruction, the Carnegie Museum of Pittsburg and other museums have sought to increase informal visitation by means of annual prize essay contests open to school children, with topics based on the collections. Cooperation between public museums and public schools is yet to be developed in many respects: the organization of branch museums comparable to branch libraries, perhaps located in school buildings, the writing of suitable "penny guides" for children which will give surveys of fields of science and other expositions based upon the exhibits, the place of changing exhibits within the museum, correlated with the course of study of the schools, the possibilities of oral instruction within the museum, either in lectures or in peripatetic explanations of exhibits, exhibits and instruction for teachers as distinct from pupils. That this field is one rich in possibilities for school and museum alike is evidenced by the success attending loan exhibits sent to schools, lectures for classes from the schools, and special exhibits, rooms, and museums for children.

**Museums and Higher Technical Education** — The place of museums in higher technical education is more striking than in public elementary and secondary education, and especially in the three higher fields of fine arts, the industries, and industrial art. The museum of fine arts which exists in practically every large center of population has often a formal school of art attached, and is nearly always a place of informal art education. The industrial museum is one which displays industrial products, a museum with exhibits representing the whole field of industry, however, would be impossible of realization, some principle for the selection of exhibits is necessary, and this may be historical, technical, or artistic. The exhibits in the National Museum at Washington, for example, illustrating the development of artificial illumination from ancient lamps to electricity, or the evolution of fire-

arms, offer interesting historical data and suggest the significance for history of well-organized exhibits illustrating the industry of the past. Collections made for technical purposes are those which seek to improve industry in a limited field by more or less inclusive exhibits of materials, tools, machines, methods, and products. Finally, industrial objects may be selected for exhibition because of artistic rather than technical merit, such collections form an industrial art museum as distinguished from the industrial museum in which technical interest predominates. The industrial museum aims to increase technical proficiency in industry, the industrial art museum, to increase the element of beauty in industrial products. The relation of museum collections in fine art, industrial art, and industrial technique to education in these fields is obvious enough. Concrete examples of the best man has hitherto done are the necessary stimulus and basis to further progress.

Europe has appreciated this better than America up to the present. There is scarcely an industrial center in Europe but has its collections intended to improve general taste, as with us, but also used specifically to aid workers in fine arts and increase the skill of the artisan and the beauty of his useful product. A city like Leipzig, for example, has the following museums: City Museum of Graphic Arts, Industrial Art Museum, with collections in metal, wood, ceramics, textiles, etc., Museum of the German Book Trade, besides two historical museums, the university collections and certain others. Dusseldorf, art and industrial center, has the Fine Art Collections of the Royal Art Academy, the Industrial Art Museum, which is controlled by an industrial association, and an art hall for exhibitions. In Dresden there are the Royal Collections for Art and Science, and the Royal Museum of Industrial Art, connected with the Royal Academy of Industrial Art, besides many minor collections. Chemnitz has the Industrial Museum of the Artisans' Association, with a collection of 9000 objects "to advance the skill of workers," and a city collection of models managed by the Industrial Union and aided by a grant from the city "to advance local industry especially in regard to artistic taste". Both exhibits represent local industries. Crefeld has a collection of the Association for the Advancement of the Textile Industry, started in 1902, which shortly had over 25,000 samples illustrating carpets, upholstery, modern silks, etc., and receives large accessions each year. One might cite the large museums and collections of Berlin, Stuttgart, and Munich, representing local and national industries; the example of the smaller centers, however, illustrates even better the wide diffusion of the museum in the system of art and industrial education. The Bremen commercial collections merit the motto "Here learn how

Bremen prepares her sons for world commerce " Museums indeed form one absolutely essential element in the great German organization for industrial progress. Not only do the technical and art schools depend upon the museum collections, with which they usually stand in close connection, but the individual artisan works within the museum and takes out drawing plates, objects, etc., for study. In Dusseldorf, for example, the Industrial Art Museum loaned 200,000 illustrations and 64,000 objects in the first twenty years of its existence.

In France, Switzerland, Italy, and England one finds that museum collections are similarly utilized in higher technical education. The example of England is suggestive, particularly in two respects, first in the large number of local museums, and second in their close relationship to the great Victoria and Albert Museum in London. This relationship is evidenced especially by the very efficient loaning service maintained by the museum in London, and similarly by the Dublin Museum, which send out selected exhibits to the local and provincial museums, to educational exhibitions, and, what is more significant, to art and technical schools, "as examples likely to be useful to their classes in which training in art crafts is given." These loan collections are veritable traveling museums which reach every industrial center in Great Britain.

In the United States natural history and art museums have been organized widely, and have reacted upon science and art teaching. The industrial and industrial art museums, however, are thus far few in number. Industrial art objects find a place in many art museums, however, as in the architectural, woodcarving, glass, and other sections of the Metropolitan Museum of New York, and industrial collections are to be found in certain general museums, as the National Museum at Washington. The best American example of an industrial art collection is perhaps the Pennsylvania Museum and School of Industrial Art, Philadelphia. This institution, organized just after the Centennial Exposition, maintains significant collections in fine arts and particularly in industrial arts, with departments of numismatics, textiles, goldsmith's work, oriental pottery, American pottery, arms, musical instruments, sculpture, furniture, prints, philately, it also conducts an important School of industrial arts, which includes a school of design and a textile school, the latter, one of the leading American schools of textile technology. Another growing industrial art collection is the Museum of the Arts of Decoration of the Cooper Union, New York City. The United States will need a great museum of industrial art alongside of every great industrial school, and industrial and industrial art collections in every industrial center if we are seriously to use education for technical and artistic progress. B R A. AND H W. K.

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**MUSIC AND MUSICAL TERMS** — Whenever and wherever music has been included in academic curricula, rhythm and harmony have been the main subjects of study. Counterpoint was at first included under the general term "harmony," but since the rise of the modern conception of harmony, counterpoint has been recognized as a distinct subject of study. Rhythm, in its broader sense, has almost vanished as a specific study, but its narrow, mechanically conceived metric phase is included in the study of *form*. Until within a very few years the only academic studies have been harmony and counterpoint, pursued, generally, in the order named. This is an anomaly when we stop to consider the relation of melody to harmony, and note the fact that the modern choral system is the outgrowth of a highly developed melodic imagination embodied in counterpoint. Strictly speaking, therefore, there should be no separate study of these two eternally wedded elements of music, but out of a free melodic development of harmony, in its legitimate signification as tonality, should be evolved aesthetically significant harmonic backgrounds and colorings of interval and chord masses.

The following condensed treatment of the three subjects, harmony, counterpoint, and rhythm, is an effort to explain the general nature and essential elements, and at the same time outline the general drift of their historic development.

**Harmony** — Harmony, broadly conceived, covers all synchronous and progressive or melodic tonal relations. In a restricted use

it means the structure and relation of chords and intervals.

The history of harmony is the history of the development of music, inasmuch as all forms of music are based on harmony in its broad and essential meaning. Archaeological research has brought to light many facts concerning ancient instruments which give wing to the imagination, and induce the belief that harmony, in its narrow meaning of synchronous intervals, was known and practiced before recorded history recognizes it. This belief finds corroboration in ethnological researches, which make clear the fact that all stages of human development are represented by human beings to-day, and that the most primitive of these peoples not only sing in parts, but in some instances order their music in accordance with modern tonic tonality.

The highest expression of the conception of harmony as the simultaneous sounding of tones, however, could not be attained until its deeper and broader significance was discovered and wrought out in a conscious application of the tonic principle of tonality. Many of the most ancient folk melodies, untouched by theoretical or ecclesiastical thought, reveal this principle as at least subconsciously operative in the human mind. A large mass of melodic material makes it certain that this principle was the essential force in the structure of the folk music that arose from the effort to give expression to the individual and social spirit, long before and throughout the periods when the theoretical musicians were blindly searching for a free and unlimited means for musical expression of the human spirit.

From whatever source the Greeks may have derived their conception of harmony (*harmonike*), historically they furnished the primary harmonic system upon which rested the first period of music as a consciously developed art. Through the Christian Church the modern world inherited the diatonic tonality of the Greek system, with its various species. To this were added, at a later period, chromatic intervals as embellishments, but not as integral units of a definite chromatic tonality, as in the Greek system. With the exception of many of the genuine folk songs and dance tunes, and the dawning musical drama of the latter part of the sixteenth century, this harmonic system of tones or modes furnished sufficient material for the larger part of the monodic and contrapuntal music, secular and sacred, vocal and instrumental, of the first Christian period, including the marvelously complex and beautiful works of Orlando Lasso and Palestrina. Such a system, however, was not comprehensive enough to furnish the human spirit with adequate material to meet the demands of its awakened and expanding aspirations for higher forms of musical expression. Still further, dependent upon language for its coherency, this tonal system

did not possess an inherent principle capable of crystallizing into a well organized and independent art the tonal material and relationships revealed and suggested by the contrapuntal polyphony of the period

During the latter part of the sixteenth century the tonic principle, which had been embodied in many of the genuine folk songs and dance tunes of the modal period, and which had sporadically come to light in contrapuntal music, finally broke the shackles of the mathematical determination of intervals, received definite recognition, and assumed its rightful dominion in the ordering of harmony and melody. This tonic principle gradually developed a definite and primary harmonic tonality, the *diatonic*, involving the three primary harmonies of *tonic*, *dominant*, and *subdominant*, together with a corresponding system of harmonic units, called *chords*. Here, too, the term "harmony" covers two distinct meanings: the progressive conception involved in tonality, and the static conception embodied in the chord, and in the interval formed by two synchronous tones. The system of pitches necessary to the expression of tonality was called, as in the Grecian and ecclesiastical tonalities, a *key*, each key system being named by the root pitch of the tonic chord. Two distinct species of diatonic tonality, called major and minor modes, gradually crystallized, adding new and extremely effective harmonic material.

An embryonic conception of chromatic tonality arose from experiments in modulation to nearly related keys. Owing, however, to the pure tuning of the instrument used in the period preceding Bach, the number of key tones available for modulation was limited almost exclusively to those of the dominant and subdominant, with their so-called relative minors based upon the sixth tone of each major key. With the final establishment of the equally tempered scale of keyed instruments, the way was open for the application of the tonic principle to the complete development of a harmonic unity of diatonic keys in a definite tonality, the *chromatic*, with its system of chromatic keys, chords, and cadences. This larger horizon stimulated and greatly enriched harmonic imagination, since chromatic intervals no longer served as mere melodic embellishments, but became harmonic units of chromatic tonality, and their expressive significance and capacity were therefore enormously enhanced. As a result, chromatic melody assumed a new and highly significant rôle in the development of all types of music, but especially of the dramatic.

Diatonic and chromatic tonality furnished, almost exclusively, the harmonic and melodic material for the monophonic and contrapuntal music of the sixteenth to the first half of the nineteenth century, including the greater number of the works of Bach, Handel, Haydn,

Mozart, and the early part of the Beethoven period. Rich as this mine of harmonic and melodic material proved to be, it did not measure up to the demands of the restless spirit of the latter part of the nineteenth century. In this period of storm and stress and feverish search for more efficient means of musical expression the tonic principle proved equal to all demands, and opened a new vein of unlimited harmonic and melodic wealth in an all-inclusive tonality, for which the term *enharmonic* is a legitimate cognomen. The enharmonic tonality is the all-inclusive harmonic unity of all diatonic and chromatic keys.

In the polyphonic exploiting of tonality, one of the most significant means of expression, vitally characteristic of contrapuntal as distinct from chordal polyphony, is the harmonically individual significance of each melody. In pure counterpoint the application of this principle of harmonic individuality in respect to each melody produces the impression of the compounding of harmonies. In diatonic, or even chromatic tonality, this harmonic individuality concerns itself only with the simultaneous defining of different harmonies, or chords, of the same or related keys, but in the enharmonic tonality two or more melodies may simultaneously move in two or more diatonic or chromatic keys. The revelation of this inexhaustible source of harmonic and melodic material opened an infinite field for monodic invention, and revealed an entirely new basis for contrapuntal imagination. Composers have not been slow in exploring this mine, and their labors have issued in many masterpieces of musical art born of the noblest and purest spiritual aspirations and inspirations, and also in some voluptuously sensual aural orgies that rival the wildest dreams of Bacchanalian revels and debaucheries. And the end is not yet.

The history of harmony, in its broad and legitimate sense, shows clearly that the development of the consciousness of tonality is the direct result of the ever-increasing demands for significant melody. In the Grecian and early Christian periods, the units of thought were intervals conceived, in a sense, horizontally. Musical thought was concerned with only one dimension. Expressive power was gained by means of the character, the color, of the intervals, and relatively few were, or could be, made use of, even if the quarter tones be included. This monodic mode of expression sufficed, since, in the main, music had no real independent existence, and melody was essentially speech inflection tonally defined. Cohesion of melodic material really centered in language, and the æsthetic character of the poetry. The result of the efforts at polyphonic expression immediately established a harmonic conception of the interval in two dimensions—longitudinal (melodic) and vertical (synchronistic)—moving simultaneously.



Through this process coherency began to appear as a definite and purely musical fact, music began to break away from the limitations imposed by language and to assume an individual existence and character. As a result the development of instrumental or pure music became possible.

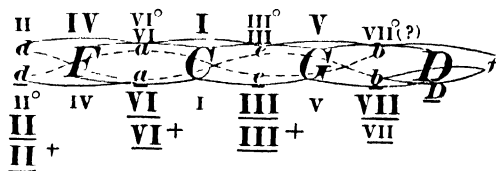
Pushed to its logical conclusion, the synchronous conception of intervals revealed the fact that the chord is not a mere aggregation of such intervals, but is a definite harmonic entity formed, primarily, of a *root*, or center of unity (thus representing, like the prime pitch of the individual tone, the tonic principle), a *fifth*, or root-defining interval, and a *third*, or mode-defining interval. The recognition of this pure chord unit and its progressive orderings necessarily led to the consciousness of a third dimension embodied in pure harmonic tonality. Thus melody enlarged its expressive scope by a threefold harmonic significance, and attained to a principle of cohesion that finally wrought out the absolute individuality of music as an art having its own significant power of expression, and no longer dependent upon either the dance or poetry to define its solidarity, or to make clear its message.

Since in all times the roots of art draw their sustenance from the eternal mental and spiritual needs of humanity, history is ever repeating itself in art, as in all other modes of thought. This repetition is never a copy, however, but is manifested in new forms, under varying conditions, meeting the present conceptions of mental and spiritual nature and aspirations. This is seen in the history of music. Notwithstanding the enormous amount of harmonic and melodic material included in diatonic, chromatic, and enharmonic tonalities, in keeping with the ultra-impressionistic spirit of all modern art, musicians are not wanting who find no satisfaction in the material at hand. Even the alleged whole tone scales and melodic phrases are beginning to pale, and the quarter tone as an element of harmonic and melodic coloring and significance is being revived and experimentally exploited by a few radical musicians. The demand by the few for more significant means of expression is no proof, however, that the present melodic and harmonic material is inadequate. It may possibly be a sign of failure to perceive the potentialities of present means, or a witness to the absence of the "open vision," of the power to see through the veil of sensuous tone and discover and mold significant melody, rhythm, and harmony into pure and noble embodiments of the real spirit of music. Time alone can determine whether the employment of the new-old material shall issue in rarer and more beautiful "temples never built at all, and therefore built forever", but history would seem to prophesy failure, and for the same inherent reasons that obtained in Grecian efforts based upon like means.

**Harmonic Terms — Tonality** — In general, any specific system of intervals, or chords, or harmonies constituting the unit basis of melody. In modern music, a specific harmonic unit based upon a real tonic principle. Tonality is essentially fluidic in nature, involving, like the line, progress of thought, whereas the tone or the chord is static in its primary character. Tonality is of three orders —

(a) *Diatonic*, — the harmonic unity involving the primary harmonies of *tonic* (I), *dominant* (V), and *subdominant* (IV), in both major and minor modes, and their derivatives, *super-tonic* (II), *submediant* (VI), *mediant* (III) of the major mode, and *diminished* and *flat super-tonic* (II), *flat submediant* (VI), *flat mediant* (III), and *flat subtonic* (VII) of the minor mode.

The following diagram of the diatonic tonality of C makes the chordal and harmonic content clear. A line under a figure or letter indicates a flat ( $\underline{d}$  = d-flat,  $\text{II} = \text{II-flat}$ ), and over a figure or letter, a sharp ( $\overset{\circ}{c}$  = c-sharp,  $\text{IV} = \text{IV-sharp}$ )



(b) *Chromatic*, — the harmonic unity of the diatonic keys of *tonic*, *dominant*, *subdominant*, *mediant*, *super-tonic*, and *submediant* tones of the major mode, and *tonic*, *dominant*, *subdominant*, *flat super-tonic*, *flat mediant*, *flat submediant*, and *flat subtonic* tones of the minor modes.

(c) *Enharmonic*, — the all-inclusive unity of all diatonic and chromatic tonalities.

**Chord** — Harmonic unity of three factors, root (1), color (3), and definer of root (5).

Chords are (a) *simple* — major and minor triads (b) *complex* — (i) augmented and diminished triads,  $c\ e\ \bar{g}$   $c\ e\ g$  (ii) all septachords and (iii) nonachords, (c) *compound* — all chord forms having two well-defined roots, although one may harmonically predominate, as in the major diminished septachord,  $c\ g\ a\ \bar{c}$ , or nonachord,  $c\ g\ a\ \bar{c}\ b$  where  $c$  and  $a$  are roots whose center of progression is the chord of  $d$ .

The superimposing of chords results in (1) *compound harmonies*, (2) retardation of harmonic progression, or (3) the simultaneous progression of two different harmonic series.

**Interval** — The harmonic unity of any two tones, the relation, synchronous or progressive, of any two tones. Intervals are classified (1) according to (a) the number of contiguous degrees involved — *primes*, *seconds*, *thirds*, *fourths*, etc., (b) the character of the interval — *perfect*, *major*, *minor*, *augmented*, *diminished* (2) As (a) consonant — *perfect fifths*, and *octaves*,

and major and minor thirds and sixths, (b) dissonant — seconds, fourths, ninths, and all augmented and diminished intervals

**Key** — The system of tones involved in tonality, — diatonic, chromatic, or enharmonic. The key is named by the root tone of the tonic chord — key of *D major*, *D minor*, etc

**Scale** — The degree-wise ordering of the tones, diatonic or chromatic, of a key from any given point, usually the key tone, up or down to the octave

Diatonic tonality includes sixteen, and chromatic tonality a very much larger number of possible diatonic scales

The chromatic scale consists of the following incidents — 1 1 2 2 3 4 4 5 5 6 7 7, in the major mode, and of 1 2 2 3 3 4 4 5 5 6 6 7 7, in the minor modes

**Counterpoint** — The term "counterpoint" (*contrapunctus*) had its origin in an early system of representing melodic movements by means of points, and therefore literally signifies point against point (*punctus contra punctum*) In general, counterpoint is a species of musical writing resulting from the weaving together of two or more individually significant melodies into a harmonic unit having definite design and form *Polyphonic* (many-voiced) singing is known to exist among the most primitive peoples of the present age, such as the Bushmen of Australia This fact furnishes some basis for believing that part singing may have been practiced long before written history takes note of it, but there are no records of a conscious effort to develop polyphonic art until about the eighth or ninth century of the Christian era The development of a higher and more complex inner life, together with an expanding apprehension of the solidarity of humanity, could not find adequate art representation in the pure monody of Greece or in the early Christian period, notwithstanding all the subtle and complex modes of enhancing its æsthetic and spiritual significance The demand for a more deeply expressive, more comprehensive, more fully organized form of an art that touches so strongly the hidden secrets of the human mind and heart led to the development of *polyphonic* and *polyodic* music

The earliest attempts at polyphony resulted in one or more voices singing a more or less exact repetition of a given melody, called the *cantus*, a fourth below or fifth above, with cadences on the unison or octave The essential progress of the accompanying voices being parallel to the *cantus*, no real melodic individuality could result This seemingly barren type of counterpoint was not, however, without a certain æsthetic significance quite in keeping with the austere and icy character of monastic and religious life Melodic individuality and significance in the accompanying voices became possible when the principle of contrary motion in respect to the *cantus* began to govern the progression of the accompanying

melodies The resulting synchronistic intervals were the fifth and octave This type of polyphonic music was called *descant* (*discantus*) The ungainly skipping nature and utter insipidity of the melodic succession of intervals resulting from this mode of descant led to the improvised or artistically designed filling in of certain skips according to laws governing both melodic progression and rhythmical proportions, and the point for point (*cantus planus*) type of counterpoint was supplanted by the more interesting and artistic species of figured counterpoint

The development of this species of writing finally broke through the restrictions imposed by a false mathematical determination of intervals, and established the intervals of the third and sixth as effective musical material, whether in the form of melodic progression or quasi chord masses Thought and imagination thus liberated wrought out a higher degree of melodic and rhythmic individuality and significance in both the cantus and the accompanying voices, and a pure contrapuntal polyphony was the final outcome The advent of this free and pure contrapuntal type of music marked the beginning of the choral epoch, one of the most prolific and glorious periods in the history of music an epoch which included the works of Palestrina and Bach Notwithstanding the enormous increase in the power and broader scope of musical imagination and æsthetic expression resulting from the use of the richer intervallic coloring and rhythmic life in the ordering of melodies, a purely musical cohesion did not exist The necessity for it, however, did exist in the very nature of human thought, and the next epoch registers the appearance and application of the primary principles of musical coherence and unity, and a more highly organized and expressive type of form.

The first principle to appear was imitation Somewhere some one hit upon the device of making portions, or the whole, of the principal melody accompany itself In one method of writing the second voice begins the original melody when the first voice reaches a certain point in the *cantus* This distinct species of contrapuntal polyphony is called the *canon* The well-known Round, *Scotland's Burning*, is an illustration Canons are termed *strict*, if the answering voice repeats each interval exactly as in the *cantus*, or *free*, if it varies in any degree the nature of the answering intervals Canons are also designated as *canon at the unison, octave, second*, etc., according as the answering voice begins at the interval of the unison, octave, or second from the first tone of the *cantus*

The following types of complex canon were eventually evolved (1) *Canon by inversion* — the second voice answering the upward progressions in the *cantus* by downward movements, and vice versa. (2) The *crab canon* —

the second voice singing the cantus backwards (3) *Canon* by *augmentation* — the second voice singing the melody in notes double the length of the cantus (4) *Canon* by *diminution* — the second voice repeating the cantus in notes of half the value. Repetition rather than true imitation is the essential characteristic of this type of polyphony, but in the *free canon* the element of variation approaches more nearly the spirit of the higher type of imitation.

Through the increasing influence of the folk song, the folk dance, and the musical drama, and the adoption of the tonic tonality, with its major and minor modes, the fundamental principles of form were evolved, and instrumental or pure music attained its freedom. From this period, polyphonic thought in both vocal and pure music developed in the direction, (1) of the pure contrapuntal type, (2) of the chordal or harmonic type. Apart from dramatic music and the pure song, the dominating idiom of musical thought in this contrapuntal and choral epoch was the fugue and fugal and canonic imitation. This species of musical art was the product of the canonic type plus a demand for greater unity through well-defined tonality and logically organized form. It used the principle of the cantus, but in the form of a short theme. It employed the repetitional method of imitation, but developed a high species of *variation* in the imitating voices. It molded its forms along lines derived from the folk song and the folk dance, but with a freedom that made possible the embodiment of the noblest lyrical and even dramatic imagination.

The elements of the fugue are (1) the *theme* (*dur*); (2) the answer (*comes*) — the repetition of the theme by the second voice in the dominant key (later in other keys), either strictly, called the *real fugue*, or in a modified form, called the *tonal fugue*; (3) the *counter subject* — the contrapuntal melody sung by the first voice as an accompaniment to the *answer*; (4) the *episode* — a free treatment, in fugal and canonic imitation of various types, of some figure or phrase of the theme, binding together the several parts and serving as contrasts to the sections in which strict imitations of the theme obtain, (5) the *stretto* (pressing together), in which the imitative repetitions of the second voice begin before the complete ending, and at points nearer and nearer to the beginning of the theme.

The era of the fugue and canon culminated in the works of the acknowledged greatest musical genius the world has yet known, Johann Sebastian Bach.

Overlapping, but essentially beginning with the establishment of the tonic principle and the domination of the chord mass in place of the simple interval as the essential unit of thought in tonality, pure counterpoint has been ordered in accordance with the two dis-

tinct governing principles of (1) *tonality*, whether *modal* (ecclesiastical) or *tonic* (modern tonality), and (2) the *chord*. In the first and purest type of counterpoint each melody moves freely in the tonality, untrammelled by any necessity for defining, in conjunction with the other voices, a specific series of chords, and unfettered by any demand that its cadences shall coincide with those of accompanying voices, except at the close of important sections. In this species the synchronous masses are not chordal in the strict harmonic sense; but masses of synchronous intervals, intervallic colors, suggesting, it may be, two or more harmonies or chords. In the second type of counterpoint all the voices, while real and individual melodies, move with reference to defining a specific chordal scheme. In this second type the synchronous masses are clearly defined chord units, either simple or complex. These two types of polyphonic music are distinguished by the fact that all the voices are concerned with melodies of equal significance, and are, therefore, strictly contrapuntal.

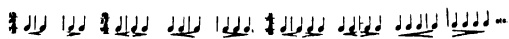
A third and important species of polyphonic music is one in which the voices are concerned mainly, if not solely, with the function of defining chord masses and enriching them with intervallic color, sonority, and massiveness. Chord masses thus conceived may serve as the principal means of expression, and melody, in a degree, may be fragmentary and not definitely organized, or all chords may be used as means for enhancing the expressive significance of one or more important melodies. This is the genus of what is termed the monodic or monophonic type of composition, although it may be polyphonic as to the fact of many voices. In this type of polyphony the voice progressions do not pretend to assume melodic significance, as in pure counterpoint, in fact, the various voices may be, and often are, without melodic significance. These three types of polyphonic thought are all employed as means for enhancing the æsthetic import of the music of all writers, from the pure lyrical and dramatic contrapuntist, Johann Sebastian Bach, down to Richard Strauss and Claude Debussy, the ultra-impressionist tone painters of the present time.

**Rhythm** — In all modes of thought, all modes of imaging a consciousness of ideas or experiences, the factors of duration, or quantity, and intensity, or stress, are necessary conditions for determining æsthetic form and significance. Proportion in respect to duration, or dynamic intensity, arising from the æsthetic impressions or from the nature of the elements of expression, — for instance, sound in language, tone in music, — is the essence of that idea which, following the Greeks, we call **Rhythm**. A rhythmic idea appears whenever a grouping or ordered sequence of proportions is defined.

In music the melody of folk songs and church cantata followed the proportionate durations gov-

erning the sounds of language until the efforts at combining melodies of varying rhythmic design made it necessary to adopt some principle of order and unity in respect to the number of tonal durations that should be sung to the tones of the cantus by the discanting voices. From these efforts arose what was called *metrical music*, based upon two primary ratios—the perfect, three is to one,  $\text{♩} = \text{♩}$  and the imperfect, two is to one  $\text{♩} = \text{♩}$ .

Under the influence of counterpoint, the dance and instrumental music, the gradual development and organization of complicated rhythms led to the adoption of the accentual principle of metric rhythm as a means for defining the progress of the various voices. The elements of metric rhythm are (1) units of a given duration, called beats, and (2) varying intensities in respect to the thought content of such units. A measure, therefore, is a rhythmic entity involving the relation of a definite number of beats of like duration, but of differing intensities. Measures may vary (1) in the number of intensities or beats, *i.e.* two, three, four, beat measure, etc., (2) in the order of the intensities, as in the following illustrations, where the quarter note represents a beat of given duration, and the bar the point of greatest intensity.



To meet the exigencies of free poetic imagination and to avoid monotony resulting from a long series of like kinds or orders of measure, there are in music varying modes of treating metric conceptions.

1. The most common metric variation results from the use in a given metric series of a variety of forms (orders of intensities of measure), that is, while the general unit of duration from crest to crest of the greater intensities remains comparatively constant, the less significant thought units, the lesser intensities, may freely vary in their relations to the strong intensity, thus resulting in a series of changing forms of measure.

2. A second mode of variation (Fig 1) arises from the sudden changing of the strong intensity from its normal position in the series, resulting in what is known as *syncopation*. In polyphonic music, syncopation practically arises



Fig. 1.

from superimposing like meters, starting at different periods, a species of rhythmic dissonance. A modern term for the extreme use of this effect is *Ragtime*, to which all great writers must plead guilty.

3. A third and very effective mode of rhythmic treatment arises from combining different measures. That is, while one melody moves in, say, three-beat measure, the second may be moving in two-beat, and a third in four-beat measure, a species of rhythmic harmony. In the following illustration (Fig 2) from Schumann the melody is in three-beat and the accompaniment in two-beat measure.

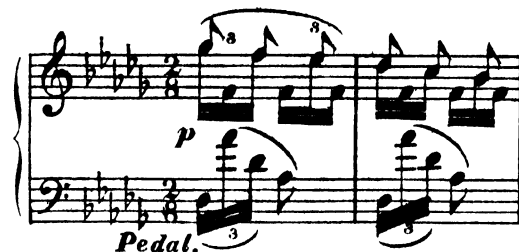


Fig. 2

(4) The fourth form of metric variation is the product of a series of varying kinds of measures. This species of rhythmic variation may be accomplished in different ways.

(a) The measure may change in respect to the number of beats without changing the limit of duration between the points of greater intensity, as in the following passage from Schumann (Fig 3), where *a*, the primary two-beat measure



Fig. 3.

of the first strain, is followed by *b*, a three-beat measure, the metric scheme of the second strain, (*b*) A beat may be added or subtracted, thus changing not merely the *kind* but the real *duration* of the measure, as in the passage from MacDowell on the following page (Fig 4).

This rhythmic variation is characteristic of many folk songs, showing that it is a primitive form. The following fifteenth-century chanson is a fine specimen. (Fig. 5)

(c) A third variant, of like nature with the above, is a species of rhythmic augmentation, as in the following passage from Schumann (Fig 6), where the rhythmic unit *a*, formed by two three-beat measures, is followed by really a



Fig 5

one-measure rhythm of three augmented beats, three longs, the quantitative value of which equals the preceding two-measure unit.



Fig. 6.

The following complicated and effective passage from Brahms's Clarinet Sonata in F minor is interesting, because of the augmentation in two voices that are syncopated in respect to each other. (Fig 7)

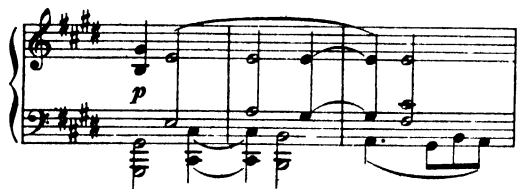


Fig 7

In the educational development of rhythm, meter is usually given the first place, as though it were the more important rhythmic factor; quite opposed to this common theoretical notion, however, is the fact that in the real interpretation of both music and poetry meter is far from being the most significant rhythmic conception. Based upon the circumscribed figures of the dance, and serving the purpose mainly of punctuating the lesser units of thought, in the highest lyrical, and especially in dramatic music, the metrical accent is practically lost, swallowed up in the quantitative proportions and the stresses involved in the larger units of musical thought, such as the phrase, and even the motive. As a matter of fact, therefore, quantity (durative mass) and quantitative proportions are the essential elements of rhythmic thought. A very simple illustration will serve to make clear the vitally expressive rhythmic effect of the rhythm of quantity. The following versions of the opening phrase of Beethoven's Sonata, *Opus 13*, do not differ in respect to the number of beats and points of greater intensity (Fig. 8.)



Fig 8

Nominally, and as conventionally printed (fig 4) this phrase is supposed to lie within one measure of four beats, each beat being represented by a quarter note. Practically, the development of the thought requires two points of greater intensity — the first and fifth tones. The beat, therefore, is represented by the eighth note, and the phrase includes two four-beat measures.

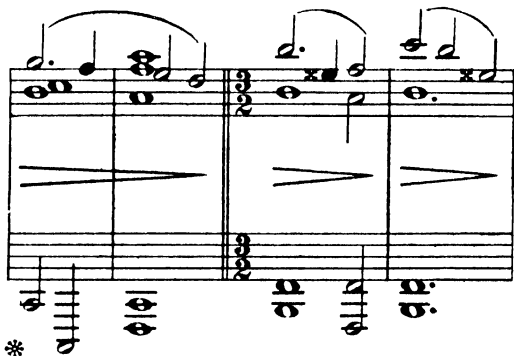


Fig 4

In the first version, Beethoven's dramatic idea is entirely lost, because the individuality of the first chord is merged with the second and third chords, forming the opening musical idea. In version two the rhythmic form of the first chord embodies a distinct impression, like, for instance, the first word in *Hence 'loathed Melancholy'*. But the intensely dramatic force of the opening chord is only realized in the quantitative form of Beethoven's version. Still further, in Beethoven's version the second idea, *b*, is far and away more dramatically expressive by reason of the quantitative proportions, and also because the same means break the thought into two impassioned utterances, *b<sup>1</sup>* and *b<sup>2</sup>*, the second of which forms the climax.

Educationally, it would seem to follow, as a necessary deduction from historical evolution and the greater significance of quantitative (durative) proportion, that this should be the rhythmic principle first recognized and most assiduously studied. The ordinary method of metric scansion in music based upon the tyranny of mechanical accent (in music represented by the bar) is deadening to the higher and vital conception of the beauty and expressive significance of quantity in music as certainly as in poetry.

It remains to call attention to the fact that rhythm plays as significant a rôle in the harmonic design as it does in the melodic structure. For the understanding and interpretation of a musical work of art it is essential, therefore, that the rhythm of the harmonic background

should receive equal consideration with the rhythm of the melodic designs C B C

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#### MUSIC IN EDUCATION. — Historical Sketch

— The place of music in popular education has changed with the changing motives that control such education. Three distinct phases may be recognized. the religious, when education was chiefly connected with the Church and the teacher was the priest, the humanitarian, which came with the growth of the democratic influences of the eighteenth century, and the social-economic, as one may call the third phase upon which we are now entering. The rapidly growing complexity of our modern life has been putting greater and greater demands on our whole educational system. The problem of the modern educator is to discover how to economize time and energy. A new valuation is now going on of all forms of study and exercises that occupy the student's time, aiming to adapt the curriculum to meet the practical requirements of life efficiently. It is natural that such a study as music, which presents so little that can be measured from a practical point of view, should be influenced by this movement.

*The Religious Phase Choir Schools* — Tradition says that choir schools (*schola cantorum*) were instituted at Rome as early as the fourth century (by Pope Silvester I, 314-335) and from 590 they were much emphasized by Gregory I (*qv*). At least by the eighth century, if not much earlier, the Western Church had given official sanction to a system of unison melody, commonly known as "Gregorian," though apparently developed from Byzantine and Greek origins, which had attained notable proportions as the artistic vehicle or embodiment of the liturgy. That the Church used music as a means of elevating the people is shown by a saying of Chrodegang of Metz (746-766) "The melodies of the singers shall uplift the people to love of divine things through the inspiration of the words as much as through the tune." From about the twelfth century the Church also became the field within which the art of contrapuntal composition unfolded. This evolution was scholastic, rather than popular. To master it required discipline, such as was possible only under teachers and through study. In the medieval "choir school" the subject of the new Figured Song was now added to that of the Gregorian Plain-Song. The persons thus educated were primarily only adult ecclesiastics, — monks and priests, — but as choirs of men and boys became common, the "choir school" tended to become an institution in which many boys below the age of puberty might be educated to considerable musical proficiency. The study of sacred song was the main object, but, because the boys had to be kept together for several years, other subjects were introduced more or less. Hence the "choir school" often touched the field of general education, but with music highly emphasized. In process of time some of these schools accumu-

lated endowments and became independent institutions. A famous illustration of this is the Thomasschule at Leipzig, which began as an Augustinian monastery school in the thirteenth century, and became a Protestant town school before the middle of the sixteenth. Many others, especially those connected with cathedrals and with certain national courts (*Chapel Royal*), have persisted in some form to the present day. (See *CHORISTERS' SCHOOLS, SONG SCHOOLS*, in the article on *MIDDLE AGES, EDUCATION IN THE*.)

*Early Methods of Teaching Music* — From the earliest periods two distinct modes of approaching music teaching were presented, one in which the learning was through imitation, teaching by rote, as it is called — and the other where the rudiments of music were taught, and the pupils learned to read from the written signs. In a school ordinance of 1522 at Nördlingen the pupils were to be divided into three sections, of which the two upper ones were to receive instruction in theory and practice, and the last should first be taught the text, and then the tune by ear. The Württemberg church ordinance, 1559, and the Pomeranian, 1563, provided for the practice of singing in elementary schools, but the method was only that of singing by ear, in the Latin schools it was usual to employ the pupils in chous so that they received regular instruction in music. While the Reformation broke away from the older ecclesiastical music, it stimulated in the chorale even a greater desire to sing. Luther is reported to have said "A schoolmaster must be able to sing or I take no notice of him." The ordinances drawn up by Melancthon and Bugenhagen provide for instruction in music, but they deal generally with Latin schools. The School and Church Visitation in Marburg (1628) and Hesse-Darmstadt provided that all children above eight years of age should "attend the public schools and at all times be present at the singing in Church." Duke Ernest the Pious of Gotha (*qv*) included singing in the famous *School-method* of 1643, which devoted one of the longest portions of the work to the subject (paragraphs 212-294). It includes suggestions on method and formal instruction in music. At least one hour each day was to be given to it. Two divisions, choral music and figured descent (*Figuralgesang*), were made. The former was taught by ear, phrase by phrase, the latter from notation. The teacher is warned not to weary the pupil with too much theory and troublesome scales. A song book is to be provided for each. Clear and sensible expression should be insisted upon. The earliest pieces were to be sung in four parts (descant, alto, tenor, and bass). The teacher was not provided with an instrument for accompaniment. An ordinance of 1697 for Nuremberg provided that singing should be taught in writing and ciphering schools for church purposes. Co-

menius (*qv*) proposed that the child should be taught singing of a few easy psalms as early as the "mother school." In the elementary school he only recognizes singing for church and religious purposes. Francke's aims in music were similar.

The numerous ordinances of the sixteenth century provide for the teaching of singing, but in all cases the subject matter is religious. In many cases the ordinances appoint the local sexton to teach singing along with the catechism. In fact, many Protestant schools owe their origin to the need of teaching singing for the service of the Church.

In England the song school occupied a position a little above the elementary and below the grammar, and while their chief object was to teach the singing necessary for church services, the other common subjects were included.

Erasmus describes the English as a musical and the German as a drunken people, and it has been suggested that the abolition of the training school of song and music that took place with the Reformation and during the reigns of Henry VIII and Edward VI had much to do with changing the musical character of the English people.

It must be noted that the song school was not confined to song, often teaching to play on the organ is included in the description of the song school master. Such was the case at Bosbury in Herefordshire. The schoolmaster was to "bring up the youth in learning and to play the organ." Similar to the song schools in England were the sang schools of Scotland, one in Aberdeen is believed to have existed as early as 1370. While in Scotland especially the sang school seems to have been adopted by the Reformation, the lesser importance that music occupied in the service of the Protestant Church reduced the importance of these schools, so that they have gradually died out.

*Gild Schools* — Outside the Church two organizations, the gild schools and the "town musicians," contributed largely to the development of musical education. Of the gilds the most notable example is the extensive circle of gilds organized by the *Meistersänger* of southern and western Germany from the fourteenth century onward for more than two hundred years. These societies sought to magnify poetry and song as a kind of trade specialty, which was to be cultivated only by passing through a graded system of training and examination that led ultimately to the right to the title "Master." The historic importance of these curious fraternities lay not in the artificial and even ridiculous methods that they often used, but in their number and distribution, with the considerable number of their members. Artistically and pedagogically, the *Meistersänger* movement lacked breadth and insight, but its popular influence was not

insignificant. It served to bring into action latent capacities for music as a serious pursuit among the common people, and to dignify the process of education which was involved in that pursuit. Somewhat parallel movements—the so-called “Minstrel Gilds”—occurred in other countries.

*Town Musicians* — Associated with these gilds in time, though not always connected with them directly, were numerous efforts to organize in certain communities a body of “town musicians,” both singers and players upon instruments, which could be called upon to assist in numerous civic and social functions. Every such organization, when continued long enough to become an institution, demanded more or less of an educational element or basis, which was variously supplied in different cases, sometimes through the town schools. It is difficult to cite any large number of facts under this head, but there is reason to suppose that from the sixteenth century onward a constantly increasing number of towns and villages in Germany, France, and England maintained some communal interest in music, and made some slight communal provision for instruction in it. This tended always to bring the subject of music into organic connection with whatever system of public education was attempted.

*The Humanitarian Phase* — The second phase of music teaching was strongly influenced by the humanitarian spirit that so pervaded the democratic movement in the latter part of the eighteenth century. The school, instead of being for the Church, was developing more and more for the people. Hence, reforms in the methods of teaching were many and radical. The desire to give every one attending school the rudiments of a musical education led to the simplifying of notation. Much of the interest that was awakened in popular singing early in the nineteenth century can be traced, in Germany especially, to the revival of interest in liturgies in the Lutheran Church, giving importance to congregational singing. Another motive is that the national school systems that were then being started in the leading countries of Europe gave a value to music as an element in the education of patriotism. The influence of such a reformer as Pestalozzi was felt. Hans Georg Nagel (*d* 1836), a music publisher near Zurich, was active in agitating for school music, especially advocating the application of the new methods of Pestalozzi to the subject.

In France, Guillaume Louis Wilhelm (Boequillon, *d* 1842), known chiefly by his efforts to promote popular teaching of singing, was made director-general of music in the municipal schools of Paris in 1819. He threw himself into this cause with an enthusiasm which soon produced striking results. Besides the school teaching, he had classes which gave instruction to thousands of pupils, mainly working people, and out of this presently grew the establishment of the Orphéon, the vast organization

which has since covered France with singing societies.

The success of Wilhelm's work in France stimulated similar movements in England under Mr. Hullah, who on Feb. 1, 1841, opened at Exeter Hall a school for instruction of school-masters of day and Sunday schools, in vocal music, by a system based on Wilhelm's. In twenty years, it is said, over 25,000 persons passed through his classes.

*Tonic Sol-fa Method* — A parallel movement in popularizing music in England, which grew to much greater importance, under the lead of Mr. John Curwen, began to attract attention about 1850. It is based on a simplification of musical notation, the staff being discarded and a letter notation being substituted in its place, indicating the relation of the tones in the key. The emphasis of key relationship of the three most important tones in our harmonic system gave the name to the method of Tonic Sol-fa.

*Galm-Chevé Method* — A similar method was being developed in France, although not attaining the same importance, under the name of the Galm-Chevé, in which, as in the Tonic Sol-fa, the relationship of the tones in the key was emphasized, only in this case numbers were placed over the notes to indicate this relationship.

*Public Class Instruction* — Still more important pedagogically was the change in methods that ensued from passing from the traditional custom of private or individual instruction, which had been in use for generations in most musical subjects, to systematic class instruction, particularly of singing in chorus. This is seen in the widespread interest in choral societies of different sorts that began to attain large proportions during the first half of the nineteenth century in Germany, France, and England. Such enterprises, whether in schools or in communities, stimulated the preparation of special literature, — textbooks for learners, manuals for teachers, graded material for the use of societies, — and tended increasingly to induce many persons to prepare themselves to become instructors, trainers, and leaders. Thus public school music and public choral societies so closely connected in the methods employed gradually became distinct and significant movements.

*United States* — The enthusiasm for the popular teaching of music, which was being felt so strongly on the Continent and in England, was not lacking in the United States. Under the lead of Lowell Mason (*qv*), who is well called the father of school music in America, work was commenced in Boston that led eventually to the adoption in 1837 of a resolution “That in the opinion of the school committee it is expedient to try the experiment of introducing vocal music, by public authority, as part of the system of public instruction, into the public schools of this city.” Parallel to



the school work, like both Wilhelm and Hullah, Mr. Mason started an institution for giving concerts and preparing teachers, known as the Boston Academy of Music, established in 1832. Mr. Mason was strongly influenced by the teaching of Pestalozzi, and avowedly conducted his work on his system of teaching. The example of Boston was soon followed by such cities as Cincinnati and New Orleans, and there has been a steady advance toward the full recognition of music as a school study.

**The Social-Economic Phase** — The trend of the third phase in modern popular education, which we have termed "the social-economic," is well illustrated by the tendency to slight or drop music entirely in schools fitting students for the higher institutions of learning.

A glance at the courses of study offered by such institutions in Germany, France, England, or the United States will show that less time is given to music than formerly. Higher education tends to become more specialized, and a subject like music, which shows perhaps less connection with a professional occupation than does any other, now takes a less important position than in schools serving a similar class of people fifty years ago, when the cultural or general education was stronger than the professional or economic.

A second reason influencing the change is the very great development of popular education, making a demand for teachers from the middle and lower classes who necessarily are unable to put very much time on professional training, so that, especially in America, a large proportion of the grade teachers are musically unable to teach the subject. The preparation of these teachers, demanding so much in the line of modern practical subjects like physical training, manual training, drawing, domestic science, and domestic art, tends to leave less and less time to the preparation for teaching music. Along with this same pressure the experiment of attempting to teach everybody sight reading, that was so enthusiastically supported in the middle of the last century, is not giving the expected results. Not only is the necessary drill proving irksome both to teachers and pupils, but the slight mastery gained is not proving of any great musical value in the later experience of the pupil. Hence, the liberal educators are dividing the time given to specific music study with what might be called "appreciation work," the hearing of music performed, since the modern mechanical means for reproducing music prove a very great aid to such work. There is also a distinct tendency to encourage instrumental work in schools, although this is often supplementary to the regular school work. Especially striking is the work done in England by what is known as the "Maidstone Movement," where fully half a million school children of the British Isles are connected with an organization for playing the violin. There

is a tendency in the extremely modern schools to shift the emphasis in music from the pure sight reading work of the earlier years to various forms of what might be called creative work. Under the theory that the pupils get the most out of what they make themselves, they are encouraged to make up not only their words but the tunes as well. Finally, while the place of music and the method of its study are changing, and the place it has occupied is being contested by other subjects, yet this very struggle is bringing about a larger view as to its true value in education, and more efficient methods as to its realization.

**Methods in School Music** — Methods in music teaching deal with two kinds of activities. (1) What is necessary for producing the music, such as the control of the instrument, or voice, and the understanding of the notation. (2) What is done under the term of "nuance," popularly called "expression," and the slight notation that indicates it. The first may be said to deal with the structure of music, the second with its interpretation. It is obvious that the first application of a method in music will be to produce tones, following which there will be a constant effort toward control for expression. This is especially true for the instrumentalist. Even the voice teacher spends the first few years in what is called "voice-placing," practice for producing a good singing tone, before he does much with song interpretation.

In teaching school music, however, this order of activities is reversed. The voice in most children, through the exercise of speech, is already under wonderful control, so the aim of school music is not to produce professional singers with developed voices, or professional players, but to cultivate a taste for music by good singing and to prepare the individual to aid in the social uses of music, and it is better to commence with rote songs, or singing by imitation. Two things are thus of special importance in school music: (1) the pupil must know how to render many fine songs in order to develop his taste and appreciation, and (2) he must be able to read from notation.

The instrumentalist, by the time he has learned to play, has associated the action necessary to produce the tones with the notes on the staff that represent these tones, so that when he sees the note he can produce the tone. He can thus, unfortunately, especially if he is unmusical, avoid the necessity of thinking music. The mental process of such a person consists in thinking the physical motions necessary to produce the tone called for by the note, but not the tone itself, which he only hears as the result of his action. On the other hand, the singer has no definite movement in his throat that he can associate with a given note on the staff. F and F sharp feel the same to him. The singer is obliged to learn his notation not by connecting it with the

actions that produce the tones, but by connecting the notation with the way the tones sound. The first few tones heard tend to establish a key to which all the tones that follow are related, the task of the singer being to associate these tone relationships to the notation that represents them. His mental process, instead of being connected with the physical movement necessary to produce the tone, is a thought process, for he must hear mentally the sound that the note represents before he can produce the tone.

*Interpretation* — Learning songs and learning how to sing them expressively in school is largely carried on through imitation, the pupil being required to match or imitate the model tones given as well as the style or way in which the songs are sung. Supporting this work, the thought of the text and the character of the melody are brought home to the student's mind, so that his feeling for the thought and the character of the song aids in getting the quality and rendering desired. Besides this work, vocal habits are developed in the pupil, based on the distinction between the chest and head tones. The former is what the child or youth largely employs in his play, and there is a natural tendency to do the same in music, but when sustained pitch is attempted with this register above B in the middle of the treble staff, the tone becomes hard, and the vocal mechanism strained. The head tone that the child naturally uses when singing above D of the fourth line of the treble staff is clear and sweet. Vocal method in school music is largely concerned in strengthening this upper head tone and developing it downwards. For this reason most teachers agree that scale practice and technical work should commence with the upper part of the voice, with the head tone, bringing this quality down as far as possible and that the lower tone should be sung softly, developing by constant practice an automatic control of the voice. Thus, the first method in school music deals largely with musical interpretation, and consists in (1) Imitation of a good example (2) Attention to the thought of the composition, both text and style (3) Development of clear head tones.

*Structure* — Turning now to the second element in learning to read music, the starting point here also lies in imitation. Tone progressions, such as scales or simple songs, are first learned by imitation. These are then sung in connection with their notation, until an association is formed between what is sung and what is seen. Such association is not as simple as it seems, for the notation of music presents three different kinds of tonal relationships: pitch, duration, and metrical grouping. It is through the combination of these three kinds of relationships that the pupil is able to form a concept of the musical movement of his tune. The problem here is essentially the same as that of reading language. From what

the notes indicate, the pupil's mind must be capable of forming concepts of the musical movement sufficiently far ahead of what the voice is producing not to interfere with the even flow of the music. Unlike language, the signs and notes that represent these relationships are not grouped into musical units as letters are combined into words standing for the same idea in whatever combination the words may appear, but every musical unit has its own peculiar combination. The music reader must think these musical units by combining the separate relationships that go to make them up. The most complex part of the training, and the one that requires the closest attention in the methods employed, is concerned with the problem of rapid conception of the tune from its notation. A musical child will often make its associations between the appearance of the notes upon the staff and the movement of the music, so that he is able to read music fairly well, without being able to tell definitely the separate intervals of duration and pitch, representing the musical thought.

*Key* — The large majority of people, however, need help in associating the position of the tones in the keys with the notes. Such a device we have in the famous *do re mi*, or syllable names, dating back to the eleventh century, and attributed to Guido of Arezzo. This association is made possible when the key is established, the tones of the scale taking on certain characteristics. When, therefore, a certain syllable is always sung to a certain tone in the key, when the sign for a syllable is written, it suggests the relative tone in the key it represents. The principle underlying this use of the syllable names had a revival in France under the leadership of Pierre Galin, a music publisher of the early nineteenth century, who indicated the relationship of tones by numbers. In England John Curwen utilized the sound names attributed to Guido. In the system thus developed, called the "Tonic sol-fa," the fixed pitch representation of the staff was ignored, and the first letter of the syllables, *do*, *re*, *mi*, etc., were printed instead of numbers, for example, *d*, *r*, *m*. The spacing of these letters indicated the duration of the tones. These letters, like the numbers, drew attention to the relationship of the sounds to be sung, and not to any given pitch, and are evidently a vocalist's notation.

The American methods follow the English usage, and some places even adopt the Tonic sol-fa notation as an introduction to sight-reading; but the ordinary practice is to use the syllable names with the staff notation. This brings about a complexity that does not exist where the syllables are used with the Tonic sol-fa notation, for reading by note requires a student of harmony to determine the proper relative name from the fixed notation that the staff represents, especially in modern music, which tends to be more and more chromatic

and makes it difficult to determine what the exact key relationship of a tone is. Another difficulty grows out of the constant use of the Tonic sol-fa names, especially where the syllable names have been too slavishly used. The tendency is to associate the tone to be sung not simply with the sight or sound of the name, but with its actual physical production, so that the pupil is able to sing the tune if he can sing sound names, but is unable to think the tune apart from the names. In order to avoid this difficulty many schools use numbers instead of sound names. The objection to this is that the number names do not lend themselves to good tone production, and when too closely followed this method is open to the same objection as the use of the sound names. The chromatic tendency of modern music above referred to is making these methods less and less effective.

*Interval* — Besides thinking of tones in their relation to key, we may think of them as determined by their distance from each other as intervals of seconds, thirds, and fourths having certain common characteristics. When this has been thoroughly grasped, one is enabled to sing these distances by thinking the nature of the interval. Mr. Samuel Cole of the New England Conservatory in his sight singing course has given specific names for each interval. By always using the name with the interval whenever it occurs, associations are formed between the interval character of tones and the name, so that, when the interval name is thought, the tones occur to the mind.

*Rhythm* — The teaching of duration and time grouping of tones does not present such a variety in the methods employed. The demand on the pupil, unlike that of thinking pitch relations, is identical for both singer and player. A few fundamental differences in tone lengths are used over and over, whatever the key, although confusion is caused to young students by changes in the note used to represent the beat. This difficulty is being reduced, there being a tendency among publishers to use uniformly a quarter note to represent the beat in simple time. Besides beating the time, other physical movements for strengthening the feeling for pulse in music are being employed in a more varied way.

In Europe much interest has been awakened by the work of M. Jacques Dalcroze, who has developed a remarkable feeling for rhythmic character through dancing and gesture. Movements of the march and folk dance are advocated for developing rhythmic feeling as a support for musical work.

*Present Procedure* — The pressure of more and more studies in the school is tending to lessen the time given to singing. A fair average allotted to this subject is one hour a week, sometimes given in two half hours, sometimes in fifteen-minute periods. This hour is often supplemented by another period of music

work and general exercises. The music study period generally commences with some breathing exercises, followed by scale and vocal practice. Then technical matter pertaining to notation is followed by reading new music or exercises, and the lesson ends with a review of familiar songs.

In the first grade learning songs by imitation, or "rote singing," as it is called, is largely emphasized, and in some schools this is carried on in diminishing extent through the grades. This makes it possible to introduce a great deal of excellent music, which might otherwise be too difficult to read. On the other hand, those schools employing sight reading do little rote work after the first grade, paying much more attention to the singing of exercises intended to improve sight reading. This procedure reduces the artistic musical material used, but tends to increase the proficiency in reading. In either case, much depends upon the amount of individual work demanded from the pupils. The great difficulty in accomplishing any thorough teaching along ordinary lines lies in the fact that music is universally taught collectively, thus reducing the individual responsibility to a minimum, so that students can go through eight years of grade work, and at the end be unable to give the simplest description of what they have done.

*New Tendencies* — The new trend in modern education is bringing about a decided change in the attitude toward the popular teaching of music. This change in aim puts the emphasis not so much on what is taught as on what the pupil can do with what he is taught. The point of interest is the pupil rather than the subject. Under this new influence the teacher aims to make the tone quality, the dynamics, the pronunciation, and the musical form, both as to pitch and rhythm, grow out of one central thought, — the expression of the feeling suggested by the words of the song. The child must sing it in a way to show that he realizes the significance of what he does.

But this is not all, the child must not only make the musical thought of another his own, but he must have experience in expressing his own poetic and musical thought, not that in so doing he can express anything of value for others, but for the sake of the musical development both in thought and taste that such practice brings about. It is parallel to theme work in the teaching of the mother tongue. This attitude toward music treats it more as a language, and seeks to make the form expressive of the feeling. In making a melody fit the words of a song the child is constantly led by the teacher to observe the relationship between the music and the text. Such effort on the part of the pupil brings about the most searching observation and thought with reference to the song he is producing, and when such song making is the collective effort of the whole class, different members offering their

versions of the wording and thought of their couplets and their melodic expression, a much more intensive exercise of æsthetic faculties and discriminative thought is brought about than ordinarily takes place by the old methods.

Thus the new methods seek to develop the poetic, imaginative, and discriminative power of the pupil in his relation to music, laying the basis for musical appreciation, which after all is the most important use to which the pupils in our public schools will put their musical education.

*Training for Teachers* — Unfortunately for music in American schools, the normal schools have been unable to give the necessary training, five hours a week for half a year being the average time allowed to the subject. When this short amount of time is divided between the development of the student's own musical capacity and her training as a teacher, the inadequacy of this work will be comprehended. To meet this need the larger publishing houses are conducting summer schools for training music supervisors and grade teachers, offering courses running in some cases for three seasons. The danger in this work has been that methods advocated have been too closely allied with the particular publications of the house conducting the school. In spite of this, improvements in methods and in material have been due to the far-sighted enterprise of publishing houses rather than to the school authorities. C H F

**Music Schools and Conservatories** — The name Conservatory was first applied to orphan asylums where children who were particularly fitted by virtue of superior talent received a thorough musical education.

*Italy* — The oldest known conservatories were founded in Naples during the sixteenth century. Four of these were combined by order of King Murat (1808) into the now existing conservatory San Pietro a Majelle. The last director was Guiseppe Martucci (died 1910).

*Rome* — Conservatory of St. Cecilia, founded in 1566, subsidized by the government. Perhaps the most famous Italian music school. Tuition sixty lire a year.

*Palermo* — Royal Conservatory, founded in 1615. Has at present twenty teachers and about 150 students.

*Venice* — Liceo Benedetto Marcello became a municipal institution in 1877. Present director E. Wolf Ferrari. Tuition very moderate, from 20 to 100 lire a year.

*France* — Paris — Conservatoire National de Musique (1795) is perhaps the best organized music school in the world, and its standards are therefore of the very highest. Among the instructors have been France's finest musicians, — Cherubine, Auber, Thomas, Dubois, Fauré, Widor, Lavignac, Lasalle, Rose Caron, Chevillard, Guilman, Rösler, etc. The age of admission is from nine to twenty-six.

There are about 800 students and eighty-five instructors. The highest honor obtainable is the "grand Prix de Rome." Some of those receiving this distinction were Halévy, 1819, Berlioz, 1830, Gounod, 1839, Bizet, 1857, Massenet, 1863, Debussy, 1884. Branches of the Conservatoire National de Musique exist in the important towns all over France. The requirements of scholarship vary with the different localities. Noteworthy branches exist in Toulouse (1826), Lille (1826), Boulogne-sur-Mer (1884), etc. Another important school is École de Musique classique et religieuse, founded by Niedermeyer in 1853. A new school was founded in 1896 by Guilman and D'Indy, 300 students specializing principally in organ and composition based on modern tendencies.

*Germany* — Germany has developed more music schools than any other country. Some of these are under the patronage of reigning houses, others are endowed by individuals or societies, but there are numberless private schools existing and flourishing without any financial aid from outside sources.

*Berlin* — Königl. Hochschule für Musik. It is divided into three sections. The oldest section is called Royal Institute of Church Music, founded in 1822. It receives only twenty students, and charges no tuition. The second section is called the Academic Master School for Composition (1833). The present masters are Bruch, Humperdinck, and Gernsheim. Tuition is free. The third section, which now is the Royal High School of Musical Art proper, was created in 1869. Joachim, the famous violinist, was the first director. Students must be sixteen years and over. The entrance examinations are very severe. A nominal tuition is charged, varying from \$7.50 to \$100 for the school year. It is interesting to know that each student costs the government on an average about \$250 a year, and yet the average tuition charged is less than \$75. Excellent private conservatories in Berlin are the Klindworth-Scharwenka School of Music and Stern's Conservatory.

*Leipzig* — The Royal Conservatory, founded in 1843 by Mendelssohn, has financial guarantees from the Saxon government and the municipality. It is perhaps still the most famous conservatory in Germany. There are at present about 900 students and forty-five instructors. Some of the great musicians who taught at this school were Mendelssohn, Schumann, David Hauptmann, Richter, Gade, Moscheles, Reinecke, Iadassohn. Among the present teachers are Reger, Teichmüller, Hilf, Sitt, Straube, Klengel, etc. Famous pupils, Kirchner, Bargiel, Brassin, Iadassohn, Greg, Sullivan, Wilhelmj, Svendsen. A peculiar position is that occupied by the Thomas School in Leipzig. Only boys with pronounced musical talent ("absolute ear" is one of the conditions) are admitted. The boys form the choir of

the Thomas Church. The boys receive a complete education without cost. The most famous director of this school was J. S. Bach.

**Munich** — Royal Academy of Music (1846). The best known teachers connected with this school were and are Hans Von Bulow, Cornelius, Rheinberger, Abel, Bussmeyer, Stavenhagen, Mottl, Klose, etc. Among its students have been many Americans. George W. Chadwick, Horatio W. Parker, Fred Bullard, Leo Lewis, Adolf Weidig.

Royal and ducal music schools of high standing exist in Dresden, Stuttgart, Würzburg, Karlsruhe, Weimar, etc. Private conservatories of first rank are to be found in Frankfurt, Hamburg, Strassburg, Wiesbaden, etc.

**Austria** — Vienna — Conservatorium der Gesellschaft der Musikfreunde admits pupils from the age of ten to twenty-four years. The German language is obligatory. The attendance is about 1000 pupils, taught by sixty-four instructors. Among the teachers of the present day are Godowsky and Ševčík.

**Prague** — Conservatory of Music (1811). Bohemians receive free instruction, but bind themselves to stay six years. Besides the musical education, students receive instruction in all the important liberal branches.

**Budapest** — The Royal and National Academy of Music receives students from the age of eight on. The tuition fee is nominal, and no tuition is charged for students of wind instruments, double-bass, viols, etc.

**Russia** — St. Petersburg — The most important conservatory was founded in 1862 by the Royal Russian Music Society. It is richly endowed, and has about 200 scholarships. The average attendance is 800 students, under ninety teachers. The curriculum comprises, besides the study of music, a complete liberal education. The first director was Anton Rubinstein. Famous teachers have been Glasounow, Rimski-Korsskow, Essipow, Auer, etc.

**Moscow** — Royal Conservatory of Music, founded by Nicolaus Rubinstein (1866), gives courses similar to the conservatory in St. Petersburg. Famous teachers have been Taneev, Safanow, etc. There are sixty teachers, and about 600 students. The School of Music of the Philharmonic Society (1878) received in 1886 the same official recognition as the Royal Conservatories mentioned above.

There are numerous schools of music in the provinces which are considered branches of the St. Petersburg Royal Conservatory.

**Belgium** — Brussels — The Royal Conservatory of Music (1813) is one of the most important of the European institutions. Students born in Belgium pay no tuition. Those born in other countries are admitted only if acceptable to the director and the Secretary of State. Famous teachers were Fétis, Gevaert, Tinel, De Beriot, Vicuxtemps, Leonard, Ysaye, etc.

**Liège**. — The Royal School of Music (1827)

is also one of the important schools in Europe. Conditions are practically the same as in Brussels.

**Antwerp** — The Royal Flemish Conservatory (1867) is one of the largest institutions, and has about 1200 pupils and fifty teachers. Tuition fees are very nominal. The first director was Peter Benoit.

**Netherlands** — Amsterdam — The Conservatory of Music is under the management of the Society for Development and Protection of Music (1862). Only about eighty students over seventeen years of age are admitted. These are selected from among the pupils of the preparatory school of music, which is affiliated with the Conservatory. Well-known teachers are Zweers, Röntgen, etc.

**Rotterdam** — The School of Music (1845) is under the same management as the one in Amsterdam. It admits pupils from eight years on.

**Spain** — Madrid — The Conservatorio de Maria Cristina (1830) is largely endowed by the State. There are about 1500 students and sixty teachers. Other important conservatories are maintained in Barcelona and Saragossa. All are subsidized by the government, and tuition is practically free to Spaniards.

**Portugal** — Lisbon — The Conservatorio Real (1833) is maintained by the government, which pays all expenses. There are about 300 students and thirty teachers.

**Scandinavia** — Copenhagen — The Conservatory of Music (1867) admits only fifty pupils, according to its constitution. This restriction was made by its financial founder, P. W. Moldenhauer. Lately the government has given a small subsidy, making it possible to admit about twenty-five additional students. Teachers have been, among others, G. Hartmann and N. W. Gade.

**Stockholm** — The Royal Conservatory (1871) is a government institution, no tuition is charged except to a few aliens.

**Christiania** — The Conservatory of Christiania (1865) is largely subsidized by a private society and the State. The tuition charged is from five to twenty-five Kronen. The present director is Lindermann.

**Switzerland** — Geneva — The Conservatory of Music (1835) has occasionally been able to engage on its teaching staff some of the best known musicians, *ie* Stavenhagen, Marteau, Jacques Dalcroze. The latter's *Rhythmic Gymnastic* bids fair to become a pronounced factor in the child's musical education. The Conservatory has about 1200 students and fifty teachers.

**Basel** — Music School, director, Hans Huber.  
**Zurich** — Municipal Music School, director Fr. Hegar.

**Great Britain** — London. — The Royal Academy of Music (1822) was endowed by a private society. It is attended by 500 students, and has eighty instructors. Among the

famous teachers who have been connected with this school must be mentioned J B Cramer, M Clementi, Bennett, Macfarren, Mackenzie

The Guildhall School of Music (1880) is perhaps the largest music school in the world, and has approximately 4000 students and 150 instructors. It receives a subsidy from the city.

The Royal College of Music (1883) maintains perhaps the highest standards of all the English conservatories. It was founded by Arthur Sullivan as the National Training School of Music. It is richly endowed, and possesses one of the best libraries. Present director is Ch H H Parry.

Other more or less important schools in London are the Royal College of Organists, director, E H Turpin, National College of Music, director, Dr Tindall; London College of Music, director, I I Karn, Birmingham Midland Institute of Music, directors, Elgar and Bantock; Manchester Royal College of Music, director, Adolf Brodsky.

*Music Departments in Universities* — Only German, Austrian, and English universities have music in the curricula. While music schools outside of universities make very few demands on their students as to liberal education, entrance into a university requires that students shall have passed final examinations in the gymnasium or preparatory college. The study of music in universities is confined to history and theory. The lectures on these subjects may be attended by students who have not passed the above-named examinations, but are admitted as special students. Only regularly matriculated students may receive the degree of Doctor of Philosophy, after submitting an approved dissertation dealing with a musical subject and showing original research. The faculties of universities sometimes bestow the degree of Doctor of Philosophy or of Doctor of Music on distinguished musicians, but *honoris causa*. Chairs of music occupied by prominent men of the "Science of Music" are to be found in Germany in the universities of Berlin, Leipzig, Bonn, Göttingen, Halle, Heidelberg, Munich, Strassburg, in Austria in Vienna, Prague, and Graz, in England at Oxford and Cambridge, and in Ireland at the University of Dublin. English universities confer the degrees of Mus Bac or Mus Doc, after examination. Examinations also include the writing of *Compositions in various forms*.

*United States* — It is possible at the present time to secure a thorough musical education in almost every state of the Union. This is particularly true in the larger cities or in the towns where the proximity to the larger cities offers advantages in regard to hearing concerts and attending opera. But even in more isolated places a good musical education has become possible, as some members of the faculties of educational institutions are, as a rule, ex-

cellent musicians who have received a thorough education themselves as either instrumentalists, vocalists, or theorists. It is therefore no longer necessary for music students to go to Europe for study, although it is always desirable to become acquainted with musical conditions of other countries. No music student should go to Europe until he has had a thorough education at home, and he should never leave these shores for further study abroad unless he speaks one or two foreign languages fluently. While it is true that the English language is spoken by almost every well-educated European musician, yet this is a great disadvantage to the American student, as it deprives him of the possibility of a thorough appreciation of European conditions, resulting frequently in absolutely false perspectives and erroneous conclusions.

Colleges and Universities having Departments of Music — Harvard University — A Music Department was established in 1862 on equal terms with the other departments. Credits of two points each in harmony and counterpoints are allowed on entrance requirements of twenty-six points. Courses offered are harmony, counterpoint, instrumentation, composition, history of music. The degree granted is the A B, the requirements for which are eight approved courses, five in music and three in modern languages. A M and Ph D candidates must be graduates of approved colleges. At least one year of residence at Harvard is demanded. The examination requirements are a thesis on musical aesthetics or history and composition for chorus and orchestra. The annual tuition is \$150. Special students are admitted, but are not eligible for degrees.

Yale University, New Haven, Conn — The music department was founded in 1894. The courses offered are theoretical and practical. The former include harmony, counterpoint, composition, orchestration, and conducting. The practical courses are organ, piano, string instruments, singing, chamber music, and orchestral playing. The degrees and diplomas granted are certificates of proficiency in the theory of music, and the B M on two years' work, including two languages, one of which must be modern. Certificates are also awarded to students of practical courses. The tuition ranges from \$50 to \$200 a year.

Columbia University, New York, N Y — The music department was founded on an endowment of \$100,000, and the chair of music first occupied by Edward McDowell in 1896. Extra credits are given in musical appreciation or harmony — one point in a total of 14½ required for admission. The courses offered are harmony and history of music, and are open to undergraduates as electives. The degrees of B A and M A are conferred after passing satisfactory examinations in counterpoint and composition.

## MUSIC IN EDUCATION

## MUSIC IN EDUCATION

The following table gives a list of departments or schools of music connected with universities In all of them practical and theoretical courses are given

Boston, Mass., New England Conservatory of Music — Founded in 1853 by Eben Tourjee, and incorporated in 1870, one of the best equipped schools in the world, owning one

UNIVERSITY	TITLE	FOUNDED	DEGREES	EXPENSES (TUITION AND BOARD)
Northwestern University, Evanston, Ill.	Department	1873	B A & M A, since 1895	\$390-\$669
Michigan University, Ann Arbor, Mich.	School	1873, reorganized 1890	B A	\$15-\$90 a course
Oberlin, Ohio	Conservatory	1867	Mus B and Teachers' Certificate	\$350-\$500
Grinnell College, Grinnell, Ia.	School	1875	B A	\$306-\$430
Wisconsin University, Madison, Wis.	School		Mus Grad	
Syracuse University, Syracuse, N Y	Department	1873	B M and Certificate	\$325-\$500
Illinois University, Urbana, Ill.	School	1895	B M	\$280-
Boston University, Boston, Mass.	Course		B A	
Pennsylvania University, Philadelphia, Pa.	Department	1875	B A, Mus Bac	\$30 a course

Music Departments in Colleges for Women — Wellesley College, Wellesley, Mass — No credits are given for music in entrance requirements Courses in theory and history are open to all students, and count toward the A B degree Practical courses are given in piano, organ, violin, and voice and theory leading to B A The length of the course is from four to five years Special students are admitted, and may receive a certificate of the Department of Music The expenses for tuition in practical music and board in halls of residence is \$450 per school year

Smith College, Northampton, Mass — Courses in music may be taken in connection with regular college work, and count toward the degree of B A Music may count as one point of credit in the entrance requirements

Vassar College, Poughkeepsie, N Y — Only regularly enrolled students can elect studies in the music department, which may count up to one fifth of all studies required toward the degree of B A

Independent Conservatories and Schools of Music — These have become an important factor in the musical development of America Every large city has a number of schools comparing favorably with the best schools in Europe, and there is hardly a town which does not support a school of music of its own Only the most important are mentioned here

Baltimore, Md, Peabody Conservatory of Music — Founded in 1868 as a branch of the Peabody Institute, established in 1857 by George Peabody All branches of music are taught in two main departments Preparatory (elementary, junior, and intermediate), and Conservatory (advanced, senior, and graduate). There are about 1400 students and 60 teachers Tuition fees average about \$125 a year

of the finest buildings for the purpose The conservatory possesses, besides a large number of studios, two concert halls, a splendid library, a collection of instruments, eleven pipe organs, etc Complete courses are offered in all branches of music Candidates for graduation must have been graduated from a high school or must take work in literature Privileges are interchanged between Harvard University and the conservatory for qualified students The university credits certain conservatory courses toward the A B and M A There are about 2700 students, with ninety instructors The average cost of tuition for the full course per school year is \$250

Chicago, Ill, American Conservatory of Music, 1886 — A school with a faculty of seventy-five teachers and an attendance of over 2000 students All branches of music are taught, enabling a student to become a practical and theoretical musician The regular course requires from three to four years of study After successful examinations graduate and post-graduate diplomas are issued Special features are normal classes for teachers, a children's department, and a students' orchestra Deserving students are given scholarships at the discretion of the board of directors Tuition from \$10 to \$160 per term of ten weeks

Chicago, Ill, Musical College — One of the oldest private schools in the country, founded in 1867 Its organization is similar to that of the American Conservatory of Music, without some of the special features mentioned There are about 100 teachers and 3000 students Among the teachers have been some of the best known European musicians

Cincinnati, Ohio, College of Music — Founded in 1878 by Reuben R Springer, with Theodore Thomas as the first director. All

branches of practical and theoretical music are taught by about forty teachers. The number of students is 650. Certificates and diplomas are granted after successful examinations. Special features include a school of opera, a students' orchestra, and a students' chorus. Tuition varies according to instruction selected.

New York, N. Y., Institute of Musical Art — Incorporated 1905 under a charter granted by the board of regents of the University of the State of New York. It has an endowment of \$500,000, given by James Loeb. There are seventy teachers and 600 students. Certificates and diplomas are granted in all branches of music study. The tuition per school year varies from \$15 to \$250, according to studies selected.

Other important schools of music in New York are National Conservatory of Music, German-American Conservatory, Virgil School of Music; Guilman Organ School.

Philadelphia, Pa., Combs Broad St. Conservatory of Music — Complete courses are given in piano, violin, vocal, hand, and orchestra instruments. The following sections are maintained: introductory, advanced, teachers', diploma, postgraduate, and artists', leading to the degrees of M. M. and B. M. Reciprocal relations are maintained with the University of Pennsylvania, which offers to music students English, French, and German, upon passing satisfactory examinations for admission to college in the subjects chosen, while the university gives full credits for theoretical work done at the conservatory. Tuition from \$40 to \$200 for the school year of forty weeks.

A. W.

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## MUSICAL INSTRUMENTS, MECHANICAL, AND EDUCATION. —

Visual aids (*qv*) to teaching have long been used in almost every subject and in greatest variety. Auditory aids have not been available until within the last few years, when remarkable inventions have provided such means. These auditory aids consist of the variety of mechanical musical instruments such as the phonograph and similar instruments for reproducing sounds and the pianola and similar mechanical devices for operating pianos. A third type represented by the Welte-Mignon is just being developed which provides for the actual reproduction of the interpretation of a virtuoso or of any individual performer. These three types differ radically in their nature and in the kind of educational opportunity they offer. The first type, by some contrivance of disks



grooves, and vibrating keys, reproduce more or less accurately and with mechanical fidelity any kind of musical sound, including the human voice. The second type operate mechanically the piano and thus produce only one type of music, but that with the instrument of widest musical scope. These latter furnish the technique of the performance, but allow to the individual operator room for the variety of expression and interpretation which renders music an art.

But little use has been made of such instruments in the school, and but slight recognition has been aroused until the last few years. It seems no exaggeration, however, to state that they promise to do for musical education what the various arts of illustration have done for painting, and the art of printing itself has done for general intelligence. The first great educational service which such inventions, especially those of the pianola type, seem to furnish, is that of making musical appreciation as common as the art of printing has made our appreciation of literature. Not only this, but by means of the voice-reproducing instruments, productions artistic both as regards tone and delivery can be given in the schools, thus teaching by excellent examples and employing methods especially essential in the lower grades. There is no reason why a knowledge of the finest music should not be considered an attribute of culture as well as a knowledge of the best literature. Long ago a German educator said: "The fundamental evil in music is the necessity of reproduction of its artistic creations by performance. Were it as easy to learn music as words, the sonatas of Beethoven would have the popularity of the poems of Schiller." And little reason exists why in a coming generation an ability to reproduce the best music with fidelity and artistic expression should not be within the power of any educated person. It seems no exaggeration to say that what printing did for general intelligence, some of these inventions promise to do for artistic appreciation. For by means of unlimited reproduction, which such instruments afford, the same advantage is given as by the printed page. For some generations now a recognition of the place of music, especially of musical appreciation, in education has been growing, and many attempts have been made both for children and adults to develop such power of appreciation or performance. But aside from singing, these efforts have been limited, especially with English-speaking peoples, to adults. Here it has appealed chiefly as an expensive pleasure, limited to a favored few. Now, these mechanical devices remove the difficulty of technique and afford the means of repeatedly reproducing the entire subject matter of music, and of giving the child or operator the pleasure and training of participating in this reproduction. Even with the favored few possessing a musical education, a

large part of the world's musical treasures are practically a sealed book, a book which may in time, if the real educational value is obtained, be opened to all.

The talking machine has now become an important part of the equipment of the schools of perhaps 500 or more cities throughout the country. So rapidly has this innovation taken place that few realize the tremendous hold that music has upon people, and the avidity with which educators have seized upon this really wonderful invention, which brings to every child the hearing of the great music of the world. Special records for teaching purposes, in all grades, — folk dances, interpretative dances, folk songs, songs of different nations to correlate with the work in history, records showing the tones of all the instruments of the orchestra, — are now to be had. A course of study for high schools in history and appreciation, using several hundreds of records from the operas, oratorios, etc., has been published. These courses of study, copiously illustrated by splendid reproductions of the voices of the artists, carry into the school-room the culture and knowledge of real music, and must prove a boon, especially to the rural, village, and small city schools, where the children never have an opportunity of hearing the great artists, orchestras, and the opera.

It is to be hoped and expected that the schools will soon avail themselves more generally of these inventions and that music may be given a place in American and English culture as a social, moral, and aesthetic agency of vast import as it has long been in some other civilizations.

A second service which the piano player affords is of a more technical character in the beginnings of instruction in piano playing. But as the most comprehensive of all instruments and the one in most general use, this service may be of no slight character, though musicians are more divided or much less enthusiastic in their beliefs as to what mechanical invention can do here than in the cultivation of musical appreciation in general. With the mechanical piano player it is possible to carry any parts of the composition by mechanical means, while the learner may develop his ability to play other parts of progressively greater difficulty. That is, a pupil can play a five-finger exercise and at the same time so operate the instrument with his feet that interesting harmonies will be produced. One marked advantage which this scheme has is that of having the child work on pieces of inherent merit and attractiveness which otherwise would be too difficult for him to attempt. Possessing both advantages and disadvantages which are obvious, this use of the piano player has not been sufficiently tested to enable musical educators to form a judgment.

While the use of the piano player as an aid to musical instruction has had but slight use

in the public school, it has been recognized quite generally in American colleges and universities. Not only are these instruments used in many of the institutions as a means to musical education of students, but the professors of music of Columbia, Harvard, Michigan, Oberlin, Smith, Tufts, Vassar, and leading professional musicians have cooperated with the manufacturers in working out elaborate courses in the music of the greatest composers, such as Bach, Beethoven, Chopin, Liszt, Schumann, Wagner, and others as a means to a general cultural education. These courses combine lectures and interpretation with selections.

Thus the general public can obtain real insight into great music by means of actual auditory illustration and expert comment. It is the hope of these educators that in time music may cease to be a special cult, as unfortunately it is in our civilization, and become a matter of common culture depending, as do other elements of culture, not upon a highly technical ability but upon the intelligence and sympathy of the individual.

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**MUSIC SCHOOLS** — See CHORISTERS' SCHOOLS, MIDDLE AGES, EDUCATION DURING, THE SONG SCHOOL.

**MUSKINGUM COLLEGE, NEW CONCORD, OHIO** — A coeducational institution established in 1836 and now under the control of the United Presbyterian Synod of Ohio. Preparatory, collegiate, and music departments are maintained. The entrance requirements are fifteen units. The degrees of A.B., B.S., Ph.B., and A.M. are conferred. The enrollment in 1910-1911 was 610. The teaching staff consists of twenty-seven members.

**MUSURUS, MARCUS** — See RENAISSANCE AND EDUCATION.

**MUTATION THEORY AND MUTANTS** — See HEREDITY, also ACQUIRED CHARACTERISTICS, EVOLUTION, INSTINCTS.

**MUTISM** — The inability to speak, due to lack of cerebral development (in idiots), to sensory disorders (as in deafness), or to inhibition or negativism (in dementia precox, *(q.v.)*), or in hysteria (*q.v.*). The acquired mutism is to be distinguished from aphasia (*q.v.*), in which the ability to speak has been lost. Mutism is simulated by the apparent

lack of speech in melancholia (*q.v.*) in which there is mental and motor retardation. The inability to speak following emotional excitement, *e.g.* fear, are normal conditions. Like mutism they are frequently found in children, especially in those of nervous temperament, and they are often the first symptoms in the development of grave psychoses, *e.g.* dementia precox, hence their importance in education.

Deaf mutes may be educated to use the vocal apparatus, and the absolute mutism may be replaced by speech. There is, however, an incoordination, for the sounds lack the modulation to be found in the voices of normal people. This is because of the inability to correlate the sounds with the movements of the vocal apparatus. Mutism in idiots is incurable, but the mutism of imbeciles may, by appropriate education, give way to a vocabulary sufficient to indicate their wants and desires. The mutism in melancholia is only temporary, and disappears with the improvement in general condition. The dementia precox mutism is also temporary, and may be improved by stimulation and by appropriate training to a slight extent, but the amount of improvement depends upon the accessibility of the patient. S. I. F.

See DEAF, EDUCATION OF; SPEECH DEFECTS.

**MUTUAL AID** — See PENSIONS.

**MUTUAL INSTRUCTION, SYSTEMS OF** — See MONITORIAL SYSTEM; BELL, ANDREW, LANCASTER, JOSEPH.

**MYOPIA** (from late Greek *μυωπία*, from *μύωψ*, from *μύειν*, to shut, and *ὥψ*, sight), or more scientifically BRACHYMETROPIA or BRACHYOPIA (from *βραχύς*, short, and *ὥψ*, sight) — That condition of refraction where the antero-posterior diameter of the eye is too great and parallel rays of light entering the eye at rest come to a focus in front of the retina. This defect has now been studied in the eyes of hundreds of thousands of school children, and as a result of the modern investigations the following facts have been pretty well established. There are two kinds of myopia. (1) myopia of high degree, a disease of degeneration more likely to be found among the lower classes, (2) myopia of low degree, the common form, known as functional, frequently not appearing till puberty. It is not a disease, but a defect. The distinction between the two forms was recognized by Dr. Beger in a monograph on nearsightedness, published in 1845.

The question of the cause of myopia is still a much-debated one. Those who agree with Cohn hold that the school with its unhygienic conditions of work is the chief cause and point out that in Germany not only the number of cases but the degree of nearsightedness increases

with the age and grade of the pupils. More recent investigations (*e.g.* by Steiger, Miss Barrington, and Karl Pearson) seem to show that myopia, as well as other errors of refraction, are inherited. On another point, also, modern opinion has changed, modern studies showing that the defect of myopia occurs among primitive as well as among civilized people. The most prominent recent theory on the subject has been formed by Stilling, who on the basis of many thousand measurements of the cadaver, maintains that myopia is caused primarily by innate structural peculiarities of the eye socket, and that those who have a low orbit have a tendency to myopia. The practical result of such a theory, on which a controversy has raged for twenty years, would be to make it possible from the shape of the skull and the orbital index to pick out on the first day of school those pupils who have a tendency to myopia and to relieve them from the strain of near work and later to determine the kind of vocational training for which they are fitted.

In no part of the field of school hygiene, perhaps, have more errors prevailed than in this particular chapter. And among the many investigations that have been made during the last hundred years it is possible to find statistical evidence for almost any current error. Not only the teacher, but the specialist himself must be on his guard against being misled by the results of so-called studies of this subject.

Perhaps the best way to summarize important points, and to show briefly the complexity of the problems connected with the genesis and development of myopia and the danger of hasty inferences, is to enumerate some of the errors that have prevailed and still survive in some quarters. Among these are the following: 1 The error of not distinguishing the different conditions of refraction and of confusing weakness of vision from whatever cause with nearsightedness, *e.g.* the cases of hyperopia, myopia, and presbyopia. 2 Even scientific writers often fail to distinguish between pathological myopia and ordinary myopia, which is merely a defect. And even to-day the usual form of myopia and the pathological form are often not distinguished. 3 Some writers like Cohn have believed that the ordinary myopia may develop into the pathological form. The two, however, are distinct, and it seems probable that the former never develops into the latter. In the pathological form, as Stilling puts it, the eye is not diseased because it is myopic, but it is myopic because it is diseased. 4 The error still prevails that myopia is caused by the conditions of civilized life, whereas it is found among primitive peoples as well. 5 The charge is still made even by scientific writers in an indiscriminative way that the school is the cause of myopia. Studies by Steiger have shown, however, that not only do cases of

myopia occur at the time when children enter school, but that among nearsighted children the percentage of cases of myopia of high degree is enormously greater than among children who develop nearsightedness later, say at the age of twelve. The pathological form of myopia at least would develop in any case whether children attended school or not. Landolt, Hoor, and others have found myopia of high degree among peasants and soldiers, people who never used their eyes largely for near work, and who never had attended school. 6 The error of supposing that because the number of cases of nearsightedness, especially in Germany, is apt to increase from the lower to the higher grades, the school is responsible for this increase. This inference, plausible as it seems, is not justified by the evidence cited. Not only are many cases likely to develop at the age of puberty, apparently on account of the conditions of growth, but no account is usually taken of the fact that children who are myopic, lacking an interest in outdoor occupations on account of their imperfect vision, are more likely to become interested in school work, and hence more likely to remain to the higher grades of the school. 7 The error is widely prevalent that myopia is caused primarily by near work, whereas it seems to have been amply demonstrated by the studies of Motais, Steiger, Miss Barrington, and Karl Pearson that errors of refraction are inherited. And while the use of the eyes for near work is probably a secondary cause determining largely the development of the defect, it is not the primary cause. 8 The error of supposing that the conditions of the human eye at birth is myopic. This error was due in the first place to the old investigations of Jaeger, who by some erroneous method found that most of the cases of newborn children studied by him had myopia in some degree.

A number of interesting correlations have been strongly suggested, if not established, by modern studies, among them the following: a correlation between the number of cases and physiological development, between the tendency to myopia and sex, girls being apparently more likely to become myopic, between the number of cases and the general environment, the percentage of cases being often greater among the children of the well-to-do, between the percentage of cases and the intelligence of the pupils and their success in school work, myopia occurring more frequently apparently among the more successful pupils, and a correlation according to the shape of the skull, the brachycephalic being prone to myopia. It is also maintained by some that there is a correlation between the number of cases and the degree of civilization in a country, and likewise between the number of cases and the hygienic condition of the schoolhouse and school environment.

Very extreme views have been held by some of the leaders of the controversies waged in regard to myopia. On the one hand, Schnabel and others have maintained that myopia is a good thing, that it means the perfection of the eye for the finer occupations and near work required by civilized life; while on the other hand are those who have taken an extremely pessimistic view and taught that myopia is a disease, that all are liable to the defect, and that all cases are liable to develop into the pathological form.

There are many unsolved problems in regard to myopia, and further studies are needed, but those who would learn the present condition of our knowledge in regard to this defect should be suspicious of the popular writings, and consult among investigators, not Cohn and the older writers, but rather Steiger and Karl Pearson.

While the net result of modern investigations has been to show that heredity is the primary cause of myopia, that it is probably in large part due to innate structural peculiarities of the eye, and that the school and near work are only in a secondary way responsible, these results do not make the demands of hygiene less important. While it may be quite impossible to prevent the development of myopia, it is a significant fact for hygiene that probably from ten to twenty-five per cent of the children in any school are likely to have this defect or else a tendency to it, and it is necessary to make the conditions hygienic for such myopic eyes. They should be tested by competent oculists, fitted with suitable concave lenses, the error of refraction fully corrected, and the ordinary well accepted rules for the hygiene of the eye should be observed. W H B

See EYE, HYGIENE OF, ASTIGMATISM, HYPEROPIA

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**MYSTICISM** — Mysticism is that type of religion in which the soul endeavors to apprehend eternal realities immediately by an inner experience. It places little emphasis upon rites as a means of influencing the deity or of obtaining power and sanctity, or upon obedience for the sake of rewards, but it endeavors to obtain a present enjoyment or foretaste of eternal bliss by a suitable training of the soul. Together with the sacramental idea, mysticism is present as a normal religious phenomenon in many higher forms of religion, especially those in which asceticism is developed. In primitive Christianity it finds its expression in the New Testament in the writings of Paul and John. Although the name mysticism is taken from the Greek mysteries, it was long before they had any influence upon Christian mysticism and early resemblances cannot well be explained upon any theory of borrowing. In Christianity mysticism took two distinct lines of development, a more emotional and a more speculative. In the East the former is seen in Ignatius of Antioch (ob c 115) who first developed the Johannine tradition, then in Irenæus, Methodius, and Athanasius, and, in a somewhat different form and more strongly influenced by contemporary Hellenic philosophy in Clement of Alexandria and Origen. In the West this Mysticism found its first great exponent in Augustine, who in his *Confessions* passes far beyond any Neo-Platonic mysticism he may have retained, for however much Neo-Platonism influenced Augustine's doctrine of God and of evil, his mysticism, anticipated somewhat by Ambrose, has a different content and establishes a new type of piety. Its influence upon Western thought appears again most impressively in Bernard of Clairvaux in language which recalls both the rapture and the diction of the *Confessions*. The principal source of speculative Christian mysticism is the works of the Pseudo-Dionysius the Areopagite, written under the unmistakable influence of Proclus the Neo-Platonic philosopher. These works were written about the end of the fifth century, purporting to be the writings of the Athenian convert of St. Paul, and accepted generally as such they profoundly influenced religious thought. Their authenticity is now defended by no scholar. The Areopagite took over the Neo-Platonic metaphysics of his master and his practical method whereby the soul after passing through stages of purification, illumination, and completion became one with the primordial being. These three stages

reappear in all systems of the Christian mystical theology. In thus adapting Neo-Platonism to Christian mysticism, the Pseudo-Dionysius considerably Christianized it and Maximus, the Confessor, who wrote a commentary upon Dionysius, carried the process still further. The influence of the Areopagite in the West dates from the ninth century and John Scotus Eriugena, who built for himself upon him a system of pantheistic mysticism.

After the introduction of Dionysius the Areopagite into the West, mysticism, except as the pious experience of saints such as Anselm of Canterbury and Peter Damiani, plays no prominent part until the development of mystical theology in the twelfth century under the general intellectual revival of that age. From the first in this revival both types of mysticism are clearly developed and in the closest connection. Hugo of St Victor (1078-1141) is the first after Eriugena to comment on the Areopagite and also the first of the greater mystical theologians, tracing clearly and successfully the foundation of mystical theory and basing it upon a psychological analysis of man's religious nature and mental and moral powers. After him Richard of St Victor (*ob.* c. 1174) and Bonaventura (1221-1274) develop the system, building upon the foundations laid by Hugo. With these three the theory of mysticism as worked out in the Medieval Church is complete. The metaphysical and psychological basis of this theory always remains strongly tinged by the Neo-Platonism of the Pseudo-Dionysius and the connection can always be traced. But the theory is by no means merely metaphysical, there are always two ways of attaining the goal of mysticism, an ethical and an intellectual, which are only different sides of the same process, for to know anything one must share in its nature. In this lay the basis for the union of the various types of mysticism into one general theory. It, too, was derived from Neo-Platonism.

The significance of mysticism for pedagogy is that in it, by an analysis of the soul's life, a psychological basis was won for a religious pedagogical theory which corresponded to the ideals of life of the times. This theory is not worked out systematically in any one treatise, not even in Hugo's *Eruditio didascalica* or *Didascalicon de studio legendi*, the most important educational treatise written by any of the medieval mystics, but it underlies a great mass of ascetic and devotional literature and is not difficult to grasp. This pedagogical theory corresponds to the monastic ideal of life, which till nearly the time of the Renaissance was dominant in Western Europe. Monasticism as it was organized by Benedict, and even as it was reformed under the influence of Cluny, provided little more than the outward conditions for the higher religious life, and it was only in and through mysticism that

monasticism received its higher pedagogical principles and was brought into vital relations with the intellectual movements of the age. While scholastic theology was a practical science, mystical theology had always a practical end, a pedagogical purpose, for in tracing the stages of the soul's advance to higher spiritual experiences and to the end of all, union with God, it provided means for a systematic training of the whole spiritual nature. In its Areopagitic form mystical theology revealed a religious content and significance in science. This is clearly brought out in Hugo's *Eruditio didascalica*, to which the other mystical and theological works of Hugo form a useful supplement. In form the *Eruditio* is in imitation of the encyclopedic works of Isidore of Seville, Hrabanus Maurus, and others, a comprehensive survey of the various profane and sacred sciences. (See HUGH OF ST VICTOR.) A pedagogical theory, which aims at the cultivation of the purely spiritual functions, comes into close contact with the science of the times, in fact, brings it into its system.

However much the intellectual side of mysticism might be emphasized in a work which professedly treated of the method whereby science might be used in mystical training, the ethical side is as essential to mysticism as it was to Neo-Platonism and was closely connected with the cogitative process and the way of purification. It is only less psychological, and is more ascetic and devotional. The soul approaches God by purification of the heart, for one sees only as he is what he sees. In the case of God, he can know God only as he loves God. Therefore, by ascetic training a man frees himself from the external world and the life of the senses, with its passions and desires. He is trained in virtue, and here mysticism and theological ethics are one. This training differs from the popular ethics in being a preparation of the soul rather than a means of acquiring merit. The soul, thus prepared by ascetic discipline intelligently directed, and by meditation upon the facts of divine redemption, attains the same result as in the intellectual training, which it must always accompany. In perfect union with God, the soul loves nothing less than God, loves all else than God only as they are seen to be included in the love of God.

In the hands of Bernard (*qv*) who joins it indissolubly with the monastic asceticism, mysticism obtained a power of conviction which left a permanent impression upon Western religion. It does not lend itself to any appropriation of contemporaneous science, it cannot be formulated in a pedagogical theory, but it can be easily detected as reinforcing the emotional side of mysticism which was in danger of being lost in an intellectual process. It was of special value in the religious training of the age in revealing higher forms of sanctity attainable by those

who were not adepts in speculation. Even laymen, especially those who were affiliated with monastic institutions, came to have a place in the new training designed primarily for monks. This is especially clear in the later mysticism of Germany. On account of the ascetic character of mystical devotion, mystical writings are commonly classed as ascetic writings. They have never ceased in the religious world. The most remarkable of works of devotion and courses of spiritual training, the *Spiritual Exercises* of Ignatius of Loyola, is essentially a work of mysticism, and the methods of the Victorines and Bonaventura are manifested throughout it.

Only medieval mysticism is of special pedagogical significance. It alone corresponded to the ideals of the times. In the later Dominican mysticism, popularly known as German mysticism, there is little distinctive that needs to be noticed. Notwithstanding Eckhart's departure from orthodoxy, he stands for the most part upon Thomas Aquinas. He and Tauler, together with several others, differ from the older mystics principally in extending their work beyond the monastic life and by writing in the vernacular. This later mysticism, although the little treatise *Theologia Germanica* was highly esteemed by Luther, is not to be regarded as leading the way to the Protestant Reformation. Its spirit is distinctly medieval.

Mysticism in the West is by no means confined to the Medieval Church. It constantly appears in Protestantism, to mention only in German the theology of Luther and Pietism, in the Anglican Communion, the mysticism of Andrewes, Wilson, and Law and the rich hymnody of the Wesleys. How widespread it is in Protestantism William James shows in his *Varieties of Religious Experience*. In Protestantism mysticism is Augustinian, rarely Arcopagitic. In the modern Roman Catholic Church, mysticism has taken a new development, especially in the hands of Gorres. In his treatment, the whole mass of "mystical" phenomena is classified and the miraculous element, little emphasized by earlier mystics, is stressed. Accordingly, mysticism is regarded as a higher knowledge made possible by an imparted higher light and a higher, *i.e.* miraculous, activity made possible by an imparted higher freedom, in the same way that ordinary knowledge and activity are possible by the light and freedom implanted in the soul. This explanation, established by a novel analysis of the spiritual and mental faculties, gives an interesting explanation of the miraculous, sees a new and wider scope in mysticism which is recognized as a widespread religious phenomenon, and distinguishes between true and false mysticism, formerly a difficult matter. True mysticism, accordingly, is that in which man actually stands in relation to God and this is possible only when in his

ordinary religious consciousness he holds the right conception of God. But in all these modern developments, wherever they appear, mysticism has departed from the pedagogical point of view which it may be said to have had in the Middle Ages as a method of spiritual training. J. C. A., JR.

See articles on the chief writers referred to above, *e.g.* CLEMENT, for school systems, inspired by the influence of mysticism. See BRETHREN OF THE COMMON LIFE; FRANCKE, JESUS, SOCIETY OF, EDUCATIONAL WORK OF, PIETISTS, PORT ROYALISTS, etc.

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**MYTHS AND MYTHOLOGY — Definitions** — Mythology may be said to be the prehistoric form of existing religions, just as superstitions may be termed the survivals of otherwise extinct beliefs. Religious feeling of some sort is common to all mankind, but it has not developed equally or in the same direction among every people. It keeps pace in general with the advance of civilization and material prosperity. The term mythology has been applied to that form of belief which has been developed especially under literary influence, while religion commonly denotes the serious belief of peoples as represented by the Church, and superstition means the semi-conscious beliefs handed down from generation to generation by word of mouth.

Each of these has its special devotees: the poets love to dwell in mythological realms, the philosophers explore the field of religion, while the common people hold firmly to their superstitions. And all of these things have probably been as true for thousands of years

as they are now. Any given legend, doctrine, or superstition may usually be readily traced back for centuries among the various peoples having a historic past, and the same is doubtless true for the others without a known past history

A myth is some particular religious legend considered by itself, and hence it is the unit from which mythology is constructed. It usually belongs in its most perfect form to a rather primitive stage of development in the scale of civilization, as in later times it is apt to become merged in a confused mass of tradition. It should further be observed that in a restricted sense and as commonly employed the term "mythology" denotes the legends told by the ancient Greek and Roman writers concerning their gods and heroes, and since their day perpetuated by literary men in all the nations of the modern civilized world.

**Theories** — Various theories have from time to time been advanced by scholars to account for the origin of myths and legends. Some have tried to see in them attempts at popular etymologies, by which process some fanciful tale was invented to account for an epithet commonly applied to some deity. Such stories are best exemplified in the *Metamorphoses* of Ovid, whose popularity has always been deservedly great. Others have wished to account for their origin by referring them back to the great natural phenomena which were thoroughly appreciated in all their grandeur by early peoples. This theory has of late years been in special favor with the modern school of anthropologists. Still others would have it that they are but a generalization and idealization of ordinary human activities and attributes, thus offering a wholly rational explanation of a common mental phenomenon.

In all cases of theorizing, however, it would seem to be highly important to compare the mythologies of various nations in all stages of civilization in order to gain a broader view of the whole field than would otherwise be possible. This special phase of the subject is denominated Comparative Mythology.

**Greek and Roman Mythology** — In the Golden Age of Greek and Latin literature, which we commonly call the classical period, the old religious beliefs had lost their hold on educated men, and thus it came to pass that the poets of the time were wont to relate the old mythological stories in a half credulous fashion which was fortunately well adapted to their artistic purposes. And indeed mythology was so closely interwoven with the whole of classical civilization that it would have been impossible for any one entirely to free himself from its influence.

With the coming of Christianity and its rapid spread throughout the Roman Empire, the old mythology was relegated more and more into the background. It was afterward perpetuated during the Middle Ages solely by

the efforts of literary men, until at the time of the Renaissance its cultural influence became very strong, especially so in Italy. In more modern times mythology has once more waned in popular estimation, being driven out more and more from the public consciousness by the constantly increasing rôle played by science. Only in the realms of art and literature is classical mythology still an important factor.

**Celtic and Teutonic Mythology** — There is, however, another influence in modern Europe, whose mythological power is great, namely, the traditions of the Celtic and Teutonic peoples, whose ancient beliefs still form an essential part of our intellectual life. The former is as beautiful and graceful as the Greek, and it possesses an immense poetic power, with its direct appeal to the imagination, the latter, with its crudeness and stern warlike note, gives stamina to our being, and fosters the more practical qualities that have built up Anglo-Saxon civilization. For English readers the Celtic gods and heroes are the natural inhabitants of a British landscape, especially so in the wilder and more mountainous western section where the original inhabitants of the land lingered longest. Thus, in the west of England, in Wales, in Scotland, and especially in legend-haunted Ireland, the hills and dales still keep memories of the ancient gods.

Teutonic mythology is closely akin to great natural phenomena in their earliest attainable form. But as civilization began to exert an appreciable influence on the Northern peoples, it was profoundly modified both by the process of internal development and by the external force of the Christian religion. At the present day the old mythology has among the educated classes been relegated largely to the nursery; but among the common people its influence on their religious beliefs is still powerful.

**Uncivilized Mythologies** — A great deal of attention has been paid of late years by anthropologists and students of folklore to the religious beliefs of semicivilized, barbarous, and savage peoples, and a vast amount of material bearing on this subject has been gathered up, chiefly from oral sources. Investigations based on such material are of great importance as showing the workings of the human mind in the religious sphere, and as throwing a strong light on the prehistoric phases of our own beliefs.

Mythology had its birth, unquestionably, among uncivilized peoples. There we find that when the mind is fresh the mythical fancy has its creative hour, and develops the most varied and fantastic forms, and these manage to perpetuate themselves long after their original significance has been outgrown and forgotten. Thus we see that the myth-making tendency is strongest, and exerts its

most effective influence, when a race is passing through its formative stages such as are well represented in the savage races of the present day. Every student who attempts to penetrate back to the sources of a civilized people's religious faith will find himself surrounded by a luxuriant growth of mythological legends which may seem weird and strange to him merely by reason of their remoteness from the mental life of modern times.

In the western hemisphere the European races have during the last few centuries been brought into direct contact both with the legends and beliefs of the aboriginal Indians and with those of the negro races in the persons of the numerous slaves imported from Africa. As modern civilization has inevitably influenced both of these subject races (the former but slightly, the latter profoundly), there is presented to us the rather curious phenomenon of the forcible grafting of one system of mythology upon another older and more primitive system, just as in England the Teutonic mythology was superimposed within historic times upon the Celtic mythology of the subjugated inhabitants who had previously been politically supreme in the island.

**Mythology in Schools** — Of late years there has been considerable discussion in educational circles as to the relative value of history and mythology in the curriculum of the schools, — of the facts of the past and of its legends. The extensive literature which has received its chief inspiration from myths of all sorts, the many classical dictionaries and textbooks on the subject, all bear testimony as to its importance as a study.

In the use of mythology for this purpose it is of the utmost importance to approach the subject in the proper spirit, and to bear in mind the particular needs as well as the stage of mental development of the class to be instructed. Take the story of Arachne, for instance. It may be used with very young children as a nature myth, explaining in an interestingly dramatic way the origin of the spider and its peculiar characteristics. Used with older children, however, and emphasis being laid on Arachne's pride and willfulness, the same myth can be just as profitably employed to accomplish an ethical lesson. The same story with grammar-grade pupils might also be treated as a bit of historical material, showing how early man blended his religion and the nature world. Or again, consider the Tyrolian legend of the origin of flax, which will serve to illustrate the many-sidedness of myths and their adaptability to the various other studies of the child. This story, used as a character study in a reading or language lesson, may be correlated with the study of plant life in science, or with the consideration of raw products in geography, or in history it affords a poetic explanation of the beginning of one of Europe's greatest industries.

To use a myth primarily for a reading or language lesson would not be very purposeful. The most important use of myths at any time is to furnish thought food for that particular period of the child's development. Indeed it is contended by many educators that history proper appeals only to the understanding, but that mythology, with its attractive legends, stimulates the imagination of the pupil, and that the one study is as essential in the development of the student's mind as the other.

G C K

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**NAGEL'S TEST.**—Nagel's test for color blindness and lesser defects in color discrimination is doubtless the best simple test yet devised. It is specially valuable in testing large numbers of persons quickly (railroad, army, and navy service). It consists of two sets of small cards on each of which there is printed a series of colored dots, each about 4 mm in diameter, arranged at equal distances on the circumference of a circle. The principle of the test is, of course, to give the dots on each card colors peculiarly likely to be confused, or perceived as identical in color, by the color defective. The first set has sixteen such cards, these are spread out on a table before the subject, in good daylight, and he is then to view them from a distance of about  $\frac{3}{4}$  m (since the dots should be seen in foveal vision) and indicate, first, all cards possessing reddish dots and, second, all with only reddish dots. The same procedure is then repeated for green and gray. By following the brief but adequate directions accompanying the cards, any experimenter of reasonable intelligence may, by this first set of cards, in a short time eliminate from a number of subjects the color defectives. The second set of four cards is designed to determine the particular type of color defect present. It has been found that the average person may be tested in less than two minutes.

The charts of Stilling may be used as preliminary test, they do not, however, give certain results. On a sheet of nearly uniformly colored dots there are intermixed others, in colors likely to be confused with these, arranged in the form of a letter or an Arabic

numeral. The subject is required to decipher the letters and numerals on the various test sheets. Holmgren's test (*qv*), or some modification of it, and Stilling's and Nagel's tests are probably the three most used for the testing of color vision for practical purposes. Of these the best is Nagel's. For more detailed laboratory investigation one should have recourse to Hering's tests or to the spectral color mixer. For descriptions of these the literature of the subject must be consulted. R P A

See COLOR BLINDNESS

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**NÄGELI, HANS GEORG** (1773-1836) — Composer and teacher of music, born in a village of the canton of Zurich. He studied at home and at Zurich, where he later opened a music store and lending library, and gave music lessons. In 1800 he issued a periodical dealing mainly with music. In 1810 with M T Pfeiffer he published *Die Gesangbildungslehre nach Pestalozzischen Grundsätzen* (*Theory of Instruction in Singing on Pestalozzian Principles*). This work had considerable influence on the introduction of singing as a regular school subject both in Europe and the United States, where the work was introduced by Lowell Mason (*qv*) and W C Woodbridge (*qv*).

See MUSIC

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**NANCY, UNIVERSITY OF, FRANCE** — The University of Nancy is the direct successor to the university established at Pont-à-Mousson by Papal Bull of 1572 on the petition of Duke Charles IV of Lorraine and the Cardinal of Lorraine. At first only the faculties of theology and arts were organized and placed in the hands of the Jesuits. In 1582 the faculty of law was established and in 1598 the faculty of medicine followed. The university met with great success and, with the college or secondary school, numbered 2000 students, the majority in theology. The Thirty Years' War and the subsequent wars of that century put an end to the progress of the university. In the eighteenth century the dukes of Lorraine, especially Duke Stanislaus, aimed to promote higher learning at Nancy. He established a public library, an academy, and a medical college. In 1768 the university was transferred from Pont-à-Mousson to Nancy and continued there until the time of the Revolution (1793). It was not reestablished in the reorganization of Napoleon. A

medical course was, however, conducted privately from 1822 to 1843, when it became the *École préparatoire de Médecine et Pharmacie*. In 1854, as a result of a public appeal, the university was restored with faculties of letters and science, in 1864 the faculty of law was established, in 1870 the School of Medicine became a faculty. The Franco-Prussian War drove many members of the University of Strassburg (*qv*) into exile, many were welcomed at Nancy and the whole medical faculty was taken over in 1876. In addition to the four faculties there is also an *École supérieure de Pharmacie*. The enrollment in 1911 was 2184 (law, 491, medicine, 440, science, 793, letters, 402; pharmacy, 58). The following institutions at Nancy, some conducted by members of the university faculty, some independent, may be mentioned: *École Nationale des Eaux et Forêts*, *Institut Chimique*, *Institut Electrotechnique et de Mécanique Appliquée*, *Institut Agricole*, and the *Institut Colonial*.

See FRANCE, EDUCATION IN

**NANTES, SCHOOL OF MEDICINE AND PHARMACY** — See above

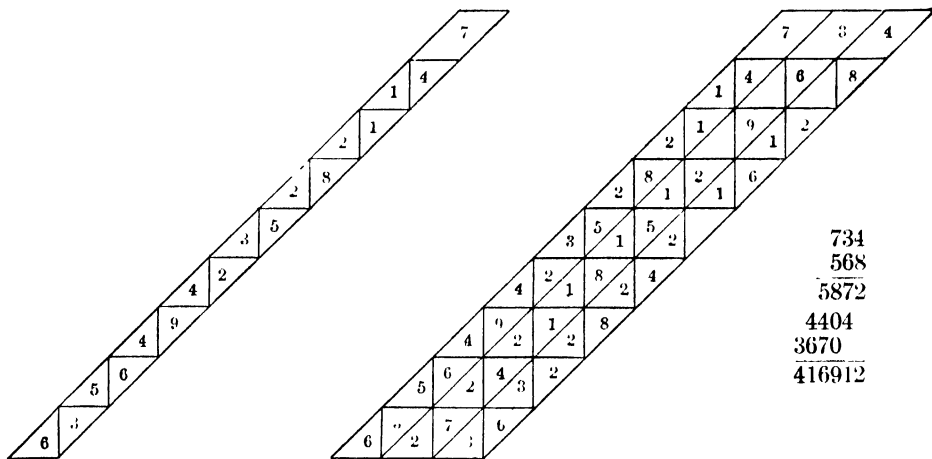
**NAPIER, JOHN, BARON OF MERCHISTON** (1550-1617) — Scottish mathematician, commonly known as the inventor of logarithms (*qv*). His name appears in various forms, as Neper, Neperus, Naper, Napier, Napeir, and Nepier. He matriculated at the

first published in 1614 under the title *Mirifici Logarithmorum Canonis Descriptio* D E S  
See LOGARITHMS, NAPIER'S RODS

**NAPIER'S RODS** — In 1617 Napier (*qv*) published at Edinburgh a work entitled *Rabdologia, seu Numerationis per Virgulas, libri duo*, in which he set forth a scheme of multiplication and division by means of rods marked as shown in the accompanying illustration. As arranged by Napier each rod was a parallelogram with an angle of 45 degrees, although those usually sold at present are rectangular in form. In the illustration here given, one of the rods is shown with the number 7 at the top, and the products of 7 by the various digits below. A group of rods is also shown giving 734 at the top. If we wish to multiply this by 568, we can at once read off the partial products, so that all we need to do is to arrange the rods as shown, write down the partial products, and add.

Since the rods were at first made of bone, they are often called Napier's Bones. They never had any extensive use, but they can still be purchased from certain dealers. As a school device they add a little to the temporary interest of the pupils, but their value ceases here  
D E S

**NAPLES, UNIVERSITY OF** — Founded in 1224 by Frederick II, who forbade his subjects to attend any other institution for higher



University of St Andrews in his thirteenth year. Little is known of him, however, from that time until the publication of his strong anti-papal *Plaine Discovery of the Whole Revelation of S Iohn*, which appeared at Edinburgh in 1593 (second edition, with the title as here given, 1611). He seems about this time, or at any rate by 1594, to have been occupied with his plan of simplifying numerical calculations, particularly those that enter into trigonometry. His logarithmic tables were

learned. Unlike the other universities of the period, the University of Naples was thus established by decree of a monarch before there was any organization of studies or students. The institution met with very little success and was in abeyance and "reformed" several times before it began to show signs of prosperity under the encouragement of Charles of Anjou and Pope Clement IV, who reorganized it in 1266 with all the faculties, including medicine and theology. In the last-named faculty

Thomas Aquinas was for a time lecturer. Another feature which distinguished the University of Naples was the fact that control was wholly in the hands at first of the Royal Chancellor and then of the Grand Chaplain. Examinations for the doctorate were superintended by him and the diploma or license was issued in the name of the king. Such control retarded progress for some time. Under the reorganization of 1860 the university has made steady advance. The following faculties are maintained: jurisprudence, medicine and surgery, physical science and mathematics, philosophy and letters, and a school of pharmacy. The student enrollment in 1908 was 6602, of whom 2627 were in the faculty of jurisprudence.

SEE ITALY, EDUCATION IN

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**NAPOLEON AND EDUCATION** — The educational system which was introduced by Napoleon and which in its outline has survived in France to the present day is of interest as an attempt to realize a dominating political ideal through the schools. Political aims and political ideals could, according to Napoleon, only be realized through a well-organized teaching body. "Of all political problems," he says, "this is perhaps of prime importance. An established political state will be impossible without a teaching body with established principles." And elsewhere "My aim in establishing a teaching body is to have a means of directing political and moral opinions." The organization of the Jesuits to a large extent could have realized his objects, and he would have put the schools in their charge, if they had not been subservient to a "foreigner." For a time he and his advisers thought of employing the Oratorians, or the Congregations of the Doctrine, or the Benedictines, or all three. Later, however, he was opposed to ecclesiastical teachers, because "priests look upon this world only as a vehicle to conduct to the next. I want the vehicle to be filled with good soldiers for my armies." Good soldiers and citizens loyal to his person were to be product of his educational scheme. The basis of instruction was to be (1) the Catholic religion, (2) loyalty to the emperor, and (3) obedience to the statutes of a teaching body. All alike, pupils and students, teachers and professors, were to be creatures of a large administrative machine. A curious omission from Napoleon's scheme was the neglect of a thorough provision of elementary education.

Elementary schools are mentioned in the decree of 1808, and their organization was promised for the future, but little was done. The Christian Brothers (*q v*) were to be allowed to conduct their schools, provided they became members of the university and took an oath of allegiance. In this way Napoleon hoped both to economize on the budget and to break the independence of the Christian Brothers. Napoleon seems to have repented of the omission, but too late, when he issued a decree in 1815 (Apr 27) "on the importance of primary education for the improvement of the condition of society."

By the Law of May 10, 1806, the Imperial University was created and charged with the sole care of public instruction and education. The decree organizing the university was issued on Mar 17, 1808, and contained the following features. All public education is in the charge of the university. No school or educational institution could be opened outside the university or without the authority of its head. No one could open a school or teach publicly unless he were a member of the university or a graduate of one of its faculties. The university for administrative purposes was to be divided into academies, each with its own faculty, *lycées*, thirty in all, for instruction in classics, history, rhetoric, logic, and the elements of mathematics and physical science; *collèges*, or municipal secondary schools, giving but the elements of the curriculum of the *lycées* without rhetoric and logic, private institutions of secondary character, boarding schools, and elementary schools to teach reading, writing, and elements of arithmetic. At the head of the whole system was to be a grandmaster assisted by a chancellor, or secretary, and a treasurer, a University Council of thirty members was to be appointed partly by the emperor, partly by the grandmaster. Each academy was to have a council of ten. The grandmaster was to appoint twenty to thirty inspectors-general and rectors of academies. Subordinate officers were to be academy inspectors, professors, principals, regents, teachers, etc. To provide teachers a normal school for 300 students was to be created at Paris. The efficiency of the machine was to be further secured by requiring celibacy from all engaged in schools without the rank of professors. No member of the teaching body could leave the service without permission from the grandmaster. By a decree of Sept 17, 1808, all institutions which were not provided with a diploma from the grandmaster by Jan 1, 1809, were to be closed. In 1811 (decree of Nov 15) the system was further extended by a proposal to raise the number of *lycées* to 100, by compelling institutions and boarding schools in towns where a *lycée* or *collège* already existed to send their pupils to these schools and to limit themselves to repetition of the school work, by limiting the curriculum given by

institutions and boarding schools in towns where a *lycée* or *collège* did not exist. (For the later development of the system see FRANCE, EDUCATION IN.)

The education of girls Napoleon did not consider to be of importance. For girls the destination is marriage and "of all educations the best is that of mothers." He seems, however, to have been at some trouble to prescribe the curriculum for the school at Ecouen, a boarding school for the daughters and sisters of officers of the Legion. "Religion is an important matter in a public institution for girls. Train believers not reasoners," for religion will supply qualities otherwise unattainable by the weaker intelligence of women. The secular subjects were to include ciphering, the vernacular, orthography, geography, and history, a little botany and natural science for the older girls, music and dancing, but the chief attention was to be devoted to the preparation of mothers and home-makers, so that about three quarters of the day was to be given up to the manual work connected with a home. The scheme seems to have been carried out, but the severity of the discipline and the burden of the practical work seem to have made the school distasteful to many of the pupils.

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**NARCOLEPSY** -- Is an abnormal condition of sleepiness in which the individual has a tendency to go to sleep many times during the day, the sleep lasting from one or two minutes to several hours. The impulse or tendency to go to sleep is so strong as to be almost irresistible. The condition is sometimes produced by physical causes, such as ocular fatigue, anemia, diabetes, uremia, gout, and certain drugs. It is a common symptom in hysterical persons, and is sometimes a psychic equivalent for epileptic convulsions.

Any unusual amount of sleepiness, especially in children, should be looked at with suspicion, and an appropriate medical examination made to determine its cause. If brought about by a state of fatigue, whether from eye-strain or from any other similar cause, due measures may be taken to overcome it, and the child will return immediately to a normal condition. If the narcolepsy be an epileptic or hysterical symptom, the individual must be treated for these diseases, and if it be found in a child, due allowance must be made by the teacher for the diseased condition. The opposite condition is called insomnia. S I F

**NARCOTICS** -- Concerning the narcotic effect of tobacco upon health, there has been

much discussion. The fact that the stem and leaves of the tobacco plant contain a poisonous substance (nicotine) which in concentrated doses quickly kills small animals, proves nothing regarding the effect of smoking or chewing tobacco, for in both of these ways of using tobacco, the nicotine is exceedingly diluted, as is the poison found in tea and coffee. It seems certain that indigestion, irritation of the respiratory organs, and heart and nervous disturbance may in some people result from the use of tobacco, while others show no apparent effect. All this refers to healthy adult men, for many medical authorities agree that tobacco is *always harmful to growing boys*, and interferes with their physical and mental development. The whole physiological truth about tobacco so far as now known is that

(1) no one needs it except to satisfy an established habit, (2) many adults are injured by it, and no one knows just how much will do harm to a particular person; (3) some adults are apparently not harmed by limited use, (4) it is decidedly injurious to growing boys, (5) those who avoid establishing the habit in youth do not as a rule care to learn later, for there are no physiological reasons why any one should deliberately set out to learn the use of tobacco in any form.

It is now well known to physicians that temperance is needed in the use of tea and coffee no less than with alcoholic drinks. Their effect is due to the presence of a powerful drug (*e.g.* caffeine), which acts on the nervous system. Nervousness, insomnia, headache, and indigestion are common symptoms arising from their excessive use. Many people are injuriously affected by tea and coffee, but others are apparently benefited by a limited use of these beverages. However, they should never be given to young children.

Concerning the effect of various narcotic drugs in common use there is no question as to disastrous effects of such drugs as opium, morphine, cocaine, laudanum, chloroform, chloral hydrate, and various patent or secret preparations, when habitually used.

M. A. B.

See ALCOHOL, PHYSIOLOGICAL AND PSYCHOLOGICAL EFFECTS OF, TEMPERANCE INSTRUCTION

**NARRATION (Rhetorical).** -- See COMPOSITION

**NARRATIVE METHOD** -- In teaching history in the primary and intermediate grades a systematic study of history by topics or movements is avoided. The children lack the motive for the study of historical facts so organized. Hence, in the lower school grades a basis in historical fact is established through a study of (1) the great personages of history, and (2) the dramatic incidents and stories of history. When events are grouped about a per-

## NASCENT PERIODS

sonality, we have the "biographical method"; when the selection of historical facts is made upon the basis of their contribution to an interesting story, we have the "narrative method." These methods are merely preliminary to a more systematic historical study and have a value (1) in interesting children in history, (2) in acquainting them with the main personalities and events of the past, and (3) in giving the pupils a basis for interpreting and motivating later study of a more thorough and scientific type

H S

See HISTORY, TEACHING OF

**NASCENT PERIODS** — A term borrowed from chemistry to indicate the periods in child development when certain characteristics are in process of formation

Human development, both physical and mental, is not uniform, but subject to periods of rapid and slow growth. Many attempts have been made to distinguish these stages of development, the results differing according to the points of view. Thus some of the classifications have been built up upon the theories of recapitulation and other similar theories. Others are based upon anthropological and anthropometric investigations, and still others upon the results of psychological observation and experimentation

Vierordt distinguishes seven stages, based upon measurements of the bodily organs. They are as follows: (1) from birth to eight months, (2) from eight months to seven or eight years, (3) from seven or eight to fourteen years, (4) from fourteen years to twenty-one or twenty-two, (5) early adult, (6) later adult to sixtieth year, (7) old age. Bagley gives three periods of development during the school life of a child. They are as follows: (1) the transition stage, from the age of six to eight, (2) the formative stage, from eight to twelve, (3) the adolescent stage, from twelve to eighteen

Kirkpatrick enumerates the following stages, based upon a study of changes in social sensitiveness in the various periods, (1) pre-social, up to close of first year, (2) imitative and socializing stage, up to three years of age; (3) individualizing stage, up to six years, (4) pubertal or transitional, up to eighteen, (5) later adolescence, up to twenty-four

It is evident that all such attempts at classification must vary with the characteristics selected as the basis of the classification. Furthermore, the ages mentioned are only approximations, and cannot be expected to hold generally. The advantage to the educator of knowing the stages of the child's development lies in the fact that changes are most easily accelerated at the natural time of their appearance and may even be impossible at a later or earlier period. It is also probable that normal development in an earlier period

## NATIONAL COUNCIL

lays the proper foundation for development in subsequent periods

E H C

See GROWTH

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**NASHVILLE UNIVERSITY, NASHVILLE, TENN.** — See PEABODY EDUCATIONAL FUND

**NATAL (AFRICA)** — See SOUTH AFRICA, EDUCATION IN

**NATAL UNIVERSITY COLLEGE, PIETERMARITZBURG** — See SOUTH AFRICA, EDUCATION IN

**NATIONAL ACADEMY OF SCIENCE** — See SCIENTIFIC SOCIETIES

**NATIONAL AID TO EDUCATION** — See NATIONAL GOVERNMENT AND EDUCATION, SCHOOL FUNDS, PERMANENT

**NATIONAL CONFERENCE COMMITTEE ON STANDARDS OF COLLEGE ENTRANCE** — See COLLEGE REQUIREMENTS FOR ADMISSION, COLLEGE EXAMINATION BOARDS

**NATIONAL CONGRESS OF MOTHERS** — See PARENTHOOD, EDUCATION FOR

**NATIONAL COUNCIL** — An organization, within the National Education Association (*q.v.*), consisting of 120 members, elected from the active and life members of the association, and for six-year terms. One half of the membership is elected by the Board of Directors of the National Education Association, and the other half by the council itself.

The first proposal for the formation of such a body was made in 1879 in an editorial in the *National Journal of Education* of Boston. The article awakened much interest, and a number of State Teachers' Associations indorsed the idea. The editor was invited to read a paper on the subject before the Department of Superintendence of the N. E. A., at its winter meeting in 1880, and a committee was later appointed to draw up a plan of organization, to be reported to the directors of the N. E. A., at the summer meeting. The plan was approved by the directors and by the association, and the first council was appointed in that year. Since then there have been some changes in the plan and constitution, and a material enlargement of the membership, but the purpose of the organization, as stated in its constitution, has remained with but little

change The membership was soon enlarged from the original 51 to 60, at which it remained until the Cleveland meeting in 1908, when it was increased to 120

The National Council was intended to be a small body of the older and more deeply interested members of the association, who should not only meet for the more serious consideration of fundamental educational questions but should also direct investigations and conduct research The appointment of special committees for this purpose was distinctly authorized in the articles of organization The council was also to recommend educational questions or the results of investigation to the directors of the National Education Association for their consideration, and was to make a report to the association on the work of the council for the year The recording and reporting of current educational progress was to be a part of its work During the first twenty years of its existence the council rendered valuable service, and the record of its discussions shows that the members considered most of the important topics of the day Many short but important individual reports were made by members and considered The *Report of the Committee of Twelve on Rural Schools*, submitted in 1897, and the *Report of the Committee on the Relations of Public Libraries to Public Schools* made in 1899, were longer cooperative studies During the past ten years, however, the council has considered few problems of fundamental importance

This plan for a Council of Education has been copied in more or less detail by a number of State Teachers' Associations, and in a few associations such a body is still rendering important service The difficulty which confronts such a selected body is that, under the democratic methods of election which prevail, and with election open to all members, persons are elected to the councils because of other considerations than ability and willingness to work, the membership is enlarged to make place for others, and the council loses its early vigor and usefulness

E. P. C.

**NATIONAL EDUCATION.** — The different aspects of this problem will be found distributed under various topics, *e g* ENGLAND, EDUCATION IN, FRANCE, EDUCATION IN, GERMANY, EDUCATION IN, SCOTLAND, EDUCATION IN, and other national systems, where the development of public education is given under the historical sections For this country see under COLONIAL PERIOD IN AMERICAN EDUCATION, MASSACHUSETTS, STATE OF, and the historical sections of the articles on the other state systems, *e g* ALABAMA, STATE OF See also DEMOCRACY AND EDUCATION, CITIZENSHIP AND EDUCATION; FAMILY EDUCATION, SCHOOL AND LIFE, COURSE OF STUDY, THEORY OF, COURSES OF STUDY, etc., and the articles on the more recent developments in special fields of AGRICULTURAL EDUCA-

TION; COMMERCIAL EDUCATION, INDUSTRIAL EDUCATION. See further ATTENDANCE, COMPULSORY; CHILD LABOR, CHILDHOOD, LEGISLATION FOR THE CONSERVATION AND PROTECTION OF, etc The general development of the principle of public education is treated under FREE SCHOOLS, see also in this connection FEES; the general method of support is outlined under TAXATION.

**NATIONAL EDUCATION ASSOCIATION** — See TEACHERS' VOLUNTARY ASSOCIATIONS

**NATIONAL GOVERNMENT OF THE UNITED STATES AND EDUCATION** —

The whole policy of national aid has been a slow and a gradual development, but following a slowly evolving plan The organization and control of the educational systems themselves have been left to the states, the national government merely aiding and encouraging the states by granting them educational endowments from the vast national domain As a total the aid granted has been large, but it has been unevenly distributed

The large national domain was acquired as the result of state cessions, purchase, treaty, and the fortunes of war The cessions west of the Allegheny Mountains and east of the Mississippi River, made by the original states between 1780 and 1802, formed the beginning of the national domain This was added to by the Louisiana Purchase of 1802, the Oregon boundary treaty settlement of 1846, and the outcome of the war with Mexico, in 1848 After the consideration of a number of proposals, the Continental Congress, in 1785, adopted a system of rectangular land survey for the new domain, based in large part on the old New England system of "town planting," which, after slight modifications, was adopted in final form in 1796, and is known as the Congressional land survey Under it the national domain has been laid out into rectangular townships, six miles square, and these have in turn been divided into sections, one mile square From this form of survey the lands have been sold and the endowment grants made

**Land Grants for Common Schools** — *Disposal of the Lands* — In April, 1783, Colonel Timothy Pickering drew up certain propositions for settling a new state in the national domain, in what is now Ohio, the same to be settled by officers and soldiers of the federal army The proposal of Pickering is significant as containing the earliest suggestion of national land grants for education, as follows —

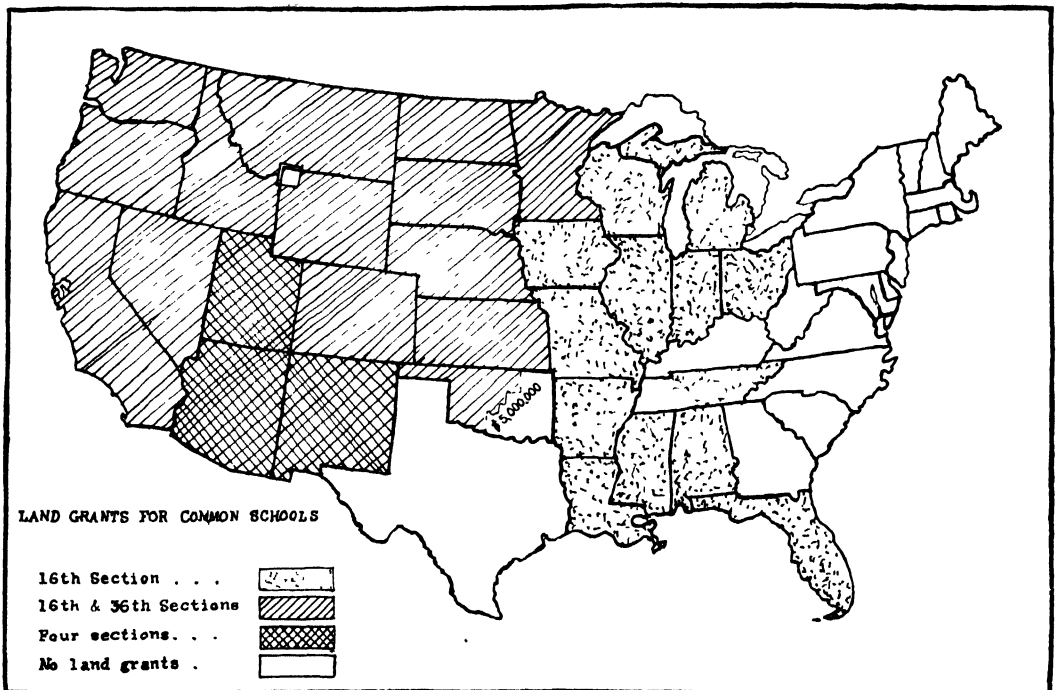
"Art 7 These rights being secured, all the surplus lands shall be the common property of the State, and be disposed of for the common good; as for laying out roads, building bridges, erecting public buildings, establishing schools and academies, defraying the expenses of government, and other public uses."

Two years later the Ordinance of 1785, ordering the rectangular system of survey, contained a provision that "there shall be reserved the lot No 16 of every township for the maintenance of public schools within the said township." The famous Ordinance of 1787 merely stated in principle, for the entire Northwest Territory, what had been specifically provided for in a part of Ohio in 1785.

In 1787 a New England company, known as "The Ohio Company of Associates," purchased 1,500,000 acres of land on the Ohio, and in arranging for this sale Congress agreed with the purchasers to reserve Section 16 in every township for schools, and Section 29 for religion, and to grant, in addition, two complete townships for the benefit of a university. The

make additional concessions. The new Congress also refused to grant lands to the Ohio Company in lieu of those of Section 29 (religion) which were found to have been sold, and the grant of sections for religion nowhere appears again. In 1792 the new state of Kentucky and in 1796 Tennessee were admitted to the Union, but no land grants were made to them.

*Ohio establishes a Type and a Policy* — With the admission of Ohio, in 1802, our land-grant policy for education really begins. A definite precedent was here established, which has been followed, and extended, in the admission of all subsequent states. The enabling act for the admission of Ohio contained a definitely proposed bargain, which, if accepted by the state, was to be binding on Congress,



university lands were given to the care and management of the legislature of the future state, but the control of the sections for schools and religion was left undecided. Similar terms were made in the contract for the sale of 1,000,000 acres on the lower Ohio to John C. Symmes in 1788. In these laws and grants by the Congress of the Confederation may be seen the beginnings of a national land-grant policy, though it was some years afterward before a settled policy may be said to have been determined upon. On the organization of the National Government in 1789, many petitions were presented to the new Congress for special grants of land and for the sale of land at reduced prices, and it is greatly to the credit of the Congress that it consistently refused to

and irrevocable. If the new state would agree by ordinance to exempt from taxation all public lands sold by Congress within the state, for five years after sale, Congress agreed to give to the new state certain salt springs, to give to the state 5 per cent of the net proceeds of the sale of all public lands within the state, and to give the 16th section for schools to the inhabitants of each township. This was a definite exchange of property and rights of value, and Congress was actuated as much by a desire to increase the market for national lands as it was to aid in the establishment of schools. Nevertheless, this bargain inaugurated a policy which was followed in the admission of subsequent states, even after the taxation exemption provision was dropped.

In 1803 Congress confirmed to Ohio all preceding grants for schools; extended the grants to certain reservations not before included; granted the state another township for a university; declared the grants "to be for schools, and for no other use, intent, or purpose whatever"; and vested the control of the school lands in the legislature, in trust for the purposes mentioned. The same year the provisions of the Ohio act were extended to the territory "south of the state of Tennessee," and in 1806 Congress, in settling a dispute with Tennessee, provided for the reservation of "640 acres to every 6 miles square" for schools, and granted the state, in return for certain concessions, 100,000 acres for academies and a like amount for two colleges. With the admission of Indiana in 1816, Mississippi in 1817, Illinois in 1818, and Alabama in 1819, bargains and grants similar to the one for Ohio were made by Congress. With the admission of Missouri in 1821 the grants for schools were extended to the Louisiana Purchase, as well as to the national domain derived from the state cessions. Louisiana had received no grant of school lands on its admission in 1812, but in 1834 the 16th section was granted the state, "wherever the same had not been sold." All states thereafter admitted received grants of lands for schools, with the exception of Maine, which was carved from Massachusetts, Texas, in which the national government owned no land; and West Virginia, which was carved from Virginia.

*Three Types of Grants; Leases* — Three types of grants were used before 1840. In the Ohio type of grant the 16th section, or its proceeds, was "granted to the inhabitants of each township, for the use of schools." Indiana in 1816 and Mississippi in 1817 followed the Ohio type of grant. With the admission of Illinois in 1818, the 16th section was "granted to the state, for the use of the inhabitants of such township, for the use of schools." Alabama in 1819 reverted to the Ohio type of grant, but Missouri in 1821, and Arkansas in 1836 followed the Illinois type of grant. By the time Michigan came to be admitted in 1837, the evils of both forms of grants had become so apparent that the convention which framed the constitution memorialized Congress to grant the 16th section lands "to the state, for the use of schools," and to be applied without reference to township lines. To this Congress assented, and this wise form of grant has been followed in the case of all subsequent states. By about 1850 the policy of making grants for schools had become settled, and after that time the reservations were ordered at the time the survey of the territory was made, the sections being held in reserve for the future state.

At first there was no permission to sell the school lands, and they were held under lease. This proved unprofitable, and in 1824 Ohio

led the way by memorializing Congress for permission to sell her school lands. This was granted in 1826, and similar permission was soon granted to the other states. This led to much waste and many abuses. Beginning with Colorado in 1876, Congress has imposed increasing restrictions as to the sale price, so as to insure proper returns.

*Additional Section Grants* — Up to 1850 all states admitted, beginning with Ohio, had received the 16th section for schools, except Maine and Texas. When the survey of the Oregon country was ordered in 1848, Congress departed from the previous policy and ordered the reservation of sections 16 and 36 in every township for the benefit of schools in the future state or states. California, entering the Union in 1850, was the first state to receive two sections, and two sections were granted to all new states thereafter, except West Virginia, up to 1896. When Utah was admitted in 1896, four sections in each township, the 2d, 16th, 32d, and 36th, were granted to the state for schools, and this form of grant was also followed in the admission of Arizona and New Mexico. In admitting Oklahoma in 1907 the most liberal of all grants was made. The state was granted the 16th and 36th sections for schools, the sum of \$5,000,000 in money, in lieu of grants in Indian Territory lands; section 13 for normal schools, the agricultural college, and the university; section 33 for charitable, penal, and reformatory institutions; and other acreage grants for individual institutions mentioned further on in this article.

*Value of these Grants*. — The total of these land grants for common schools is about 81,064,300 acres. This is equal to an area about the size of the states of Ohio, Indiana, and Illinois combined, and, at the traditional price of \$1.25 per acre for government land, would be worth about \$100,000,000. As a matter of fact, the grants have produced much more than this amount, the sale price of lands in the newer Western states being many times the old figure. Many of the earlier grants were grossly mismanaged, and in some cases the money when accumulated was borrowed by the state and spent, leaving to-day only "a perpetual obligation" on which the state pays interest from the proceeds of general taxation. In the states admitted since 1850, however, the land grants have been looked after with greater care, and since 1875 excellent results have been obtained. The accompanying map shows the distribution of the grants, and the following tabulated summary shows the approximate values of them. That a total permanent school fund of \$500,000,000 may in time be obtained from these school-section grants seems probable, while the amount may eventually prove still larger. Of this estimate of \$500,000,000 but \$6,000,000 is in the old slave states; \$35,000,000 is in Oklahoma; \$27,000,000 is in the old



Northwest Territory states, two fifths of which is land belonging to the city of Chicago, \$157,000,000 is in the Plains states, \$205,000,000 in the so-called Mountain states, and \$72,000,000 is in the three Pacific Coast states

GROUPS OF STATES	ACRES RECEIVED IN SECTION GRANTS	FUND DERIVED FROM SALE (Approximate)	VALUE OF UNSOLD LANDS (Approximate)
11 states adm. before 1825	6,465,382	\$15,250,000	\$13,000,000
6 states adm. 1825-1849	4,726,153	8,750,000	1,250,000
8 states adm. 1850-1880	26,223,353	35,500,000	95,750,000
10 states adm. 1889-1912	43,649,412	13,500,000	300,000,000
<b>TOTALS</b>	<b>81,064,300</b>	<b>\$103,000,000</b>	<b>\$410,000,000</b>

<sup>1</sup> Three fourths of this amount is land belonging to the city of Chicago

*Protests of the Older States* — It will be noticed from the map of the United States, showing the distribution of these land grants for common schools, that certain states received no grants for schools whatever. This has for long been a source of dissatisfaction and protest on the part of the older states. Maryland in 1821 drew up a long and detailed statement, which it transmitted to Congress and to each of the states, setting forth the facts as to the grants, declaring that each state in the Union had "an equal right to participate in the benefit of the public lands, the common property of the Union", and requesting Congress to make similar appropriations of land to each of the other states. The legislatures of Maine, Vermont, New Hampshire, Connecticut, Rhode Island, New Jersey, Delaware, and Kentucky indorsed the Maryland memorial and also transmitted to Congress carefully prepared memorials praying for similar grants for common schools. Ohio alone among the states opposed the grants. The Committee on Public Lands of the Senate was "instructed to inquire into the justice and expediency" of making such grants, and reported adversely, holding that the so-called grants had in reality been "sales bottomed on valuable considerations," and that to grant large areas of land to other states would greatly impede the development of the states in which the land was located. On the other hand, the committee stated that it would be both "just and expedient to grant a per centum on the sales of public lands for the purpose of promoting education in such states as had not received the aid of the government." This was not done.

The question has come up from time to time, but no settlement has ever been reached. One of the most recent proposals was a bill introduced into Congress in 1894-1895, proposing to give sufficient land to the states to equalize all grants to an equivalence of two sections for all. It was estimated that this would require about 28,000,000 acres, but no action was taken. It can hardly be denied that the older

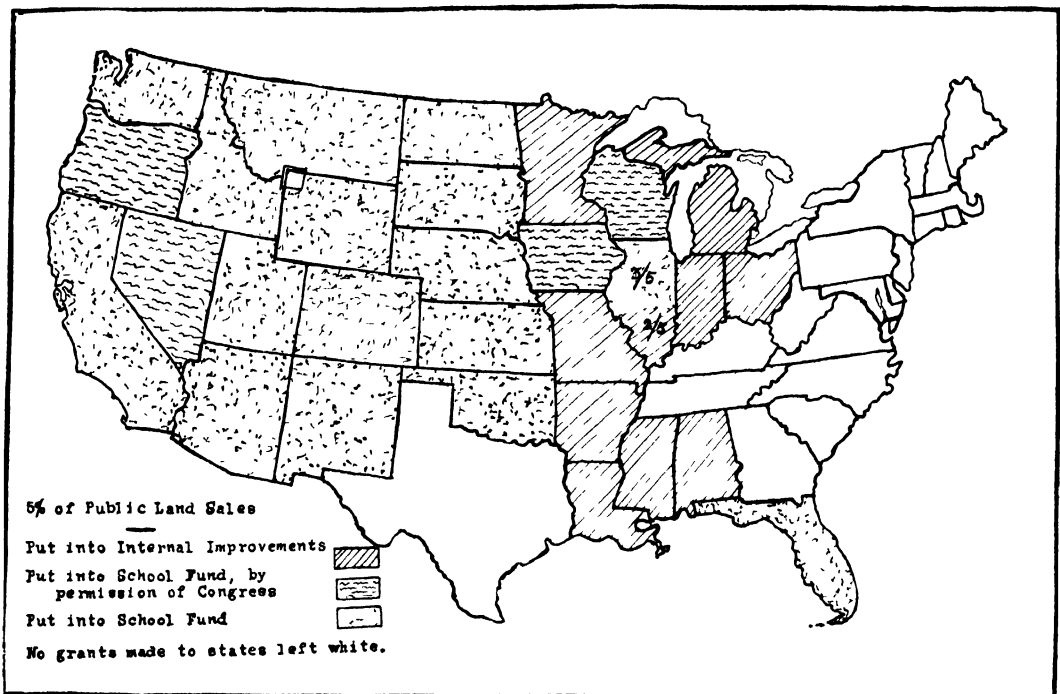
states have not received their just share in these grants from the national domain. That they would have wasted their share had they been given section grants at the beginning, seems probable. The story of the waste of the school lands by the states admitted before 1850, and the squandering of the Surplus Revenue distribution of 1837 by most of the older states, leaves little doubt as to what would have been the result. That these grants have greatly stimulated an interest in education in the newer states to the west cannot be questioned, and it is probable that national grants to the older states, even now, might awaken a new interest in the work of public education.

*Other Grants for Common Schools* — *Saline Grants* — In the bargain made at the time of the admission of Ohio, certain saline lands were given to the state, and these were in turn put into the school fund, 24,216 acres were granted in all, and their final sale added \$41,024 to the school fund. Indiana, similarly, received 23,830 acres, from which about \$85,000 were derived. Shortly afterward it became customary to grant two full townships of saline lands to each state, on its admission, to be devoted to any purpose the state saw fit, though in the admission of all states after Colorado (1876), except Utah, the grant of saline lands has been omitted. In Utah all saline lands in the state were given to the state for the benefit of the state university. About 900,000 acres of saline lands have been granted to the different states, most of which have been used for educational purposes. Some states have added the proceeds to the permanent school fund, some have used the lands to endow the normal schools, and one or two states have added the lands to the university grants. Just how much these saline grants have produced is not known, but probably something over a million dollars.

*The Five Per Cent Fund* — In the enabling act for the admission of Ohio the plan of granting 5 per cent of the net proceeds of the sale of all public lands lying within the state, for internal improvements, was begun, and has since been continued in the case of all new states, except Maine, Texas, and West Virginia. With the admission of Illinois in 1818, a portion (three fifths) of this fund was for the first time given for education, and was used for the normal university. This state, however, formed an exception, as the fund was not again devoted to education for nearly thirty years. Since 1860 the grant has been uniformly given for additions to the common school fund of the states, and, in the case of all states admitted between 1845 and 1860 except Minnesota, the fund has since been diverted to education, with the permission of Congress. In all \$7,187,316 had been added to the permanent school funds of the different new states from this source, up to 1910, and four fifths of this has been to the school funds of states west of the Mississippi River.

*The Surplus Revenue* — The idea of devoting a portion of the money derived from the sale of public lands to the cause of education, and of dividing it in some equal proportion among the states, seems to have been often considered. In 1826 the Committee on Public Lands of the House presented a report declaring that the public domain constituted "a common fund for the joint benefit of the states," and recommended a distribution among the states of a portion of the proceeds of land sales for the support of common schools. Between 1817 and 1827 there was an annual surplus of national revenue of from two to six million dollars. By 1827 the extinction of the national debt seemed certain, and, as it was at that time believed that the money could not be spent,

a presidential veto, it was put in the form of "a deposit of money among the states." After reserving \$5,000,000, all money remaining in the Treasury on Jan. 1, 1837, was to be deposited with the states, in proportion to their representation in Congress, and in four equal quarterly installments. Only three payments were ever made, as the panic of 1837 soon left the Treasury empty. Altogether, \$28,171,453 86 was "deposited," the deposit varying from \$286,751.49 to Delaware, to \$4,041,520 71 to New York. The deposit was everywhere regarded as a distribution, and none of the money has ever been called for. Of the total amount distributed, approximately \$7,500,000 actually exists to-day, the interest on all of which is devoted to schools. Over



constitutionally, for internal improvements, visions of a great annual surplus began to appear. As early as 1826 a bill to distribute \$5,000,000 among the states was proposed. The bill failed to pass, but the idea was cherished. In 1831 the legislature of Pennsylvania asked Congress for a distribution. In 1833 Clay's bill for the distribution of the land revenues among the states was passed, but vetoed by President Jackson. The money was to be used for education, internal improvement, colonization, or the extinction of state debts. The matter soon became a political issue, and a feeling of injustice on the part of the old states ran through it all. Finally, in 1836, the distribution so long talked about was made, though, to avoid

half of this amount is that of New York. There is also an interest charge, in eight states, on \$6,405,837 74 of lost funds, raised by taxation and now devoted to the support of schools. The school funds of the different states actually received about one fourth of this distribution, and to-day draw interest on about half of it. Almost all of the deposit not put into school funds was squandered or lost.

*The Internal Improvement Act of 1841.* — One section of this law (8) has been of much importance to education. By its terms, 500,000 acres of public land were granted to each state admitted after 1800, except Maine, to be selected by the state, and the same grant was made to all new states admitted thereafter up to 1889, except Texas and West Virginia.

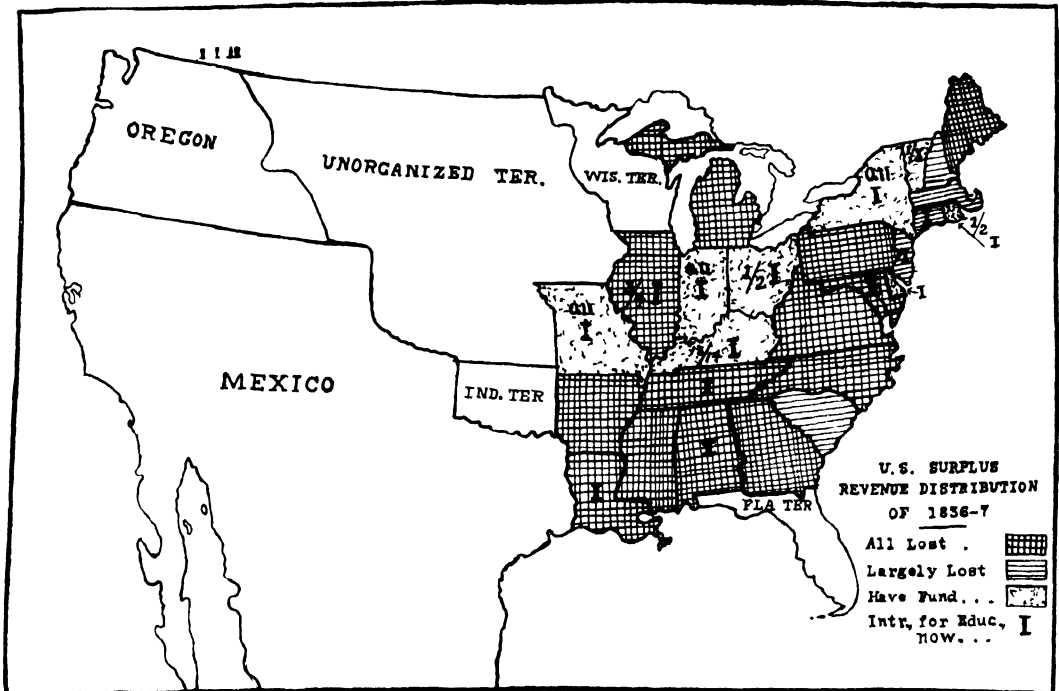
## NATIONAL GOVERNMENT

The land was at first given for internal improvements, but after 1845 the grant was diverted to education in all cases except Minnesota. Beginning with the states admitted in 1889 and after, Congress has made important specific grants, ranging from 500,000 to 2,160,000 acres, to each new state in lieu of this and the salt land grants. A brief statement of the amount and approximate value of these 500,000 acre grants to new states, made

## NATIONAL GOVERNMENT

the sales have averaged two to five times this amount. In Arizona and New Mexico certain lands cannot be sold for less than \$25 an acre. The total of all the specific grants to the last ten states admitted is 11,243,080 acres. Of this amount 6,656,540 acres have been for purposes specified above as educational. The educational lands granted to the last ten states are worth from \$40,000,000 to \$60,000,000, at least.

*Swamp Land Grants* -- In 1849 Congress granted to the state of Louisiana, on its appli-



under the provisions of the law of 1841, is as follows --

- General grants made to the states admitted before 1889. Put into the common school funds of the states, 5,000,000 acres. Minimum sale price fixed by law, \$1 25 per acre. Lands sold so far (about  $\frac{1}{4}$ ) have produced about \$6,000,000. Lands still on hand, probably worth about \$8,000,000. Total gains to common school funds from grants up to 1889, about \$14,000,000.
- Specific grants for educational purposes, 1889 and since, in lieu of the 500,000 acre grant for schools -- For universities, 1,040,000 acres, for schools of mines, 680,000 acres, for agricultural colleges, 1,000,000 acres, for normal schools, 1,260,000 acres, for schools for the deaf, dumb, and blind, 560,000 acres, for reformatory, penal, and charitable institutions, 1,180,000 acres, and in Oklahoma Section 13 (706,540 acres) was granted,  $\frac{1}{4}$  for normal schools,  $\frac{1}{4}$  for the university, and  $\frac{1}{4}$  for the agricultural college. Other specific grants have been for such purposes as insane asylums, public buildings, penitentiaries, hospitals, and irrigation. On most of this land a minimum sale price of \$10 an acre was placed, and in most of the states

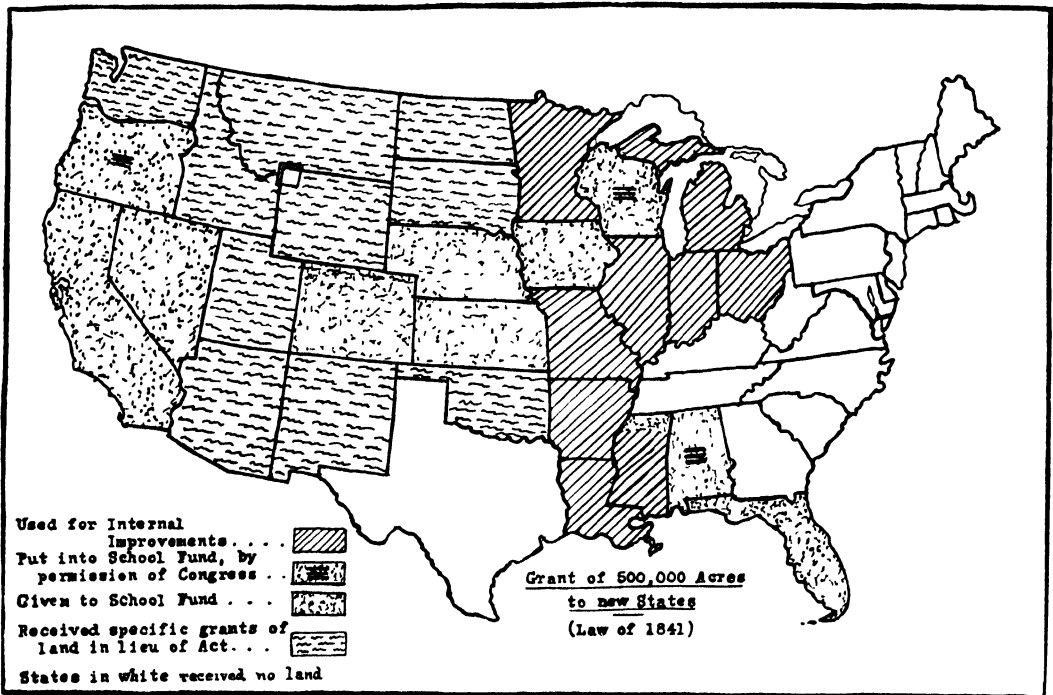
education, all of the swamp and overflowed lands within the state, the proceeds to be used in constructing levees and drains. The following year the law was made general, and many states have shared. The act applied only to the new or public-land states. In 1857 all lands so far selected were confirmed to the states. In 1860 Minnesota and Oregon were granted swamp lands, and in 1866 California received such grants. Since that date the grant has not been made to any new state. A number of the states have used this grant, or the balance after paying for drainage work, for education instead of for internal improvements, and have put either all, or the net proceeds, into the permanent state school fund. Illinois, for example, has received much of its permanent school fund from this source, if we omit the lands in the city of Chicago. A total of something over 60,000,000 acres of swamp lands was granted to the states, about three fourths of which grants were devoted to educational purposes, and mostly put into the common school funds. These have probably

brought in from \$12,000,000 to \$15,000,000 for educational purposes. Perhaps two thirds of this amount is in existence to-day, some of it having been spent by the states, and an interest charge being all that is left. Some swamp lands are still unsold.

**Forest Reserve Income** — By an act of Congress in 1908, Congress now makes grants of 25 per cent of the income of each national forest reserve, for the benefit of schools and roads within the county in which the forest reserve is located. This grant produced \$438,702 in 1909-1910, and in time will produce very substantial incomes for certain counties having national forest reserves within their borders.

grant was changed in purpose, on the request of a number of the states. Such of the saline-land grants and the deposit fund as went to education was so devoted by the states.

Between 1867, when Nebraska entered the Union, and 1889, but one state (Colorado, 1876) was admitted. When Congress came to admit the two Dakotas, Montana, and Washington in 1889, and Wyoming and Idaho in 1890, the national aid policy, as it had finally evolved, is seen. The two sections in each township in the state (Indian reservations excepted) were granted to the state for common schools; the 5 per cent fund was also granted to be devoted to the same purpose; and, in lieu of the swamp land grants and the 500,000 acre grant,



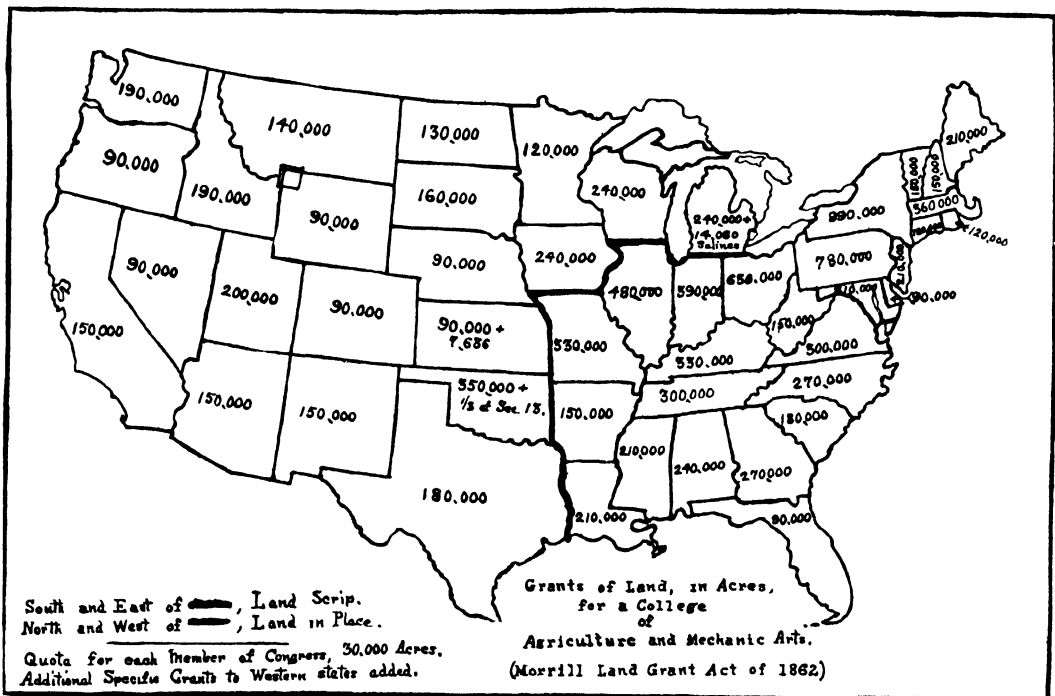
*The National Aid Policy as Finally Evolved* — Starting from a form of bargain for the sale of land, the policy of making grants for educational purposes has gradually evolved into one of very marked proportions. Perhaps the pressure of the new states for grants for educational purposes has done more to bring these educational grants about than has the desire of Congress to help education in the states. The 16th and succeeding section grants were given for schools from the first, but the form of grant was finally evolved under a request from a state. The 5 per cent fund was at first given for internal improvements, but was gradually diverted to education. The swamp land grants have been devoted to educational purposes by the states without suggestion from Congress. The 500,000 acre

500,000 acres of land, to be located by the state, were granted for specific educational objects, such as the university, the agricultural college, normal schools, a school of mines, reform schools, deaf and blind asylums, and charitable and reformatory institutions. A minimum sale price of \$10 per acre was fixed, freedom from sectarian or denominational control for all schools was required to be pledged by the state, and the state was required to pledge the inviolability of all the educational grants. These grants reached a climax in the enabling act for Oklahoma in 1907, and attained a scale of munificence equaled nowhere else. (See special articles on OKLAHOMA, STATE OF, for a detailed statement of these grants; on the other state school systems, for a statement of their grants, and the

amount of their permanent school funds, and on NEW MEXICO, STATE OF, for a statement of the grants made to Arizona and New Mexico.) The grants to Oklahoma totaled 3,876,163 acres, estimated as worth \$20 per acre as a minimum. This is an area three fourths as large as the state of Massachusetts.

One new feature of all the recent (since 1889) enabling acts is the grants of land for normal schools, asylums for the care of defectives, and charitable and penal institutions. A few states, still earlier, devoted certain of their land grants to the endowing of normal schools, but it is only since 1889 that direct grants for these schools have been made by the National Government. In all, something over a million and a half acres of land have been

posed of seminaries of learning, were confirmed to the state. In 1806 Tennessee was granted 100,000 acres of land for two colleges, and a similar amount for county academies. The enabling act for Indiana in 1816 granted the state two townships "for a seminary of learning," and vested their control in the legislature of the state. The enabling acts for nearly all of the public land states admitted since have contained similar grants, and, when omitted from the enabling acts, equivalent grants have been made at some other time. All states have received two townships (72 sections, 46,080 acres), and a few have received a larger amount. Beginning with the states admitted in 1889, Congress has, in each case except Wyoming, made specific grants in addition to



the unsold land is in states to the west of the Mississippi River

The accompanying map shows the distribution of these grants. The old states, it will be noticed, have never shared in these grants. From time to time proposals to make grants of land to the old states as well have been up for consideration. In 1819 the Committee on Public Lands of the House was instructed "to inquire into the expediency of appropriating 100,000 acres of land to each state, for the endowment of a university in each state." They reported against the plan, largely because of the disturbance in land prices which would be produced and the conflicts which would arise between states from the location of the grants. If such aid were to be granted the committee was of the opinion that "it should be given in money." These are the same objections which were urged against the Maryland proposal in 1821, and against all other similar proposals up to 1862.

*The Land Grant Colleges* — In 1850 Michigan petitioned Congress for a grant of 350,000 acres of public land to aid the state to endow a college for the teaching of agriculture, but the grant was refused. In 1858 Michigan renewed the petition, and in 1859 a bill making such a grant finally passed both houses of Congress. The bill granted to each state 20,000 acres of public land for each senator and representative in Congress, to which the state would be entitled by the census of 1860, to be used in founding a college for instruction in agriculture and mechanic arts. The bill was opposed by the Southern members, and was vetoed by President Buchanan, in a message which is an interesting summary of the old objections to such grants. In 1862 a bill drawn on similar lines, except that the grant was raised to 30,000 acres for each member in Congress, and instruction in military science and tactics was added, was passed and signed by President Lincoln. This was the famous Morrill Land Act. By subsequent legislation the time for accepting the grant was extended to 1869, and the time for opening the colleges to 1874. States yet to be admitted, and states which had been in rebellion, were specifically included in the grants. In all, including additions made by recent enabling acts, a total of 11,367,832 acres has been granted for colleges of agriculture and mechanic arts as a result of the new policy inaugurated in 1862. This is an area half as large as the state of Indiana. The map shows the distribution of the grants, and it will be seen that for the first time the old states received a share. Eighteen states added the endowment to that of their state universities, and combined the two institutions into one. Four states gave the grant to private colleges or universities already established within the state. The remaining states founded separate higher institutions of learning. (See special article on AGRICULTURAL EDUCATION.)

The financial returns from this large grant of land for higher education have been very disappointing, although the educational returns have been large. A compilation from the most recent returns (1910) gives the following as the results of the grant —

Total acres granted, law of 1862, and subsequent grants	11,367,832
Total acres sold to date	9,570,401
Total funds produced from the lands sold	\$13,736,178
Total annual income from these funds, for all colleges	\$823,400
Acres of land still unsold, mostly western	1,797,431
Estimated value of these unsold lands	\$15,020,300
If sold for estimated value, total funds would be	\$28,756,478

This total is distributed as follows —

The 28 states to which land scrip was issued, received	7,940,000 acres
These states still have unsold	47,600 acres
The fund produced in these states is	\$6,564,507
Average sale price per acre	\$3.83
The 20 states to which lands in place were granted, received	3,653,200 acres
These states still have unsold	1,797,431 acres
The lands sold have produced a fund of	\$7,171,671
Average sale price per acre	\$3.99
Estimated value, at minimum sale price, of lands remaining unsold	\$15,020,300
Probable sale value, between and	\$25,000,000
	\$35,000,000

It is in the ten states admitted from 1889 on that the large funds in the future are to be expected. Of the 9,500,000 acres granted before 1870, 8,050,000 acres, or 84 per cent, were in land scrip. The result was that all of the states were trying to sell land at the same time, the market was glutted, the price of land dropped to as low as thirty-five cents an acre, and much of it was sold for fifty cents to sixty cents an acre. The low average sale price per acre shows the result.

The results of these grants, educationally, have been quite different. Probably no aid given by the National Government for education has ever proved so fruitful as have these grants for colleges of agriculture and mechanic arts. Instead of causing the states to lean upon the National Government for the support of their educational systems, as feared by President Buchanan, the result has been the opposite. New and vigorous colleges have been created, small and feeble state institutions have been awakened into new life, the agricultural and engineering professions have been developed, and the states have been stimulated to make large and rapidly increasing appropriations to these colleges and to their state universities.

*National Money Grants* — In 1887 additional grants were made to these land-grant colleges, and a new departure in the matter of government aid was made. A direct appropriation of \$15,000 per year, "from the proceeds of the sale of public lands," was made from the National Treasury to each state for the maintenance of an agricultural experimental

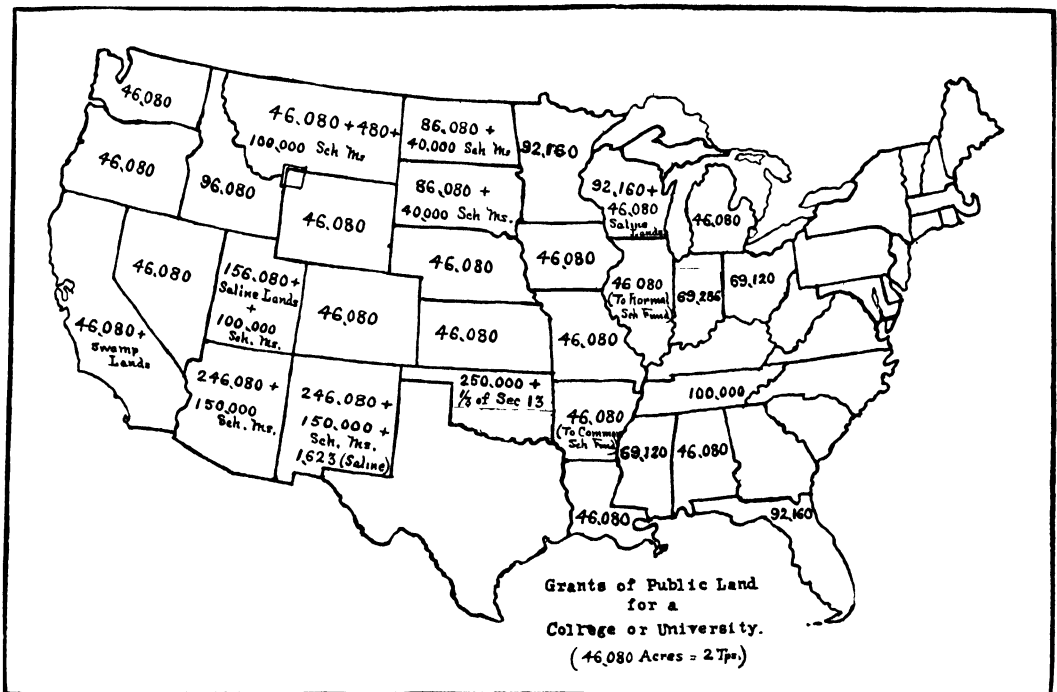
## NATIONAL GOVERNMENT

station, to conduct "researches or experiments bearing directly upon the agricultural industry of the United States" What was for so long regarded as wholly unconstitutional was now accomplished in fact. In 1905 the amount was increased to \$20,000, and thereafter to increase by \$2000 a year for five years, or until a maximum of \$30,000 was reached (which would be in 1910-1911), after which the annual sum should be \$30,000. Up to June 30, 1912, a total of approximately \$14,424,000 has been paid directly to the states from the National Treasury for experimental work in agriculture. These payments have been so carefully safeguarded that there has been no misappropriation of funds, and the government makes no payments to the states except upon the pro-

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The College of Agriculture in the Territory of Hawaii and the new University of Porto Rico have been admitted to share in these grants, making a total of fifty states and territories eligible, by 1912, for total grants of \$80,000 a year, or a total annual cash appropriation to the agricultural colleges of \$4,000,000. Up to June 30, 1912, the total cash grants under this latter appropriation have amounted to \$23,920,000, and under both forms of grant to approximately \$38,000,000.

Certainly no grants which the National Government has made to the states for educational purposes have been so well administered as the agricultural grants, and probably no grants have given so large a return in the advancement of scientific knowledge or the



duction of evidence that actual expenditures, for the purposes set forth in the act, have been made.

The results under this grant proved so beneficial that in 1890 what has often been called "the second Morrill Act" was passed. This act provided for a direct annual grant to each state, for maintenance and for the further support of the agricultural colleges. The grant began with \$15,000 a year to each state, and was to increase by \$1000 a year for ten years, or until an annual grant of \$25,000 was reached. In 1907 Congress further extended it, and provided that the annual grant, then \$25,000, should increase by \$5000 per year, until a maximum grant of \$50,000 to each state was reached. This will be in 1911-1912.

general welfare of the nation. This has been in part due to better restrictions imposed by the National Government in making the grants, and in part to the fact that the grants have been handled by the colleges themselves, and not by the legislatures of the states.

*Proposals for Additional Grants for Public Schools* — The excellent results obtained from the grants to the agricultural colleges have, within recent years, inspired a number of proposals to extend such money grants to other forms of public education. The "Davis Bills," which have been before Congress in recent years, have proposed to grant national aid "for agricultural and industrial instruction in secondary schools, for normal instruction in agricultural and industrial subjects in normal

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schools, and for branch agricultural experimental stations" So far none of these bills have succeeded in passing Congress, owing to opposition to the endowment of one class of high schools to the exclusion of other kinds of such schools

**Total of National Grants for Education** — While education has received but an insignifi-

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cant fraction of the money appropriated for all purposes by the National Government, the total amount, spread over more than a century of our national life, has in itself been rather large Briefly summarized, it has been about as follows, though in a number of cases the figures given are not exactly accurate, but rather the nearest possible approximations

GRANT AND PURPOSE	ACRFS GRANTED	FUND DERIVED FROM SALES	PROBABLE FUTURE INCOME <sup>1</sup>	TOTAL INCOME
1 <i>For Common Schools</i>				
Sections for Schools . . .	81,064,300	\$103,000,000	\$410,000,000	\$513,000,000
Saline Grants . . .	c 900,000	c 1,000,000	c 7,000,000	1,000,000
Five Per Cent of Land Sales . .		7,187,316		14,000,000
Surplus Revenue . . .		c 14,000,000		14,000,000
Internal Imp. Act . . .	5,000,000	c 6,000,000	c 8,000,000	14,000,000
Swamp Land Grants . . .	c 45,000,000	c 15,000,000	c 2,000,000	17,000,000
Forest Reserve Per Cent . . .		c 1,000,000	c 25,000,000 <sup>1</sup>	26,000,000
Totals	c 131,964,300	c \$147,187,316	c \$452,000,000	\$599,000,000
2 <i>Aid to Higher Education</i>				
University Grants . . .	3,407,643	c 5,000,000	c 27,500,000	32,500,000
Land Grant Colleges —				
Grants of Land . . .	11,367,832	13,736,178	c 25,000,000	39,000,000
Exp. Station Grants . . .		c 14,000,000	30,000,000 <sup>1</sup>	44,000,000
Laws 1890 and 1907 . . .		23,920,000	62,500,000 <sup>1</sup>	86,420,000
Totals	14,775,475	c \$56,656,178	c \$145,000,000	\$200,920,000
3 <i>Grants for Other Types of Schools</i>				
Normal Schools . . .	c 1,500,000	c 2,500,000	c 17,500,000	20,000,000
Deaf, Dumb, and Blind . . .	560,000		5,600,000	5,600,000
Reform Schools . . .	c 500,000		5,000,000	5,000,000
Totals	2,560,000	c \$2,500,000	c \$28,100,000	\$30,600,000
4 <i>Summary of Grants</i>	c 149,299,775	206,343,494	725,100,000	829,520,000

<sup>1</sup> Calculated for twenty years into the future, at present rate of increase

The land grant policy was begun in the days when land was about all that the National Government had to give, the money grants represent a much later development.

E. P. C. and E. C. E.

See also the article on NATIONAL TEACHING INSTITUTIONS, and the types of schools and institutions referred to in the text, especially AGRICULTURAL EDUCATION; TECHNICAL EDUCATION, etc., the article on STATE VS. NATIONAL EDUCATION deals with the development of state education, see further articles on the individual state systems, *e.g.* ALABAMA; ARKANSAS, etc. For the relations between governments and education in foreign countries see the articles on the national systems, *e.g.* ENGLAND, EDUCATION IN; FRANCE, EDUCATION IN; GERMANY, EDUCATION IN

### NATIONAL TEACHING INSTITUTIONS OF THE UNITED STATES GOVERNMENT

— In addition to aiding education in the various states (see special article on NATIONAL GOVERNMENT AND EDUCATION), the National Government maintains a number of teaching and other institutions of an educational nature, and has rendered assistance in the establishment of education in the territories apart from the mainland. These may be mentioned briefly here, and reference made

to other articles in which a more detailed statement is made on the different institutions.

**In the District of Columbia** — The free public library of the city of Washington, the free public schools of the District of Columbia (*q.v.*), the National Training School for Boys, the Reform School for Girls, and the Industrial Home Schools for both races are teaching institutions maintained within the District of Columbia. Appropriations are also made for the instruction of the deaf, dumb, and blind within the District. The expenses of all of these institutions are met, half by the National Government, and half by the District of Columbia. Under the Department of the Interior, the Columbian Institute for the Deaf and Dumb, and Howard University (*q.v.*), an institution for the colored race, are also maintained by the National Government in the District of Columbia. The Library of Congress (see CONGRESSIONAL LIBRARY), in the city of Washington, is another educational institution maintained by the National Government, the appropriation for its maintenance in 1910 being \$841,755.18

**War and Navy Departments.** — The United States Military Academy (*q.v.*), at West Point, New York State, founded in 1802, is a national college for the training of engineers and officers for the army. The appropriation



## NATIONAL INSTITUTIONS

for maintenance in 1910 was \$807,646 06. The Army War College at Washington, the Army Service Schools at forts Leavenworth and Riley, the Army Engineers' School at Washington, and various officers' schools at military posts are all forms of education for the army maintained by the National Government. The total appropriation for all of these institutions, including new buildings, was \$2,234,598 in 1910 (See MILITARY EDUCATION).

The United States Naval Academy at Annapolis, Md., established in 1846, is a national college for the training of officers and engineers for the navy. The Naval War College in Rhode Island and the Naval Training Schools in California, Rhode Island, and on the Great Lakes are also forms of education for the navy maintained by the National Government. The total appropriation for all of these institutions was \$1,028,094 in 1910 (See NAVAL EDUCATION).

*Under the Interior Department* — This department maintains a number of educational institutions. The United States Bureau of Education (*q v*) is under this department, as well as the Bureau of Indian Affairs. The United States Bureau of Education has charge of the educational work among the Indians of Alaska (*q v*), and the Bureau of Indian Affairs has control of the large number of Indian schools maintained by the National Government in the different states. With one exception these schools are located in the Central or Western states. The appropriation for education in Alaska in 1910 was \$200,000, and the appropriation for Indian education in the United States was \$4,566,021 97. (See special article on INDIAN EDUCATION).

For a statement of the nature of the educational organization in our island possessions, and the amount of national aid granted, see special articles on the school systems of HAWAII, GUAM, PHILIPPINES, and PORTO RICO.

It will be seen from the above that the educational activities of the National Government have never been organized into any system, but scattered among the different bureaus at Washington, with the result that there is little system or coordination of the educational work of the National Government. In most cases Congress has done its work independently of any organization or advice. E. P. C.

See also SMITHSONIAN INSTITUTION, UNITED STATES NATIONAL MUSEUM.

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## NATIONAL HOME READING UNION, ENGLAND

— An organization founded by the late Dr. J. B. Paton (*q v*), largely influenced by an article of Bishop Vincent's on "Chatauqua, a popular University," which appeared in the *Contemporary Review* in 1887. The Union was definitely organized in 1889. The purposes in view, as stated in Sadler, *Continuation Schools in England and Elsewhere*, were as follows —

(1) To stimulate, encourage and direct home reading in such a way as to make home reading educational in the truest sense of the word. (2) To give definiteness, continuity, and system to home reading, and to adapt it to the divers needs and tastes of readers. (3) To give all practical help, in the most economical and efficient way, to those who engage in such reading. (4) By means of local unions, or associations of readers, and the influences of a large organization, as well as by personal sympathy, to sustain the interest and confirm the purpose of all who undertake a regular course of home reading, and to unite them in honorable and helpful fellowship with each other.

The reading is arranged in three courses: Young People's Section, General Section, Special Supplementary and Introductory Courses. Two magazines, the *Special Courses Magazine* and the *General Course Magazine*, appear monthly and contain articles on books or subjects of interest, reviews, questions, and news. The Union sends out suggestive lists for reading with books of reference available in local libraries, "in art, history, social and political economy, poetry, science, exploration and all the sides of human activity dealt with in literature." The N. H. R. U. encourages the formation of local reading circles for study and discussion of books, and gives assistance to members by correspondence. It seeks to secure the cooperation between teachers in schools and the libraries, and the formation of reading circles among the senior pupils in public schools. The Board of Education in 1905 issued circulars calling upon local educational authorities to pay the expenses of and librarians to aid the organization of reading circles. Many schools and school systems are in active

cooperation with the Union, and have adopted its list of readings and have formed reading circles, among these may be mentioned the London County Council, Manchester, Leicester, Glasgow, and many county authorities. Another phase of the work of the N H R U is the summer assemblies. For a few years its annual meeting was held for ten days at Blackpool. In 1892 a removal was made to Bowness and the Lake District, and since that time the assemblies have been held at points of literary or historic interest, connected in the main with the reading of the year. The Union is associated with the Home Music Study Union. For the purpose of encouraging the wise use of holidays the N H R U also co-operates closely with the Cooperative Holidays Association (*qv*), and many other associations for adult education.

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**NATIONAL MONEY GRANTS** — See NATIONAL GOVERNMENT AND EDUCATION, SCHOOL FUNDS, PERMANENT

#### NATIONAL SOCIETY, ENGLAND —

The success of Joseph Lancaster (*qv*) in establishing unsectarian schools, especially after the formation in January, 1808, of a committee to help him, stimulated the bishops of the Church of England to the formation of an association for promoting the establishment of sectarian schools. Lancaster's schools attracted public attention by the novelty of the monitorial system on which they were conducted, and public support by the cheapness which that system rendered possible. In Andrew Bell (*qr*) the Church had ready to hand a clergyman eager to be employed in organizing monitorial schools that should rival the others in attractiveness and cheapness while excelling them in orthodoxy. The vague ideas of the bishops were made definite and given a practical direction by a sermon which Herbert Marsh, Lady Margaret Divinity Professor at Cambridge, preached in St Paul's Cathedral on June 13, 1811.

On Aug. 27, 1811, "a number of gentlemen, friends to the Establishment," met to discuss the question of forming a society, and at a larger meeting held on October 21 the "National Society for promoting the Education of the Poor in the Principles of the Established Church" was actually formed. The Prince Regent (afterwards George IV) "graciously consented" to be the patron, and the Charter of Incorporation, granted in 1817, prescribed that the Archbishop of Canterbury for the time being should be president, and the vice-presidents the Archbishop of York, all the bishops, and ten other persons being either temporal peers or privy councillors.

No time was lost in getting to work. At the end of 1812 the society could report that, with its help and encouragement, 52 schools attended by 8620 pupils had been opened. Next year there were 230 schools with 40,484 pupils. To provide the necessary teachers a model school was started on Holborn Hill, but this was soon supplanted by a much larger one in Baldwin's Gardens, Gray's Inn Lane. Intending teachers did little more there than master the mechanism of the monitorial system, but in the course of years the need of a more thorough training became evident, and the society opened five colleges, three of which (St Mark's, Chelsea, St John's, Battersea; and Whitelands, Chelsea) are still in existence.

In 1833 government grants were first given towards the building of schools, in 1846, towards the payment of pupil teachers and the maintenance of training colleges, and in 1853, toward the maintenance of schools. Profiting by these grants in aid of local effort and the local effort which they evoked, the society continued to extend its operations, in 1870 there were 6382 Church schools with an average attendance of 844,334.

By the act passed in 1870, if in any district sufficient school accommodation were not provided by voluntary agencies, a school board must be elected to supply the deficiency at the cost of the district. As board schools would necessarily be unsectarian the National Society made a mighty effort to render them unnecessary by establishing Church schools. The task was too great for the effort to succeed altogether, but it was far from failing altogether, there were in 1902 11,711 Church schools with an average attendance of 1,927,663.

Part of the cost of maintaining both board and voluntary schools had come out of parliamentary grants, the remainder for board schools came out of rates, and for voluntary schools out of subscriptions. The act of 1902 abolished school boards, made the councils of the counties and county boroughs the local education authority, and gave all schools the same support out of rates without depriving the voluntary managers of their power. Some of the councils, objecting to paying toward schools which they were not allowed to control, tried to differentiate in various ways between them and the council schools. The National Society fought the battle of the local managers and by a series of decisions in the law courts obtained equal treatment for their schools.

In 1911 there were 10,952 Church schools with an average attendance of 1,750,094 as against 8006 council schools with an average attendance of 3,962,819. The average council school is thus obviously larger than the average Church school, the reason being that many of the Church schools are in rural parishes and many of the council schools in towns or urban districts.

D. SA.

See ENGLAND, EDUCATION IN.

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**NATIONAL SOCIETY FOR THE SCIENTIFIC STUDY OF EDUCATION** — See HERBERT SOCIETY, EDUCATION, ACADEMIC STUDY OF; EDUCATIONAL ASSOCIATIONS

**NATIONAL TEACHERS' ASSOCIATION.** — See TEACHERS' VOLUNTARY ASSOCIATIONS

**NATIONAL UNION OF TEACHERS, ENGLAND** — The largest organization of teachers, primarily those engaged in elementary school work, in England. The Union was founded in 1870 as the National Union of Elementary Teachers, but the present title was adopted in 1889, making the association more comprehensive. Among the objects of the N U T in addition to the safeguarding and protection of the interests of members, are the following —

To improve the condition of education in the country and to obtain the establishment of a national system of education, coordinated and complete, also to secure for all public elementary schools adequate financial aid from public sources, accompanied by suitable conditions

To afford to the Board of Education and to local authorities for education, and other organizations — public or private — which have relation to educational affairs — the advice and experience of the associated teachers

To secure effective representation of educational interests in Parliament

To raise the qualifications and status of teachers and to open to the best-equipped members of the profession the higher posts in the educational service of the country, including the inspectorate of schools

A Teachers' Provident Society and Teachers' Benevolent and Orphan Fund are maintained. A representative of the Union is supported in Parliament. Legal advice and assistance are given to members. Through an Examination Board the Union issues Teachers' Diplomas in music, manual training, needlework, and dressmaking. The N U T has exercised and continues to exercise considerable influence on the administration of elementary education, the training of teachers, and improvement of codes and regulations, and teaching methods. The membership of the Union in 1910 was 69,073 distributed among 516 local branches, which in turn are grouped into fifty-seven county associations. The membership is gradually being extended among other than elementary teachers. The *Handbook of Education*, *The Red Code* (annual) are published by the N U T, while the official organ of the Union is the *Schoolmaster* (weekly). Sir James H. Yoxall, M A, M P, is the secretary.

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**NATIONAL UNIVERSITY** — The establishment of a national university, created and supported by the federal government and located at the national capital, has been repeatedly proposed and much discussed since the idea was first definitely expressed in 1790. The interest of George Washington was keen and persistent in the proposal to found a federal institution to which American youth would come for their higher education instead of seeking it in Europe, and in which would be gathered students from all parts of the United States, thus fostering that common national feeling which he had seen developed in the Continental army during the Revolution. He referred to the matter of a national university in his first message to Congress, and in his will he gave fifty shares in the Potomac Company, worth at that time about \$25,000 toward the endowment of such an institution, provided Congress should " incline to extend a fostering hand toward it ". This act Congress has never been persuaded to perform, though urged to do so by Madison, in three messages, by John Quincy Adams and later presidents, and by many other statesmen.

The question of constitutionality was early raised in connection with the proposed establishment. As a " loose constructionist," Washington did not doubt the power of the federal government to provide such an institution, Jefferson and his party took the opposite view, and a congressional committee in 1811 reported that it would be unconstitutional for Congress to found, endow, or control such a " seminary ". Even before broad interpretation of the constitution finally triumphed, the practice of Congress in voting money for the establishment and support of the military academy at West Point and the naval academy at Annapolis, and in granting lands to Georgetown University and Columbian University in the District of Columbia, went far to settle the theoretical question of power. A senate committee, first a special " committee to establish the University of the United States " to consider a bill introduced by Senator George F. Edmunds in 1890, and later a standing committee, reported in favor of the creation of such a university in 1893, 1894, 1896, and 1902.

Numerous bills for establishing a national university have been introduced into Congress, some of them widely indorsed by college presidents as well as by statesmen, ecclesiastics, and professional men. The arguments against the proposed institution have been based on belief in its undesirability rather than the lack of constitutional power to create it. In 1899 a committee of fifteen " on the national university project," organized by the National Education Association and including the presidents of Harvard, Chicago, Cornell, Illinois, North Carolina, Michigan, and Washington and Lee universities, agreed unanimously that the federal government should aid, but not con-

trol, the educational agencies of the country, that none of the bills presented in Congress was entirely commendable, that "the government is not called upon to maintain at the capital a university in the ordinary sense of that term," and that the most that should be attempted was systematic cooperation in the use of the opportunities for advanced instruction and research offered by the departments and bureaus in Washington.

The arguments for the national university are stated strongly in the appeal of the "national university committee of four hundred" in 1907, in resolutions of the National Education Association, and in the bill proposed by an almost unanimous vote of the National Association of State Universities in 1907. They assume that it is to be a purely graduate institution, cooperating with other universities and colleges, and with scientific departments of the federal government, conferring no degrees, or only the doctorate, and devoting itself wholly to higher instruction and research, to promote the advance of science, pure and applied, the liberal and fine arts, and the national welfare. They declare that it would vivify by its influence every part of the educational system of this country, greatly increase present opportunities without interfering necessarily with any now existing, attract both scholars and students from the widest possible range, enhance scholarship in many fields, and improve the service of the government, and that its right to determine what institutions should be recognized would raise and make uniform the standards of collegiate institutions in the United States without requiring conformity to particular methods or schedules. Much of the equipment ordinarily required for the highest forms of research already exists in Washington through congressional appropriation. The Library of Congress, with 1,500,000 books and pamphlets, and other libraries in departments, numbering almost as many pieces more, including duplicates of those in the Library of Congress, great collections of the National Museum, the Smithsonian Institution, the Medical Museum, the Patent Office, and the Corcoran Gallery, magnificently equipped laboratories of bureaus, such as those of Standards and of Chemistry; the great observatories; the Geological Survey; and opportunities for field service under the most expert direction in every part of the country, — all these are instrumentalities which might be utilized in considerable degree, without interference with their proper service to the public and to the government, by a national university, wisely organized and judiciously directed for instruction and for research. In fact, Congress in 1892 and 1901 opened up the government departments for the purposes of advanced research. It is estimated that the equipment and apparatus thus available represents a valuation of not less than \$60,000,000.

Something akin to the organization of facilities for research and instruction here contemplated is already carried on in a very limited, and often incidental, way in the medical schools of the Army and Navy, in the Public Health and Marine Hospital Service, in the bureaus of Standards, Statistics, Plant Industry, Soils, Fisheries, Entomology, and Public Roads, and in the National Botanic Gardens. Certain work done in some of these offices or laboratories has been accepted in partial satisfaction of the requirements for a degree by some of the strong graduate schools. C. K. B.

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**NATIONAL UNIVERSITY OF IRELAND.**

— See IRELAND, EDUCATION IN.

**NATIONALITY AND NATIONAL EDUCATION** — See CITIZENSHIP AND EDUCATION; IMMIGRATION AND EDUCATION, NATIONAL EDUCATION, also NATIONAL GOVERNMENT AND EDUCATION.

**NATIONS** — See UNIVERSITIES.

**NATIVISM** — A term applied to the theories according to which the foundations of all knowledge, or else the essential conditions of some branch of experience, are born in or with the mind or agent. It thus has close associations with the terms *a priori*, innate ideas, and intuition (*q. v.*). In psychology the term has come to be applied particularly to those theories which hold that the extensivity of space perceptions is an original, native element in some at least of the sensational qualities, in opposition to those theories which hold spread-outness and depth to be the results of association among qualities themselves lacking spatial quality. The most recent use of the term has been much influenced by modern biological theories of heredity. The old *tabula rasa* conception of sensationalistic empiricism has been made an anachronism by the demonstration of the number and variety of the instinctive non-acquired tendencies. It is only by a figure of speech, however, that these tendencies can be said to be innate in the *mind* — being rather connate with the organism. This conclusion involves quite as complete a reconstruction of the older type of nativism as of the older type of empiricism. The educational importance of the controversy gathers about the question of the relative importance of Nature and Nurture — the relative importance and function of the hereditary tendencies of the organism as compared with the influence of the social

and cultural environment (See HEREDITY) This question is thoroughly misconceived, however, when treated as a problem of one versus the other. The conditions of the educative growth of an individual are ultimately inherent in the organism, possessing its native tendencies to act and to be susceptible. This fact is all-important in contrast with the belief of a number of eighteenth-century theorists that practice and the influence of economic and political conditions are omnipotent. It is also highly important in showing the necessity of recognizing individual differences of capacity and aptitude. But, on the other hand, the direction given these native powers, the kind of ends for which they become effective, the ways in which they are used depend upon nurture—that is, upon the influence of the social medium consciously and unconsciously exerted.

J D

See ACQUIRED CHARACTERISTICS, GALTON, HEREDITY

**NATORP, BERNHARD CHRISTOPH LUDWIG** (1774–1846) — German educator, the son of a Protestant clergyman, born at Werden in the Rhine province. He studied theology and pedagogy at the University of Halle under A. H. Niemeyer (*qv*). In 1798 he received a call as a preacher to the city of Essen, and there took a leading part in the reform of the schools, which were reorganized in accordance with his *Grundriss zur Organisation allgemeiner Stadtschulen* (*Plan of Organization of Common City Schools*, 1804), a work based on the principles of Comenius, Rousseau, and Pestalozzi. From 1809 to 1816 he supervised the schools of the province of Brandenburg, where he did much for the improvement of methods and the education of teachers. In 1816 he returned to Westphalia and for thirty years more remained active in directing the educational and ecclesiastical interests of the province.

His most interesting educational work is his *Briefwechsel einiger Schullehrer und Schulfreunde* (*Correspondence of some School Teachers and Friends of Schools*, 1811–1816), in which he develops his pedagogic principles in the form of personal letters between schoolmen. Another work that may be mentioned is his essay on Bell and Lancaster (1817), in which he shows the superiority of the German elementary school, founded on the principles of Pestalozzi, over the much-advertised Bell-Lancasterian monitorial system.

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**NATURAL HISTORY** — See NATURE STUDY, ZOOLOGY

**NATURAL METHOD** — The term “natural” has been applied descriptively to meth-

ods of teaching in many subjects, frequently as a trade name for textbooks with a particular system of instruction that supposedly avoid artificiality. The term is applied when one of two characteristics is assumed to be present in the procedure suggested: (1) When the method is psychologically based,—i.e., takes account of the instincts and normal interests of young children,—it is said to be natural. Such a natural method is opposed to one which is mentally artificial. If words used in spelling are selected and graded according to the needs which develop in the course of the child's attempt to express his own experiences, the method is said to be natural. If the words are chosen and arranged merely from the standpoint of their frequency of usage in adult life, and without regard to personal motivation, the method is artificial. (2) When the method utilized conforms to usual procedure in social life, omitting special pedagogical devices peculiar to schoolroom practice, it is called a natural method. Thus it is contended that full written or oral computation of problems in arithmetic is an unnatural method, while a combined written and mental method of computation is said to be a natural procedure. In recent years the reaction against artificiality of school procedure of every sort has been marked. Teaching practice has tended more and more to take account of psychological lines of least resistance and to avoid modes of work which differ greatly from social practice. Hence naturalistic methods have characterized teaching reform in all the school subjects.

H S

**NATURAL PUNISHMENTS.** See REWARDS AND PUNISHMENTS, SCHOOL MANAGEMENT

**NATURAL READING METHOD** — See READING

**NATURAL SCIENCES** — See BOTANY, CHEMISTRY, GEOLOGY, GEOGRAPHY, etc., also EXPERIMENTATION, NATURE STUDY, SCIENTIFIC METHOD

**NATURAL SELECTION** — See ACQUIRED CHARACTERISTICS, EUGENICS, EVOLUTION; HABIT, HEREDITY, INSTINCTS

**NATURAL SIGN** — A gesture or other form of expression which calls up an elaborate idea through a reproduction of some portion of the personal reaction that would be natural in the presence of the object which it is wished to call to mind.

C. H. J.

See LANGUAGE

**NATURALISM** — See HUMANISM AND NATURALISM

**NATURE** — Probably no philosophical conception has had a more general or widespread

popular influence than that of nature. Its intellectual career has been facilitated rather than hindered by the variety and ambiguity of senses attached to the term, especially as regards the things to which it has been set in opposition. Recognition of the rôle of this uncertainty in enhancing the influence of the idea is not necessarily cynical or skeptical in character. The more typical senses of the term are sufficiently near to one another so that they insensibly pass into each other, while all of the more fundamental ideas operative in human history have some vagueness attaching to them, because they stand for deeplying practical aspirations and for intense emotional attitudes as well as for rational notions which may be accurately defined. The function common to the differing senses of the term nature has been the demand for some standard or norm for the regulation and valuation of human beliefs. It designates whatever is taken to be intrinsic and inevitable in existence and thought, in antithesis to what is external, artificial, and factitious, leaving it to the culture of the time to determine just where the natural, the normal and normative shall be looked for, and just what, in contrast, shall be regarded as secondary and accidental.

The classic conception of nature, as fixed by Aristotle, was an aftergrowth (and to some extent an outgrowth) of the inquiry raised by some of the sophists as to whether religion, morality, and the State exist by nature, or by mutual agreement (convention, tacit or express) or by decree, by enactment of superior authority. This led to an inquiry after the true nature of things, their real essence. Etymologically, *φύσις*, the Greek word translated "nature," was derived from the verb "to grow," just as the Latin *natura* is from the verb "to be born." Aristotle identified the nature of a thing with the thing in its full or completed growth, which is also the thing in its state of fullest activity or actuality. The nature of an acorn is the oak, the true nature of the human body is the intellectual activity in which the organic processes are most fully realized; the nature of the individual is the state in which alone distinctively human properties (in contrast with those of brutes and gods) come to realization. The distinguishing trait of nature is that the process of realization, involving the four ultimate principles or causes (*q v*), takes place from within, in contrast to art (all products of human invention and skill), where the movement is initiated from without. This metaphysical and teleological conception of nature was taken up into patristic and scholastic philosophy. The Stoics retained much of the Aristotelian idea, but conjoined it with the popular sense of nature as the sum total of laws, processes, and events that constitute the world as an organized whole or cosmos, — hence the precept of life in accordance with nature as the supreme moral precept. Through the

influence of the Stoics upon jurisprudence, the conceptions of a "state of nature," "natural law," and "natural right" were introduced as affording the norm of eternal justice in distinction from the positive institutions and civil laws which represent the adaptation of this eternal law to temporary and local conditions.

In modern times the conception of nature was first affected by the rise of physical science. It meant the sum total of laws which "govern" natural phenomena. Sir Isaac Newton considered these laws to present the divine legislation for the realm of created things, expressions of a rational will, so that nature might almost be conceived as a divine vice-regent. This meaning was taken up by the Deists and made the basis of a criticism of the miraculous and the supernatural in religion. As the influence of this mode of thinking spread into France, the conception of nature was generalized and made an implement of criticism of everything in the Church and State that appeared to the *philosophes* to be irrational. Since these social institutions were historical products, it is hardly too much to say that the term nature as a eulogistic term was put into opposition to history, and to everything whose existence depended upon historical traditions rather than upon an enlightened reason.

Rousseau agreed with the rationalists in opposition to existing social institutions as artificial and so unnatural, but attacked the philosophers of the enlightenment by including art and science as themselves artificial, sophisticated, and misleading. Nature, according to him, was not to be looked for in conscious reason, but rather in primitive, instinctive, unreasoned impulses and emotions. The natural is the original in the sense both of the primary in time and the creative, the originative. The "return to nature," that concept so influential in educational philosophies if not in school practice, was a return to the primitive untaught sources that condition all teaching. While there was much in Rousseau which would lead his followers to interpret the natural as an idealization of the life of savages into a poetic idyl, there was also much to call attention to the original instincts and principles of growth in children. Through the influence of Rousseau upon Pestalozzi, Froebel, and others, education in accordance with nature came to mean that there were certain intrinsic laws of development or unfolding, physical, mental, and moral, in children, and that these inherent principles of growth should furnish the norms of all educational procedure.

Meantime, the attacks by Rousseau upon civilization in the name of nature called out not merely the interest of Romanticism in picturesque natural beauty untouched by human hands, in folklore, primitive arts and poetry and in peasant life (as more primitive, unsophisticated and unconsciously creative), but also that phase of German philosophy which de-

liberately set itself to justify culture as being more truly natural than crude nature and than original impulse and instinct. This tendency found expression in all of Goethe's later work, as well as in the philosophers, Kant, Fichte, and Hegel, and in Schiller's conception of art as the great civilizing and moralizing agency of humanity. The same movement led to the idea that the nature of man is found in humanity, rather than in the individual, and hence to an idealization of history, since it is in history rather than in the consciously evolved ideas of an individual that humanity is revealed. This movement culminated in Hegel's theory that social and political institutions in their historic manifestation are more truly real than either phenomena of the physical world or the moral efforts of individuals in their individual capacity — that indeed the entire education of the individual consists in effecting in him an assimilation of the spiritual products of humanity in its historic evolution as a progressive realization of spirit. In this way, the criticism of Rousseau's return to nature reached its climax in a wholly antithetical theory. J D

See CULTURE, HUMANISM AND NATURALISM, ROUSSEAU

**NATURE STUDY** — A term which within two decades has come into prominent use in America and England to designate certain studies of natural things, particularly in schools of elementary grade. Also, in a much more limited usage, nature study means popular study of animal or plant natural history outside of schools by children or adults. The term has been applied chiefly to elementary studies of living things, but within recent years many lessons dealing with inorganic nature have been introduced into the nature study of elementary schools. As a matter of convenience, some writers distinguish between biological nature study for living things and inorganic or physical nature study including lifeless objects and the processes of heat, light, etc.

The term nature study was for many years criticized, because etymologically it suggests all scientific studies of nature, and hence is coextensive with the combined natural sciences, but this objection is no longer urged by prominent scientists, for it is now generally understood in both England and America that nature study means a special type of study adapted primarily to pupils of elementary school age.

The fact that nature study and natural science deal with the same objects and processes has led to much investigation and discussion of possible differentiation in educational practice. It is now agreed among the leaders of the nature-study movement that a satisfactory division of the field between nature study for elementary schools and science courses for higher schools has been found in theory and is rapidly becoming successful in practice.

Briefly, this differentiation is along the following lines. Science, in the strict sense, is concerned with knowledge organized under principles or generalizations, *e.g.* evolution, cell doctrine, and other principles of biology, atomic theory of chemistry, and conservation theories of physics. The best science courses in high schools and colleges are now presented so as to set forth the fundamental principles, and the natural materials are studied chiefly as illustrations of principles. In short, the present-day courses in science revolve around the principles which lie at the very heart of organized knowledge.

Now, most of the great principles emphasized in courses of science in high schools and colleges are admittedly beyond the mental grasp of elementary school children. This is one suggestion looking towards differentiation, and it has proved the most useful. Nature study, independent of the generalizations which characterize science in the strict sense, has come to deal with nature as it touches our daily lives directly. Here, then, are the essential differences between nature study for elementary schools and science for higher schools: (1) the material for study may be the same, (2) the observational method of study differs only in degree of advancement, (3) but the point of view is radically different, for science aims primarily at scientific principles, while nature study avoids these and deals with natural things and processes as they directly concern daily life. Of course, science study of the "applied" type does not eliminate every-day human interest, but this is reached somewhat indirectly in that the first aim is for principles, and, secondarily, these are applied to practical life. It is most useful in practice, however, to recognize that nature study for elementary schools and science for higher schools differ chiefly in that nature-study lessons are not organized with direct reference to the characteristic principles of science.

Nature study, however, should not be unorganized and without continuity of lessons, that is, mere object lessons of the old type. It may be independent of the organization of science and still have an efficient organization for educational ends. For example, a study of useful trees and elements of forestry may be educationally organized for pupils who are too immature to comprehend the principles of botany.

It should be noted that there can be no sharply defined line between nature study and science so far as practice in our school system in its entirety is concerned. In the upper elementary grades and first year of the high school the best nature study gradually leads the way into more and more advanced lessons which are designed to point directly to the great generalizations of science. But the line can be drawn sharply enough for all practical purposes, and there is no longer any sufficient excuse for duplicating in nature study

the work already well done as science in high schools

The distinction between nature study and science may be summarized in the following definitions. "Nature study is primarily the simple observational study of common natural objects and processes for the sake of personal acquaintance with the things which appeal to human interest directly and independently of relations to organized science. Natural science study is the close analytical and synthetical study of natural objects and processes primarily for the sake of obtaining knowledge of the general principles which constitute the foundations of modern science."

As to the educational values of nature study, it is now commonly recognized that they relate to discipline and information, discipline in habits of thoughtful observing, and information which has æsthetic, moral, practical, and intellectual influence in the every-day life of the average individual. To develop these values the teaching should be directed by certain definite aims; and summarizing the predominating tendencies of the present time, the great aims are in essentials as follows (a) To give pupils general acquaintance with and interest in common objects and processes in nature (b) To give the first training in accurate observing as a means of gaining knowledge direct from nature, and also in the simplest comparing, classifying, and judging values of facts in other words, to give the first training in the simplest processes of the scientific method (c) To give pupils useful knowledge concerning natural objects and processes as they directly affect human life and interests

There is quite general agreement that there is one fundamental method of teaching nature study that consists in getting the pupil to see and think for himself, and this is observation in the scientific sense. Upon this depend two of the three aims above stated, the aim for sympathetic acquaintance and the aim for training in methods of observing. Books and lectures cannot suffice for these, as possibly they might for giving useful information. There is now little dissent from the proposition that true nature study cannot be primarily book study. Rather should nature study aim to make the pupil learn to study nature in the absence of books, thus preparing for the usual condition in our every-day life. But although emphasizing observation as the essential basis of nature study, it is coming to be accepted widely that books for supplementary study are desirable. This refers to elementary scientific books, and not to the so-called nature stories, fables, and poems, which may well be read and explained as part of correlated language lessons, but not as nature study.

With regard to the selection of materials for study, there is universal agreement that we should, first of all, select the most common and the most interesting from the viewpoint of

every-day life. The application of this principle is responsible for much of the apparent lack of uniformity in courses of nature study. The geographical distribution of natural things, particularly the living, is highly variable, and hence the selection of common things for nature study must vary.

Much study is now being devoted to the problem of organizing nature-study courses. The pioneer work was largely stimulated by enthusiastic scientists, some of whom went so far as to advocate entire freedom from organization, but gradually the subject is now coming under the influence of specialists in education who are applying the general principles accepted for all other phases of elementary education.

At present many science teachers are much interested in the problem of adding to nature study many studies of inorganic nature in correlation with the biological work, which has long been so prominent that many educators have regarded nature study as an elementary phase of biology. There is a widespread tendency in America towards making grammar school nature study largely inorganic. So far most of this has been called "elementary science," and is largely an extract from college physics and chemistry, but much dissatisfaction points towards reorganization from the standpoint of nature study. In addition to such inorganic nature study in one or two grammar grades, there is need of some simple problems on the same line in even the first primary grades.

School gardens have proved a very important phase of nature study, especially because they combine in such a natural way the animal, plant, and inorganic aspects of nature. Most school gardens which have well-developed educational aims are conducted in harmony with the established principles of nature study (See GARDENS, SCHOOL).

Perhaps the most important of the present problems of nature study in America is that of connecting physiology and hygiene with nature study. There is a widespread opinion that hygiene should be taught on the observational basis of nature study. The following will suggest some of the possible correlations between nature study and hygiene, but the details of the plan will necessarily depend upon the course in nature study. In nature study work with squirrels, rabbits, or other common animals, the form and uses of mouth, jaws, and teeth may be made to lead to comparison with human teeth, their use and their care. Thus all the elementary hygiene of the mouth cavity may be correlated with nature studies of animals. Likewise, the hygiene of human skin, hair, and nails may be connected with studies of these structures in various animals. The hygiene of clothing is naturally referred to in connection with nature-study lessons on the fur or wool of animals, possibly with silk and



cotton, and also with lessons on heat in the inorganic nature study. The useful hygiene of the eyes and ears may be introduced in connection with simple experiments with light and sound. The question of food, which is so prominent in elementary books of hygiene, may be associated with lessons in domestic science, and also with nature-study lessons on animals and plants which are used for human food. These are simply suggestions of possible correlations which would involve the most valuable hygienic teaching in the elementary schools. Such correlations would undoubtedly make the hygiene vastly more interesting to pupils, and at the same time avoid a separate time assignment. It is doubtful whether there is any hygiene useful for pupils in any of the first six or seven grades of the elementary school which it is not possible to bring into close relation with biological and physical nature study.

Concerning the relation of nature study to geography, it is obvious that the two subjects touch in the home, industrial and physical aspects of geography. The nature study of the earliest grades should include topics which will pave the way for home geography. The first formal work in geography usually relates to the home environment, and, in so far as the observational method is used, such home geography is good nature study. Moreover, the nature study of the same year should center around topics especially related to homes, such as ornamental plants, building materials, simple sanitation, and local food-supply.

Many of the topics in the industrial aspects of geography suggest correlations with nature study. For example, fisheries, lumbering, agriculture, and mining, in industrial geography, suggest nature study of certain aquatic animals, lumber-producing trees, elementary gardening, and elementary mineral studies. Finally, the physical aspects of geography demand correlation with inorganic nature study. For example, weather studies on an observational basis are good nature study; and experiments with air, water, light, heat, and electricity are needed in correlation with physical geography. The geography of foreign countries offers no useful opportunities for correlation with nature study, which deals primarily with the home environment. Lions, tigers, plants producing tea and coffee, and other foreign materials had better be observed as illustrative of geography lessons.

The recent movement in America towards industrial education has resulted in much agricultural instruction in rural schools of elementary grade. In some places it has been called "agricultural nature study", in others, "elementary agriculture", and in still others "nature-study agriculture". Elementary agriculture tends to be a weak imitation of the vocational aspect of high school agriculture; while agricultural nature study or nature-study

agriculture is practically nature study including many natural things connected with agriculture. The nature-study point of view is most desirable in the elementary agricultural teaching. It is commonly admitted that in the first six grades agricultural nature study should deal with the common things of country life, but from the viewpoint of general nature study which is not limited to the utilitarian aspects of agriculture. With regard to the grammar grades of rural schools, there is a strong movement towards including the elements of agricultural science. This is open to criticism because its vocational value for young pupils is doubtful, it presents only the commercial side of country life, it displaces hygienic and chemico-physical studies of great value to all grammar school pupils, and as general education is inferior to advanced lessons from the general field of nature study.

In America, nature study in the widest sense is fostered by the American Nature Study Society, founded in 1908 and with about one thousand members, including all educators who are prominently identified with the movement. The *Nature Study Review*, founded in 1905 and "devoted to all scientific studies of nature in elementary schools," is the official journal. In England the School Nature-Study Union, organized in 1903, publishes *School Nature-Study*. M A B

See AGRICULTURAL EDUCATION, GARDENS, SCHOOL; CHEMISTRY, GEOGRAPHY, HYGIENE, OBJECT TEACHING, PHYSICS

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- See also References under GARDENS, SCHOOL

**NAUTICAL SCHOOLS AND ACADEMIES** — See NAVAL EDUCATION, SEAMANSHIP, TRAINING FOR

**NAVAL EDUCATION** — That form of education which fits officers and men for service

in the navy. While it embraces also nautical education, the latter relates mainly to peaceful pursuits on the sea. The principal commercial lines arrange for the training of their young officers in the vessels of the regular service, or in some cases in school ships, and there exist in some of the states, as a part of the local school system, school ships in which young men are trained for the merchant marine. The technical schools and colleges also provide courses in such subjects as nautical astronomy and navigation, and in all branches of marine engineering. In this article only that form of naval education which equips officers and enlisted men in the navies of the chief countries will be dealt with.

**United States — Enlisted Men** — The main body of the naval force consists of the enlisted men. In early days their education was simple. A merchant sailor was quickly at home in a man-of-war. The sails and rigging were generally similar to those in a merchantman, and the ordnance of the day did not present any difficulties that could not be mastered after a brief apprenticeship. In a modern man-of-war, however, while the engines and boilers may resemble those of a liner, the ordnance and other mechanisms are complicated in the extreme and need the services of a highly trained personnel. With progress in machinery and gunnery it was seen that the enlisted men would need to be trained in their specialties. The enlistment of boys as naval apprentices was undertaken before the Civil War, but the early attempts to establish a training system did not prove successful. A reason frequently assigned for early failures was that although the hope was held out to the boys that they might win a commission, only few did so, and the rest were disheartened. A way should always be open for subordinates to rise, but this should not be held out as the main inducement in the training of seamen.

The present system dates from 1875 afloat and 1881 on shore. The early idea was to embark the boys in cruising training ships and there give them the rudiments of a man-of-war's man's education. Later a shore headquarters was established at Newport, where the boys were received, and from which they were transferred to the cruising ships for further training. Then came a parallel system of training for landsmen, with entry at eighteen, the apprentice boys entering as young as fourteen. The landsmen spent only a short time at the training station and were then drafted to general service. The present system is an evolution or development. It combines in a measure the two earlier ones. The recruit is received as early as seventeen and is called an apprentice seaman. He serves about four months at the training station, where he is given preliminary instruction. The cruising training ships have now entirely disappeared from the system, the apprentice seamen going from the training

stations directly to general service. Besides Newport, there are now training stations at Norfolk, San Francisco, and North Chicago.

The instruction of the apprentice seamen at the training stations is necessarily elementary. The recruit is put into uniform, taught neatness and cleanliness in person and clothing, learns to sleep in a hammock, to pull an oar, to box the compass, heave the lead, also a certain amount of knotting and splicing, signaling, boat sailing, swimming, the sails and rigging of a ship, gunnery, infantry drill, and last, but not least, discipline. After leaving the training station and joining a cruising ship, the education of the apprentice seaman is entirely practical. He learns his duties in the main by doing them and seeing others doing similar duties, though all the men are under the supervision of, and are instructed in their duties by, their officers. When qualified, he is promoted to higher ratings.

**Artificer and Special Branches** — In addition to the seaman branch, there are the artificer branch, which includes the machinists, firemen, electricians, carpenters, and the like, and the special branch, which includes yeomen (writers), the hospital corps, stewards, cooks, bakers, musicians. The specialty classes at one or more of the training stations include yeoman classes (correspondence and accounting), musician classes, schools for hospital apprentices and for cooks, bakers, and commissary stewards. These schools are entirely practical, the methods and appliances being identical with those to be found on board ship.

It is thus seen that opinion has varied in the past as to the advantage of one or other of two systems, the first a special training of some length, in cruising training ships, the second, a short stay at a training station, for organization and rudimentary training, with completion of the training in the ships of the regular service. Whatever the merits of the two systems, the second is largely the method in the civil trades, but the controlling reason in any case is that the first system requires too large a training service, perhaps as many as thirty special ships, which is prohibitive. The navy itself is now the training school.

In addition to the training system as above described, there are several service schools for enlisted men. The seaman gunners' class is made up annually of deserving men in their second enlistment and under thirty years of age. One branch of the class is at the Gun Factory in Washington, where instruction, combined with practical work, is given in ordnance and mechanisms. The other branch is at the Torpedo Station at Newport, where the men are instructed in torpedoes and diving. These courses last six and eight months, respectively, the graduates becoming gunner's mates.

The electrical school is at New York. The course here is about five months, and includes the theory and practice of electricity and elec-

trical mechanisms and of wireless telegraphy. Besides class work and lectures the students engage in practical work in the shops. The appliances are similar in all respects to those to be found on board ship.

The machinists' school is at Charleston, S C, and is made up of deserving men under thirty years of age who have mechanical knowledge or have shown mechanical ability. There are two classes, according to the knowledge and requirements of the men. The course includes bench work, practice with machine tools, and running and repairing marine engines. It lasts about sixteen months.

Artificers' schools give practical instruction to carpenter's mates or shipwrights, blacksmiths, plumbers, painters, and ship fitters. The subjects include the practical work of these several trades, in which the men have already had some experience and practice. The course lasts for three months.

From the above, the instruction of enlisted men is seen to be on a very satisfactory basis. Recruiting is not difficult, owing to the benefits offered and to the fact that the positions are open to landsmen as well as to men with nautical knowledge. On leaving the service, the ex-sailors are sought after in civil occupations, as they have all acquired knowledge which is as useful in civil life as in the navy. The time spent in the navy is thus a true training in character, resourcefulness, and knowledge, and is of advantage to the country and would be desirable entirely apart from the service rendered by the navy.

*Officers* — The education of officers offers problems of a far more serious nature than that of enlisted men. The line of the navy may be taken up at first. Line officers enter as boys, midshipmen, with the intent of making a life career of the navy. In old times they received their appointments at an early age, from twelve to fifteen, and went at once to a cruising ship. Here they picked up readily all manner of practical information about the ship, but had no thorough grounding in general education or in the higher arts of their profession. The instruction they obtained in the service was scant, and, besides that received from the schoolmaster, if there was one on board, was due in the main to the kind-hearted interest perhaps of the chaplain or of the older officers. Their advancement in knowledge depended mainly on themselves, and it is to their everlasting credit that they developed into the characters that make up our early naval history.

The Naval School at Annapolis, was established in 1845 by George Bancroft, the historian, at the time Secretary of the Navy. The object, in his own words, was "to collect the midshipmen who from time to time are on shore, and give them occupation during their stay on land in the study of mathematics, nautical astronomy, theory of morals, international law, gunnery, use of steam, the Spanish and French

languages, and other branches essential in the present day to the accomplishments of a naval officer." The title of the school was changed in 1850 to the United States Naval Academy, which it has since retained.

Midshipmen entered the school originally at from 13 to 17 years of age. This was changed later to 14 to 18, then 15 to 20, and is now 16 to 20. These last ages are generally regarded as too old, and the range is too great. It is proposed now to make the entrance ages 15 to 18.

The earlier classes of midshipmen had already been at sea when the school was established, but it was found more satisfactory later to enter them at the school, where they were retained for one or two years, followed by three years at sea, then one or two more years at the school. This plan was not followed for long, and gave way to the system of four continuous years at the academy. The summers were given up alternately to practice cruises and leave of absence. This is still the general plan, though since 1873 the course has been six years, the last two at sea in ships of the regular service, with a final examination at the end of the six years. In 1912 the course was changed back to four years, at the conclusion of which the midshipmen are commissioned in the regular service.

The best method of educating midshipmen has been the subject of much discussion. Had ideas on education in general been more settled, it might have been simpler to establish a satisfactory course at the Naval Academy. Education develops the mind and character and also imparts information. This information may be either generally useful in life, or useful in some walk of life. If the latter, it may be designed to cover the whole field of the vocation, or it may simply fit the student to begin life in that particular field. These considerations all affect the character of the Naval Academy education, and the weight given at various times to one or the other of the acknowledged objects has produced corresponding variations in the subject matter of the course. All admit the necessity of developing mind and character, and there is sufficient unanimity on the subjects to be required in the earlier years of the course to satisfy a general education. There remains the proper division of theoretical and practical subjects included in the naval profession between those covering the whole field and those required to fit the midshipman to begin his life in the navy. To this question is due whatever diversity of practice that has existed in the past. Such will also probably be the case in the future.

The following consideration must be borne in mind. The young officer must be prepared to begin his career aboard ship. To develop into a successful naval officer he must study all the rest of his life. He should learn the rudiments of the whole profession at such time as he has the opportunity to pursue a systematic course.

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that is, at the Naval Academy. He should learn thoroughly the duties he will have to take up on graduation. The time that can be devoted to the course at the Naval Academy is limited. If criticisms have been made at any time, it is that possibly too great an effort has been made to impart detailed knowledge that would be useful to higher officers, but could not be employed by a midshipman on graduation. And on the other hand, it is only within a few years that the subject of naval strategy has been included in any form in the course of instruction. Midshipmen are not expected to exercise naval strategy, but they are entitled at least to know that there is such a subject, before discovering it for themselves, if their inclinations lead them to the study of the art of war.

Another matter is the correct adjustment of the relative weight of theoretical studies and practical exercises. Many good practical officers in the navy have not been strong in studies. The navy needs both types, practical officers, and also officers capable of independent theoretical research, and it needs more of the former than of the latter. If a sufficient number of practical officers is developed, there will be inevitably among the number enough officers of scientific attainments to supply the needs of the navy. On this principle, a large weight should be assigned to practical exercises designed to develop the greater proportion of naval officers.

A correct utilization of the available time at the Naval Academy would require, therefore, thorough instruction in all the duties of the young officer, and, so far as the remaining time would permit, elementary instruction in every professional subject.

Candidates for the service are admitted to the Academy by nomination and on passing the required mental and physical examinations. Each senator, representative, and delegate in Congress is allowed two (after June 30, 1913, only one) midshipmen at the Academy; and five each year, appointed by the President, are allowed for the United States at large. One midshipman is maintained from Porto Rico by the President. Two entrance examinations are held each year. The mental examination covers punctuation, spelling, English grammar, geography, United States history, world history, arithmetic, algebra through quadratics, and plane geometry. The maximum mark is 4.00, the passing mark 2.50. No candidate is admitted without passing the physical examination before a board of three navy surgeons.

The present course at the Naval Academy includes the following:—

Mathematics, first two years, algebra, geometry, trigonometry, calculus, analytic geometry, spherical trigonometry, stereographic projection.  
English, first two years, rhetoric, composition, literature, naval history.  
Modern languages, first two years and last half of last year, French and Spanish.

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Marine engineering and naval construction, whole course except first half year, mechanical drawing, mechanical processes, principles of mechanism, marine engines and boilers, naval construction, engineering mechanics, experimental engineering, gas engines, turbines.  
Physics and chemistry, second year, elementary physics, chemistry, physics.  
Seamanship, last two years, boats, ships, naval tactics, naval warfare, international and military law.  
Ordnance and gunnery, last two years, infantry, artillery, gun drills, torpedoes, mines, elastic strength of guns, exterior ballistics, range tables, fire control, target practice.  
Mechanics, first half of third year; theoretical and applied mechanics.  
Electrical engineering, last two years, electricity, magnetism, electromagnetism, electrochemistry, direct and alternating currents, dynamo-electric machines, heat, power, light, wiring, testing, communications, devices and instruments, wireless telegraphy, and telephony.  
Navigation, last half of third year and fourth year; astronomy, theory and practice of navigation, compass deviation, surveying.  
Naval hygiene, first half of fourth year, effects of alcohol and narcotics, first aid to injured.

In addition to the instruction and recitations in the above subjects, which take place during the regular study hours, there are every afternoon of week days (mornings on Saturdays) drills and exercises in all professional subjects. These exercises include all the subjects that have been enumerated in the training of enlisted men, also the practical work of every sort that is performed by or comes under the supervision of officers in their daily duty aboard ship. This practical work is further supplemented by the summer practice cruise, in which all the midshipmen take part, with the exception of the new entering class, who engage in practical work at the Naval Academy. In 1912, for the first time, the two senior classes are embarked in ships of the regular fleet, the third class going in a practice ship as before.

The Naval Academy course thus gives officers a grounding in all the professional work of the navy. It does not train them to be specialists in the various subjects. This is reserved for further, or postgraduate courses.

*Postgraduate Courses*—Officers not above the rank of lieutenant who make a specialty of marine engineering join an engineering class with headquarters at Annapolis. The course includes design of engines, shop practice and management at private establishments, experimental engineering, and mechanical appliances. The chief engineers of the larger ships are usually selected from officers who have taken this course. A further course in electricity is also to be established for officers. The ordnance specialists also have a postgraduate course. A class of young officers is made up annually to go more thoroughly into such matters as gun design, interior and exterior ballistics, the chemistry of explosives, metallurgy, torpedoes, experimental work, shop practice. Officers selected for the Construction Corps, from Naval Academy graduates

who have had a short sea experience, go first to the Massachusetts Institute of Technology at Boston for a course in naval architecture and kindred subjects, on completion of which they are commissioned assistant naval constructors. A law course is followed by officers detailed for duty in the office of the Judge Advocate General, unless they have previously taken such a course. Foreign languages are studied by young officers detailed as attachés, assistants to the naval attaché, at the embassies and legations in various foreign countries. Assistant surgeons on first appointment follow a course in the Naval Medical School. This insures uniformity of instruction and enables the young medical officers to learn something of naval practice. Assistant paymasters have a short course of instruction in the Bureau of Supplies and Accounts and in the Treasury Department. Officers selected for the Civil Engineer Corps follow a course at the Rensselaer Polytechnic Institute, Troy, N. Y. The work is kept up later by a correspondence course directed by the Bureau of Yards and Docks. Young marine officers follow a course in military practice and duties at the Marine School of Application at Norfolk, Va.

An examination of these courses will show that all the technical work of the navy resulting in the finished ship and her equipment is performed by graduates of the Naval Academy. All the officers concerned in this work are line officers except the naval constructors. Until 1899 the engineer officers belonged to a separate corps, but at that time they were merged with the line.

A principle that has been gaining strength recently is that all combatant officers should belong to one corps and that all technical work in connection with the finished ship should be performed by specialist officers of this one corps. Line officers at present are responsible for all design and work in connection with machinery, ordnance, electricity, torpedoes, wireless telegraphy. The principle stated would require them to take up construction work also, and it would also involve the merging of the pay corps into the line. The surgeons and chaplains are non-combatants under the conventions of international law and would retain their present status. The principle has given excellent results with reference to ordnance, engineering, torpedo, and electrical work, and it is logical to carry it to its conclusion. It is of course not intended that each line officer should take up all specialties, but that specialization should occur in the line instead of in separate corps, and that all line officers should take up at least one specialty.

*Naval War College* — A school of a different scope from any of the above is the Naval War College at Newport, R. I. This school was established in the early eighties mainly through the efforts of Rear Admiral Stephen B. Luce.

Its purpose was to afford an opportunity to officers of mature years to study the art of war. It was the first war college proper for naval officers to be established by any nation. Since that time all the leading nations have established similar colleges. Rear Admiral Mahan was one of the early lecturers. His works, delivered first as lectures, have made him and the college famous, and have in effect crystallized the art of naval warfare. The course comprises lectures on naval history, tactics, strategy, logistics, international law, and includes so-called war games, which are exercises in tactics and strategy. The tactical game is played on a table divided into squares to scale. Small ships of lead arranged in divisions, squadrons, and fleets are maneuvered as in action, one move on either side representing a certain number of minutes at a known speed. The effect of gun fire is estimated according to range and the strength of the ships in offense and defense, and is counted up for each move. Torpedo fire is estimated in a similar manner. Each ship has a life of so many units, and is disabled or destroyed according to the units scored against her. The strategical game is played with the aid of charts. Each side has a separate room or rooms, and the umpire another room. Each move represents a certain interval of time and is communicated to the umpire, who in turn informs the opponent of so much as he would be supposed to see for himself in actual maneuvers.

The course consists of a summer conference of officers of all ranks lasting for four months. There is also a so-called long course, made up of selected officers of the conference, which continues on through the winter and the following summer conference, or sixteen months in all. The permanent staff of the college consists of a president, a director, a secretary, and officers for the different departments. Their usual term is three years.

Information was formerly imparted largely through the common efforts of the conference, with a discussion of all subjects that came up in connection with the assigned problems. This method of work was more congenial to the older officers than would have been instruction in classes, such as is usual in schools. Another reason was that at the start the instructors were not much farther advanced than the students. But the development has now reached a point where it saves time to give regular instruction in methods and principles that have found general acceptance.

The War College is more than a school of instruction in the science of war, that is, in a knowledge of principles, it also imparts something of the art, which may be defined as the aptitude of experience. Naturally there can be no experience of actual war gained at the college, but the tactical and strategical exercises are of such a character that the

student must reach a decision and must act on his decision, which is, of course, the essence of experience, in war as in other occupations.

The War College also makes theoretical studies of war plans, not as a part of its work of instruction, but because the lines are parallel. The situations that are brought up for exercise need often only the attaching of names and dates to convert them into plans of campaign. This work is assigned to the War College, not because it is directly connected with the instruction of officers, but because the permanent staff of the college gains familiarity with the conditions involved while in the performance of their regular duties. This work thus becomes of mutual benefit to the college and to the division of operations of the Navy Department.

The War College is thus the culmination of education in the navy. Seamen apprentices and midshipmen have to be trained to give them a start in their career. Enlisted men and officers have to pursue further courses in special technical matters, but the art of war itself, without a knowledge of which all the rest would be energy misapplied, is reserved for the mature deliberations of the War College, which is therefore one of the most important institutions of the navy.

**England — Enlisted Men** — The Royal Navy is recruited from boys (sixteen or seventeen), youths (seventeen or eighteen), men (eighteen to twenty-three), all of whom bind themselves for twelve years, in the fleet or in the reserves. The boys and youths who are not found suitable are discharged, whereas the men (eighteen to twenty-three) serve only a part of the time in the fleet, with exceptions, then go to the reserves. The men of long service who reengage become entitled to a pension in time, whereas the men discharged early or transferred to the reserves are not so pensioned. The pensions, therefore, are accepted as the cost of good men, while the government saves on those who are discharged early. The reserve men are paid an annual retainer and continue to reengage up to the age of forty-five to fifty.

Boys on entry are given an elementary course of several months in gunnery, seamanship, and mechanical work. There are several training stations, the principal one being at Shotley, in Suffolk. After leaving the station they go to sea in a cruiser and keep up their work in the same subjects, to which is added a course of stokehold training. This work may occupy a year in all, when the boy is drafted to a sea-going ship. At the age of eighteen he becomes an ordinary seaman. Thereafter he continues his training in the above subjects, with torpedoes and field training added, and he must qualify in all of them before becoming an able seaman. The training of the youths (seventeen or eighteen) is similar to that of the boys, except that the time is shorter. The subsequent career is the same in either case.

**Special Schools** — There are special gunnery and torpedo schools for enlisted men at the principal home ports. Of these, Whale Island at Portsmouth is the typical gunnery school, and the *Vernon*, likewise at Portsmouth, the typical torpedo school. The men are trained for the respective rates of seaman gunner and seaman torpedo man. The course is largely practical, designed to give the men a complete working knowledge of the weapons and their mechanisms, ammunition, the methods of target practice, and kindred subjects. A qualifying examination is required before passing. Signal schools for officers and men exist at the principal home ports, where is taught all manner of signaling, including wireless telegraphy.

Physical training has taken a prominent part in the British service of late years. In the days of masts and sails no further training was required other than that necessary in the handling of the ship. Sailing training ships were retained probably longer than their usefulness warranted, almost entirely from the advantages they offered in this direction. "No amount of dexterity on the main royal yard would make a seaman a good gunner or torpedo man, although the physical exercise which the old sailing ships offered was undoubtedly beneficial, but as physical exercise can be introduced in other more useful ways, and in a more scientific manner, it was needless to adhere to it in this form." (From *Parliamentary Return, Admiralty Policy*, 1905, p. 19.) This quotation is an apt summing up of the whole situation as regards sailing training ships, a question that has vexed the navies of other nations as well.

The present physical training is largely on the Swedish system. The gymnastic instructors of the fleet are required to go through a special course at a school on shore—the principal one is at Portsmouth—and the naval regulations require sufficient time to be devoted to the exercises in every ship of the fleet.

The engine-room personnel also have their training schools, one at Devonport, for stokers, who after a two years' course become mechanics, and may eventually become warrant officers. Another school is that for boy-artificers, with branches at different dockyards. They enter at fifteen or sixteen and are four years or more under training. In the first half of the course the subjects are: practical mathematics, English, elementary science, heat. In the second half they are: applied mechanics, workshop appliances, electricity, marine engines and boilers, mechanical drawing. On completion of the course these boys become engine-room artificers, and may eventually become warrant officers.

**Officers** — The method of entry of midshipmen in the early days is known to every reader of Marryat's novels. The first regular school was the Naval Academy at Portsmouth, which was established about 1730, and edu-

cated a limited number of midshipmen, the rest entering the service directly. The age of entry was eleven to fifteen and the length of the course was about three years, after which the pupils went to sea as midshipmen. In 1806 the institution was enlarged and the title changed to Naval College. The number of students was about 100, which still did not include all entries. The course was two to three years. A few lieutenants on half-pay were also in attendance. The college continued as such until 1837, when it was discontinued. Thereafter for twenty years all midshipmen entered the service directly, as in the old days.

The next school for midshipmen, or naval cadets, as they were now called, was established aboard the *Illustrious* at Portsmouth in 1857, and was transferred to the *Britannia* in 1859. Captain Robert Harris was the first head. Under the new plan all candidates for midshipman passed through the *Britannia*, entering between twelve and fourteen and remaining a year. The ages have since been increased and the course has been lengthened to two years. The *Britannia* was moved to Portland in 1862 and to Dartmouth in 1863, where it has since remained. The *Britannia* provided only for the entry of executive officers, what Americans call line officers. The other branches, that is, engineers, surgeons, chaplains, paymasters, marines, entered under separate rules and at various ages.

In 1903 there was put in effect a system for the common entry and training of executives, engineers, and marines. By the new regulations the old system of nominations and competitive entrance examinations was replaced by an interview before an interview committee and a qualifying examination, thus doing away to some extent with the old "examiner." Cadets now enter between twelve and thirteen, spend two years at the Naval College at Osborne, then two years at the Naval College at Dartmouth, and six months in a cruiser, after which they become midshipmen. The midshipmen keep up their studies for three years longer in the regular service and then become sublieutenants. About two years are spent in this rank, after which the officer is promoted to lieutenant.

The instruction of the naval cadets during their course on shore and on board ship includes mathematics, geometrical drawing, physics and chemistry, mechanics, applied mechanics, applied electricity, engineering, mechanical drawing, seamanship, gunnery, navigation, French, German, English grammar and composition, English literature, history, naval history, geography, Bible study, drills, physical training. The course in all the technical branches is both theoretical and practical, with laboratory and shop work, and practice in steam and motor craft.

The midshipmen at sea devote their time

to purely professional and practical subjects, in which they are instructed by the ship's officers. The subjects include officers' duties, seamanship, gunnery, torpedoes, navigation, pilotage, engineering, about one third of the whole time being given to the last-named subject. The sublieutenants continue the same general subjects, certain of them being selected for a further six months' course at the Royal Naval College at Greenwich (mentioned later), and all perform a stipulated sea service.

On reaching the rank of lieutenant, at twenty-two or twenty-three, officers continue executive (line) duties or, after a total of one year of watch duty at sea, take up one or another specialty, all of which require additional courses, varying in length according to the subject. The symbols (G), (T), (N), (E), (M) before an officer's name indicate that he has qualified as a specialist in gunnery, torpedoes, navigation, engineering, and military duties, respectively. It is the intention that this specialization shall not be permanent, with possible exceptions, but that officers shall keep up their knowledge of line duties and eventually return to the line.

The Royal Naval College at Greenwich is an advanced post-graduate school where officers of the lower ranks are sent to complete certain required courses, and where officers of all ranks may pursue particular lines of study. Assistant naval constructors here receive their education, which extends over a number of years and is specially thorough. The courses at the college in general are professional, technical, and mathematical, and mainly theoretical.

The Royal Naval War College at Portsmouth was established about 1905. The course is for flag officers, captains, and commanders. It consists of playing the tactical and strategical war games, the solution of problems arising out of the strategical conditions of the present day, lectures on naval history, naval architecture, steam, international law, the law of evidence, wireless telegraphy, coast defense. Army and marine officers may attend these courses.

The most noticeable conclusion on studying American and English naval education is the growing opinion in both countries that the education of all combatant officers should be in common, that they should all belong to one corps, and that specialization should take place as necessary in the corps, instead of in separate corps. The Americans took the lead in this direction and have gone further at present than the English, but there are many evidences that the same practice will eventually be reached in both countries.

**France — Enlisted Men** — The European countries in general have the conscription system, which simplifies all matters of entry and education. The greater part of the French bluejackets come from the maritime inscrip-

tion, the rest voluntarily from the general conscription. The men from the maritime inscription may enter as young as eighteen. They are sailors by trade and do not need the same training as the conscripts. The latter come in as young as twenty. The special ratings are practically the same as in other services, and all have their special schools, located in the principal naval ports, where the courses average six months. These are naturally preliminary courses only for the lower ratings. Instruction for the higher ratings goes on continually in active service.

**Officers.**—The French Naval Academy is at Brest. It used to be on board the *Borda*, which was to the French midshipman what the *Britannia* was to his English confrère. Appointments are usually by competitive examination of boys sixteen to nineteen years of age. The course at the school is two years, when the scholar becomes a midshipman second class and goes aboard a school ship for a year, after which he becomes a midshipman first class and joins the regular service.

The subjects taught include the French, English, and German languages, naval history, geography, mathematics, mechanics, physics, electricity, astronomy, navigation, naval architecture, steam machinery, seamanship, ordnance, infantry and artillery, torpedoes. The time devoted to ordnance and engineering has lately been increased.

Besides the Naval Academy, there are specialist schools at the naval ports for ordnance officers, torpedo officers, infantry instruction, besides service with the board on ordnance. The courses are of various length, after which the officer takes a qualifying examination.

The Superior School of the Navy is at Paris, and is open to lieutenants. The courses are on professional subjects, including tactics and strategy, though the school has little in common with the American and English war colleges. The graduates are placed on a special list, one of the objects being to furnish officers for the staffs of flag officers.

The French have been through the same discussions as other nations as to the unsatisfactory results of having permanently separate corps of officers aboard ship and at the dockyards. The idea of the common entry and training of officers is making headway, but the stumbling block at present seems to be the absorption of the engineers, about two thirds of whom come from below decks, that is, the ranks. There will not be the same difficulty with the other branches.

**Germany.**—*Enlisted Men.*—Conscription is here in full effect, and, theoretically, whatever training is the best is the one to be adopted. Many boys volunteer for the navy before the age of military service. The intention is to train these boys for the seamen, petty officers, and warrant officers of the fleet. The age of entry is fifteen to eighteen, and they bind them-

selves to serve to the age of twenty-eight. They are assembled on shore and receive some preliminary instruction, but the greater part of their work is in the practice ships, which are used also for training cadets. After about two years the boys are rated seamen. Training now begins in the various specialties, or, for the men with no specialties, with service in the fleet. Conscripts begin their training with infantry drill and later are sent to general service. All conscripts with seafaring knowledge are required to perform their service in the navy.

Gunnery, torpedoes, engineering, and other specialties are taught in separate schools in which the instruction is very thorough. The petty and warrant officers come principally from the men who enter as boys.

**Officers.**—Cadets enter before the age of eighteen, receive a short military training on shore, and then go to sea for a year in one of the practice ships (used also, as has been seen, for the apprentices). This cruise is followed by a year at the Naval School, formerly at Kiel, now at Flensburg-Murwick. Then follow courses in ordnance, torpedoes, and military duties, after which comes a final year in the fleet, making four years in all. The principal postgraduate courses for officers are in torpedoes and gunnery. An examination of the various courses for cadets and line officers would indicate that the Germans do not attach as much importance to theoretical subjects as some other nations, but they encourage initiative and insist that officers shall be practical and shall be able to handle the ships and the mechanisms. The courses for warrant officers are thorough and practical, producing men in these grades who by training and experience are noticeably competent.

The seagoing engineers are of a separate corps, with suitable training, as are the surgeons and paymasters. There are also a nonseagoing machinery construction corps and a naval construction corps. Both of these are civil corps. The subject of common entry and training for all combatant branches has been discussed in Germany, but has not made much headway.

**Other Countries.**—The principles of education that appear in the navies of the United States, England, France, and Germany are found also in one form or another in all navies. A cosmopolitan influence is always at work in these organizations, owing to their foreign cruises and the knowledge they thus obtain of each other. The effect is noticeable in many ways, from their uniforms, which are all much alike, to their education and training, which are always tending in the same direction, though some nations lead and others follow. R. C. S.

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**NAVIGATION, TRAINING IN** — See SEAMANSHIP, TRAINING IN

**NEAL, EDWARD DUFFIELD** (1823-1893) — Educational writer, was graduated at Amherst College in 1842, and later studied theology at the seminary at Andover. He engaged in the ministry of the Presbyterian Church, and was active in the organization of the first public school at St. Paul. He was the first territorial superintendent of public instruction of Minnesota (1851-1858), and he was chancellor of the University of Minnesota from 1858 to 1861. He was one of the secretaries of President Lincoln during the Civil War, and from 1873 to 1884 he was president of Macalister College at St. Paul, which he had helped to found. He was the author of a number of historical works and several monographs on the history of American education.

W S M.

**NEANDER (NEUMANN), MICHAEL** (1525-1595) — One of the most famous teachers in Germany, regarded as second to Melancthon (*q.v.*). He was born at Sorau and studied at Wittenberg, taking lectures with Luther and Melancthon. In 1545 he became assistant, then corrector, at Nordhausen, and in 1550 went to the cloister school at Ilfeld, where he became rector in 1559 and was active for forty-five years. Neander is a typical representative of the best educational ideals of the Renaissance-Reformation period. His first task at his school was to produce order out of chaos, and he then applied himself to reforming the curriculum. Dissatisfied with the prevailing curriculum, which devoted most of the pupils' time to a dry study of grammar and left them ignorant in the end, he set before himself the task of inculcating a feeling of reverence for God and a knowledge of letters, languages, arts, physics, history, geography, ethics, and the principles of medicine. He claimed that he could teach in half a year more than other schools taught

in two years. His grammars and textbooks covered all the subjects which he attempted to teach. He published thirty-nine books during his lifetime and left fourteen others in manuscript. His educational aims and practice are formulated in a pamphlet, published in 1590: *Bedenken an einen Guten Herren und Freund. Wie ein Knabe zu leiten und zu unterweisen, dass er ohne grosses Jagen, Treiben, und Eilen mit Lust und Liebe vom 6. Jahr seines Alters bis auf das 18. wohl und fertig lernen möge. Pietatem, Linguam Latinam, Graecam, Hebraeam, Artes und endlich Philosophiam* (*Thoughts to a Gentleman and Friend. How to direct and instruct a Boy so that he may without much Hurrying, Pressure, and Haste learn well and readily with Pleasure and Love, from his sixth year to his eighteenth, Latin, Greek, Hebrew, the Arts, and finally Philosophy*)

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**NEARSIGHTEDNESS** — See EYE

**NEBRASKA, STATE OF** — Originally organized as a territory by the Kansas-Nebraska Act of 1854, and admitted as the thirty-seventh state in 1867. It is located in the western half of the North-Central division, and has a land area of 76,808 square miles. In size it is one fourth larger than the six New England states, and nearly as large as England, Scotland, and Wales combined. For administrative purposes the state is divided into ninety-two counties, and these in turn into over seven thousand school districts. In 1910 Nebraska had a total population of 1,192,214, and a density of population of 15.5 per square mile.

**Educational History** — The first school law was enacted and the first school opened in 1855. The State Librarian was made *ex officio* State Superintendent of Public Instruction, and each county was directed to elect a county superintendent, who was to establish school districts, examine teachers, and look after the interests of the schools. A district school tax, the rate bill, and a county school tax of three mills were provided for. Few schools were organized under this law. Three colleges were chartered by the first legislature, only one of which was ever organized. The report of the *ex officio* State Superintendent to the legislature in 1857 showed that there were four county superintendents, seventeen school districts, and six schools in operation in the state. In 1858 a new school law, based on that of Iowa, and with the township instead of the school district as the unit, was adopted in place of the law of 1855. The county superintendency was abolished, and a territorial school commission was created. The law was cumbersome, unsuited to the needs of the time, and

education made but little progress under it. By 1860 but twenty-nine schools were reported to be in operation. In 1861 the office of the Territorial Commission was in turn abolished, and the Territorial Auditor was made *ex officio* School Commissioner. In 1866 a school was organized at Peru, which in 1867 was deeded to the state for a state normal school.

The new constitution of 1867, adopted on the admission of the state, contained but little mention of education. The legislature was directed to provide for "an efficient system of common schools throughout the state," and the use of public school funds for secondary schools, or the sale of school or university lands for less than \$5 per acre, was forbidden. The first legislature of the new state, acting partly in response to the demands of the first state convention of educators, adopted a new school law, which went into force in 1869. The district system of school administration was reestablished, and this has remained to the present time. The office of the State Superintendent of Public Instruction was created, and county superintendents were provided for. The State Superintendent was directed to examine teachers, recommend textbooks, and apportion the school funds to the counties on the school census basis. Within the counties the present form of distribution was provided for. Township high schools were permitted in 1858, but few, if any, were organized. From 1867 to 1873 a few high schools were organized by special legislative acts, and in 1873 the first general high school law was enacted. The University of Nebraska was chartered and began instruction in 1869.

In 1875 a new constitution, which is still in force, was adopted by the people. This made much more detailed provision for education than had the earlier one of 1867. Except for a few minor amendments, these provisions have since remained. A State Board of Commissioners for the control of the school lands and school funds was created; a minimum sale price of \$7 per acre was fixed for all educational lands, the school funds were defined, the sources for increase were enumerated, the use of the income specified, and all educational funds were declared to be trust funds, to remain forever inviolate and undiminished, the legislature was directed to provide for the free instruction of all persons five to twenty-one years of age, reformatory and parental schools were permitted, and the government of the University of Nebraska was provided for. No important changes in the school laws followed, and almost no legislation of importance took place during the next fifteen years.

Beginning in 1891, a series of important acts were adopted, which have materially improved the educational conditions of the state. In 1891 the free textbook law was passed. In 1893 a new law provided for the permissive attendance of pupils at some other school than that of

their district, under certain conditions, and this was extended in 1895 to include transportation across county lines. In 1895 the first of a series of laws was enacted having for its purpose the provision of free high school education to all children in the state, and this was followed in 1899, and again in 1901, by other laws of similar intent, though all three were declared unconstitutional by the courts. Finally, in 1907, a law was enacted which has stood. In 1897 a transportation law was enacted, and the certification of graduates of the University of Nebraska on credentials was provided for. In 1889 a compulsory education law and a child labor law were enacted, under the provisions of which education was made compulsory and labor of certain kinds was forbidden for children between the ages of seven and fourteen years. These laws were amended in 1907 to increase the age in all cities to sixteen years. In 1901 attendance at teachers' institutes was made compulsory; elementary agriculture was made a required subject in the teachers' examinations for a first-grade county certificate, the number of third-grade county teachers' certificates allowed to any one person was reduced from three to two, and a union rural high school law was enacted. In 1903 an additional state normal school was provided for, Junior Normal Schools were created, and the giving or sale of cigars, cigarettes, or cigarette paper to any one under eighteen years of age was forbidden. In 1905 the certification law was revised, and a partial state system of examination and certification was provided for. Questions were to be prepared and all answer papers graded by the state office, and all teachers in high schools were required, after 1907, to be graduates of a university, college, or advanced course of a Nebraska normal school, or to hold a professional state certificate. In 1907 a number of important laws were enacted. A free high school law was passed for the fourth time, county high schools were provided for, normal training in the high schools of the state was authorized, \$50,000 of state aid appropriated for such, and a state examination and approval of all such schools required, \$50,000 was appropriated from the state treasury to enable all school districts in the state to provide a seven months school (raised in 1909 to \$75,000 and the minimum term reduced to five months), the state school tax, previously levied, was repealed, the number of Junior Normal Schools was increased from five to eight, and the summer term of such reduced from ten weeks to six or eight weeks, school district libraries were created, and the compulsory education law was extended from fourteen to sixteen years for the cities of the state. A number of minor changes and revisions in the laws were made in 1909 and 1911. In 1911 the minimum salaries of county superintendents were fixed and very materially increased; new standards for city certification

were created, and a state fire day, to give instruction and drill in combating fires, was provided for.

**Present School System** — At the head of the present state school of Nebraska is a State Superintendent of Public Instruction, elected by the people for four-year terms, and receiving a salary of \$1800 a year. His duties are to visit the schools, to decide all disputed points in the school law, his decisions being binding until overruled by the courts, to prescribe forms for all blanks and reports, to publish the school laws; to outline a state course of study for the schools, to prepare all questions for the examination of teachers, and to oversee the grading of all examination papers, to make rules and regulations for the guidance of county superintendents, to apportion the state school funds, to organize teachers' normal institutes (Junior Normal Schools) when and where deemed desirable, to provide the instructors for them, and to outline the instruction, to designate high schools in which normal instruction may be given, to outline the course, and to inspect and approve the schools, and to make an annual report to the governor. He also serves, *ex officio*, as a member of the Board of Control for the state normal schools, and as a member of the State Library Commission.

For each county there is a county superintendent of schools, elected by the people, for two-year terms. To be eligible for the office the candidate must hold a first-grade county teacher's certificate in all counties having a population of over 1000 inhabitants, and his salary, as determined by law, cannot be less than from \$1000 to \$2200, according to the size of his county. It is his duty to visit each school in his county annually, to hold each summer a teachers' institute of one week duration, to forward all blanks and the state course of study to trustees and to teachers, and to examine and correct their reports when made to him, to change the boundaries of the school districts, and to transfer individual children, to adjudicate district disputes, to act, in general, subject to the instructions of the State Superintendent, to act for the state in holding examinations of teachers, and in issuing certificates to those who pass the examinations, to act as one of the Board of Regents for any county high school formed in his county, and as one of the board of district trustees for any school district in his county having less than three voters in the district, to certify to the State Superintendent the number of districts in his county entitled to state aid to enable them to maintain a five-months school; to assist in the enforcement of the compulsory education law, and to make an annual report to the State Superintendent.

Each county is divided into a number of school districts, there being about 7000 in the state, each of which is a body corporate. For

each of these the people elect, in annual school meeting, a board of three district school trustees, electing them specifically as moderator, treasurer, and director. The moderator presides at all district board meetings; the treasurer has the custody of all district funds, and the director, or clerk, transacts most of the business for the district. The director has general charge of the schoolhouses and grounds, draws all orders on the district funds, takes the annual school census, may hire the teacher, under direction, and sign contracts, prepares an estimate of needs for the annual district meeting, and presents an annual report to the county superintendent. The district boards have general care of the schools, grade and classify them to fit the course of study as outlined, adopt and furnish free all textbooks, and may sell the same at cost to any pupil, may admit nonresidents, and expel pupils, may, by a two-thirds vote, contract with another school district or with a high school district to educate part, or all, of their pupils, and may provide transportation for part or all of the pupils. The annual district meeting, held in June of each year, votes the annual district tax, may vote a tax for a schoolhouse fund, determines the length of the school term, if any, beyond the minimum set by law, and determines all questions relating to selecting the school site or moving the schoolhouse. All residents of the district, owning property or having children, aliens and women included, may vote at these district meetings. The county superintendent, on petition of one third of the voters, may change the boundaries of a district, and on petition of one half may divide a district or consolidate two or more districts, except that no new district may be formed if it contains less than four sections of land or unless its valuation exceeds \$15,000. Any district having 150 children of school census age (five to twenty-one) may elect a board of six trustees, who then designate their own officers, grade and classify the schools, may establish a high school, may prescribe the course of study and textbooks for the schools, and have general supervision of the schools. They present a report and estimate to the annual district meeting, which then votes the amounts required. Cities having 1500 or more inhabitants may be erected into separate city school districts, with similar powers.

**Secondary Education** — In addition to the above, for districts having more than 150 school census children, any two or more rural districts may vote to unite to form a union rural high school, which is then supported by the districts so uniting in proportion to their assessed valuation. Any county may also vote to establish a free county high school, which is under the charge of a board of regents, consisting of the county superintendent of schools, the county treasurer, and three trustees elected by the district school directors of the county.

This board employs all teachers, estimates the amount needed each year, up to five mills, and certifies the same to the county commissioners for levy, and has the usual district powers for organization and control. The school must have five acres of land, and must teach manual training, domestic science, and agriculture in the ninth and tenth grades, and agriculture and normal training in the eleventh and twelfth grades. Diplomas of graduation are valid for teaching in the county for three years.

The free high school law also makes provision for four years of free high school education for all children in the state. Any pupil holding a certificate of graduation from the eighth grade may be admitted, on application of his parents to the county superintendent of schools, to any high school, if there is room. The district receiving such pupils receives seventy-five cents per week per pupil from the free high school fund of the district from which the pupil comes. This is an added tax and must be levied for the purpose, unless such district is unable to provide a nine-months elementary school. The schools follow courses of study made out by the State Superintendent of Public Instruction and the University of Nebraska.

**Teachers and Training** — The system of certification for teachers is a state system in process of evolution. Both state and county forms of certificates are issued, but the questions for the county examinations are now prepared and the answers read and graded in the State Superintendent's office. The county superintendent still issues the certificates, but on the basis of grades reported to him from the state office, and the county certificates are valid, at the discretion of the county superintendent, for a variable period. Within recent years there has been a marked extension of the principle of granting teachers' certificates on the basis of credentials from educational institutions, until now the provisions for this are very liberal. The state also has made a commendable beginning in the interstate recognition of credentials. To teach in a high school, the teacher must hold a first-grade county certificate, or be a graduate of a normal school, college, or university. Fees are charged for all teachers' examinations and registering of certificates, to pay for the expense of grading papers, and to provide a teachers' institute fund.

For the training of future teachers the state maintains three state normal schools, at Kearney, Wayne, and Peru. These are large schools. The state also maintains eight so-called "Junior Normal Schools," located in eight cities in different parts of the state. These hold sessions of six to eight weeks during the summer months, enroll from 100 to 250 students, and one week of the session constitutes the summer institute of the county where held. The public school buildings and apparatus are used

for the sessions, the instructors are appointed by the State Superintendent, and the course of instruction is that of the elementary course of the state normal schools, in which proportionate credit is given for the work done in these summer schools.

For the training of teachers for the rural schools the state grants \$350 per year to all high schools providing normal instruction in the eleventh and twelfth grades, when approved by the State Superintendent. Graduates of these schools receive a second-grade county certificate, and the number of such schools and graduates is increasing rapidly. In 1908, 65 approved high schools graduated 550 teachers; in 1909, 98 schools graduated 763 teachers; in 1910, 109 schools graduated 894; and in 1911, 112 schools graduated approximately 1025. These schools are rapidly raising the standard of efficiency of the rural schools of the state.

**School Support** — Nebraska originally received the 16th and 36th sections for schools on its admission to the Union, a total of 2,702,044 acres. The 500,000 acres of land granted to new states for internal improvements, and the 5 per cent from the sale of government lands within the state, were also added to the school fund. About one half of this grant has been sold, and almost all of the remainder is under lease. The present fund stands at about seven millions, and the probable future of the fund is about twenty-five millions. The interest on this fund is apportioned to the counties on the sole basis of census, and from the counties to the districts, one fourth equally to all districts and three fourths on census. Almost the entire support of the schools of Nebraska comes from local taxation, which may go as high as 25 mills in districts and 35 mills in cities, but with the proviso that in districts having four children or less the total tax must not exceed \$400, and in districts of five to sixteen children it must not exceed \$50 per child. Additional taxation, up to 10 mills, may be levied for a schoolhouse building fund. In all districts levying the maximum tax, the state will grant additional aid to enable them to maintain a five-months school, provided the total annual expense does not exceed \$275. For this purpose the state now appropriates \$75,000, and a similar sum is appropriated for normal training in high schools. These sums are regarded as in part compensating for the state school tax of one half cent, withdrawn in 1907. Fines and liquor licenses go to the local government unit imposing them.

**Educational Conditions** — The state is essentially a rural and an agricultural state. There are few large cities, and three fourths of the people live in the rural districts; 99 per cent are white, and about 85 per cent native born. The illiteracy in 1900 was the lowest (23 per cent) in the Union. The conditions for education are good. The state has recently become deeply interested in the

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teaching of agriculture and domestic science, and these subjects, begun in 1905, are being rapidly introduced into the schools. Boys' and girls' clubs have been formed in many places, the enrollment in 1910 being over 32,000. High schools have experienced a rapid development within the past decade, and the training of teachers has made rapid progress. School libraries have recently been provided for, and ten cents per pupil may be set apart each year for a library fund. A state library commission of five suggests books for purchase.

The state has a fairly good compulsory education law, which all districts must enforce. There is also a reasonably good child labor law. Children seven to fifteen, in all districts, must go to school at least two thirds of the school term, and not less than twelve weeks each year, and, in cities, children seven to sixteen must go to school all the time the schools are in session. Deaf children, seven to eighteen, must attend the state school. Exemptions are granted for good reasons, attendance at parochial or private schools may be accepted, the school may appoint physicians to examine as to health and disabilities, and children fourteen to sixteen may work, if attending evening schools. All cities must appoint truant officers, and may provide truant schools. All other districts must enforce the law, and may call upon the county superintendent to assist. The school census, when taken, must be taken with a view to assisting in the enforcement of the compulsory education law. All children of paupers in county poorhouses must be sent to school at the expense of the county.

**Higher and Special Education** — The University of Nebraska, a large and rapidly growing institution (*qv*), in Lincoln, stands as the culmination of the public school system of the state. This institution includes both the university proper and the Agricultural and Mechanical College, though the legislature of 1911 voted to establish another agricultural college in the western part of the state. Besides the state university, the following institutions of higher learning exist within the state, all being open to both sexes —

NAME	LOCATION	OPENED	CONTROL
Doane College	Crete	1872	Congr
Hastings College	Hastings	1882	Presby
Bellevue College	Bellevue	1883	Presby
Nebraska Wesleyan University	University Place	1888	M E
Cotner University	Bethany	1889	Chr
York College . . .	York	1890	U B
Union College .	College View	1891	7th D Adv.
Grand Island College	Grand Island	1892	Bapt

The state maintains, as special institutions, the Girls' Industrial School at Geneva; the Nebraska State Industrial School for Boys at Kearney; the Nebraska Industrial Home at

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Milford, the Nebraska Institution for the Blind at Nebraska City, the Nebraska School for the Deaf at Omaha, and the State Institution for Feeble-minded Youth at Beatrice.

E. P. C.

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**NEBRASKA, UNIVERSITY OF, LINCOLN, NEB** — A state institution established by act of legislature in 1869. It consists of five colleges (graduate, arts and sciences, teachers', engineering, law) and two schools (pharmacy and practice high school), situated on a six-block campus only three blocks distant from the business center of the capital city of Lincoln, a college of agriculture and a school of agriculture located on a 320-acre campus two miles and a half east of the city campus; a college of medicine located in the state's metropolis of Omaha, and a second school of agriculture recently located at Curtis, in the western portion of the state. In addition, the university is affiliated with the Lincoln Dental College, and several of the departmental experts of the university have been made *ex officio* specialists in the general employ of the state. The university also has supervision over experiment stations at Lincoln, North Platte, Valentine, Scotts Bluff, and Culbertson.

The university has its general outline prescribed by the state constitution, and the details of its organization determined by various acts of the state legislature. Administrative control centers in an elected board of six regents and a chancellor chosen by the board of regents, but the development of educational policies within the university is largely left in the hands of a senate consisting of heads of departments and the deans and faculties of the various colleges.

The chief source of revenue for maintenance of the university is a legislative tax of one mill upon the grand assessment roll of the state. Additional revenues are derived from lease and sale of lands granted to the state by the federal government, from federal money grants under the congressional acts of 1887, 1890, and 1906, from interest on permanent fund investments, and from various small fees paid by students.

In 1912 the equipment of the institution consisted of nearly thirty buildings of various sizes, the instructional staff numbered over three hundred, the student registration totaled 3657, the number of graduates for the year was 375, and the alumni roster showed an accumulation of over 5000 names. The entrance requirements are fifteen units of high school work. The usual university degrees are conferred on the completion of the appropriate courses.

C. E. P.

**NEBRASKA WESLEYAN UNIVERSITY, UNIVERSITY PLACE, NEB** — An institution under the control of the Methodist Episcopal Church, organized in 1887 by a union of the denominational institutions founded earlier at York, Bartlev, and Central City. In place of these struggling institutions there now exists one vigorous university having, in 1912, an enrollment of nearly 1000. The campus consists of forty-four acres, including an athletic park. The main buildings are four in number. The total equipment is valued at \$356,000. The productive endowment is \$350,000.

The departments are as follows: college of liberal arts, teachers' college, academy, conservatory of music, school of expression and oratory, and school of art. Among these departments, the college of liberal arts has the highest enrollment, numbering three hundred and seventy-three. The faculty consists of forty members.  
F. A. A.

**NEBRESSENSIS (DE LEBRIKA), ANTONIO.** — See **RENAISSANCE AND EDUCATION**

**NECESSITARIANISM** — See **DETERMINISM, WILL, FREEDOM OF THE WILL**

**NECKER DE SAUSSURE, MME ADRIENNE ALBERTINE** (1765-1841) — French writer. She was married to Jacques Necker, nephew of his more famous namesake of the Revolutionary period, and is known in the educational world largely on account of her *L'éducation progressive, ou étude sur le cours de la vie* (1828-1838), crowned by the Academy (1832). This is one of the most interesting contributions to French educational literature. Like so many similar undertakings, — a work in several volumes whose publication drags out over a period of years, — it is characterized by a lack of unity. The point of view changes several times, although in the end the author pursues her original purpose and confines herself to "the education of women." All her writings are dominated throughout by a strong religious influence. Her work was translated in part into English soon after its appearance by Mrs. Willard and Mrs. Phelps (Boston, 1835), and in 1839 two volumes were translated anonymously in London. F. E. F.

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**NEEDLEWORK** — See **HOUSEHOLD ARTS.**

**NEEF, JOSEPH** (1770-1854) — A colleague of Pestalozzi who established the first Pestalozzian schools in the United States. He was born at Soultz, Alsace, Dec. 6, 1770. He was educated for the priesthood, but gave up the notion of taking orders and entered the army of Napoleon. He was wounded in the

battle of Arcole, Italy, in 1796, and three years later joined Pestalozzi as instructor of gymnastics in the institution which the great Swiss educator was conducting at Burgdorf. In 1803, at the request of Jullien and other French apostles of Pestalozzi, Neef was sent to Paris to open a Pestalozzian school. Here three years later he was engaged by William Maclure (*qv*), an American philanthropist, to come to Philadelphia and establish a Pestalozzian school. The school at Philadelphia was in existence for several years, when it was removed to Village Green, Delaware County, Penn. David Glasgow Farragut, subsequently the famous American admiral, was a pupil in the Village Green school. Later Neef moved to Louisville, Ky., where he engaged in educational work. With the establishment of the social colony at New Harmony, Ind., by Robert Owen (*qv*) and William Maclure in 1825, Neef was invited to join the community in the capacity of schoolmaster. When the colony broke up in 1828, he went first to Cincinnati and later to Steubenville, Ohio, where he conducted schools. In 1834 he returned to New Harmony, where he died April 8, 1854. In his educational labors in America, Neef followed in the main the methods of Pestalozzi. He abolished books from the lower classes and gave instruction by oral means, he taught nature and geography by field lessons, music and gymnastics were given important places in his educational scheme, and pupil government administered the necessary discipline. His *Plan and Method of Education*, published at Philadelphia in 1808, was the first strictly pedagogical work in the United States published in the English language. It is a comprehensive survey of the aims and methods of education in a style that is singularly clear and forceful, although written by a foreigner. In 1809 he published an English translation of the logic of Condillac, and in 1813, *Method of instructing Children rationally in the Arts of Reading and Writing*.  
W. S. M.

See **MACLURE, WILLIAM, PESTALOZZI**

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**NEGATIVE NUMBERS.** — Among the artificial numbers (see **NUMBER**) is a domain of negative numbers. If  $2 + x = 0$ ,  $x$  is evidently not a positive integer, and neither can it be a positive number of any kind. It must be such a number as will cancel 2 when added to it, and it is called a negative number. Be-

cause  $2 - 2 = 0$ , it has come to be the custom to represent  $x$  in this case by  $-2$ , where the negative sign is a symbol of quality and not one of operation. Hence we have two meanings for the negative sine, as, indeed, we have for the positive sign.

Negative numbers were slightly recognized by Diophantus ( $qv$ ) and the Hindu algebraists (see ALGEBRA), but it was not until Descartes ( $qv$ ) had worked out his suggestion for analytic geometry ( $qv$ ) that they came to be well understood. Since the seventeenth century they have been generally recognized as valuable adjuncts to work in algebra, although an occasional mathematician (like Frend, the father-in-law of De Morgan) has declined to use them. Their value in physics has now been so fully recognized that they have an added importance in algebra.

The negative number is, at present, generally introduced early in algebra. This was not formerly the case, but so many simple and practical illustrations of these numbers are now known as to make their early use entirely feasible. Among the simple illustrations are north and south latitude, east and west longitude, above and below zero on the thermometer, assets and debts, weight and the upward pull of a balloon, and the "tug of war" in pulling a rope. Pupils in algebra have no difficulty in comprehending the significance of these numbers if they are illustrated in such a manner.

Some effort has been made to use different symbols for the negative as an adjective and the minus sign as indicating subtraction. Thus we have  $-a$  for the former and  $-a$  for the latter. The effort has not, however, met with much favor in the mathematical world.

A slight effort has also been made by teachers to use the expression "negative  $a$ " instead of "minus  $a$ " in speaking of the quantity, reserving "minus" for the operation only. This effort has never commanded much attention, although it is a rather harmless distinction for a beginner to make. The fact is that mathematical usage allows "minus  $a$ " and does not adapt itself readily to the longer expression "negative  $a$ ". D E S.

**NEGLECTED CHILDREN** — See CHILDHOOD, LEGISLATION FOR THE CONSERVATION AND PROTECTION OF; CRIPPLED CHILDREN, EDUCATION OF, JUVENILE DELINQUENCY, PENOLOGY, EDUCATIONAL ASPECTS OF; REFORMATORY EDUCATION

**NEGRO, EDUCATION OF THE** — The English people who sent out the first colonists were interested in the religious education of the Indians. When the number of slaves increased, they became interested in the education of the negroes, who were then also a "heathen people." The first public school in Virginia, established about 1620, was for the benefit

of these Indians and negroes. This school was destroyed in the Indian war of 1622 and little or nothing was done to educate either of them until the year 1701, when a society was organized in England to carry the gospel to the Indians and the negroes in America. In 1702 Samuel Thomas, the first missionary of the society, stated that he had taken much pains to instruct the negroes and taught twenty of them to read. Elias Neau, a French Protestant, in 1704 established a catechizing school for the Indian and negro slaves in New York, which continued successfully for a number of years.

The Moravians, in 1738, established missions exclusively for negroes. In 1745 the Society for Propagating the Gospel in Foreign Parts ( $qv$ ) established a school in Charleston. Its pupils at one time were as many as sixty, and about twenty were sent out annually "well instructed in the English language and the Christian faith." When slavery was introduced into the colony of Georgia in 1747, representatives from twenty-three districts met in Savannah and drew up resolutions in regard to the conduct of masters towards their slaves. It was declared "that the owners of slaves should educate the young and use every possible means of making religious impressions upon the minds of the aged." In 1747 the Presbyterians began the religious instruction of the negroes in Virginia.

In 1750 the Rev. Thomas Bacon, himself a slaveholder, established in Talbot County a mission for poor white and negro children. The Methodist Conference of 1790 raised the question, "What can be done in order to instruct poor children, white and black, to read?" The reply was, "Let us labor as the heart and soul of one man to establish Sunday schools in or near the place of worship. Let persons be appointed by the bishops, elders, deacons or preachers, to teach gratis all that will attend from six in the morning till ten, and from two in the afternoon till six, where it does not interfere with public worship. The council shall compile a proper schoolbook to teach them learning and piety."

There was, however, some opposition to the education of slaves. This opposition grew as slavery became more of a political than an economic institution. In 1740 the colony of South Carolina passed a law imposing a fine of one hundred pounds upon any one who should teach any "slave or slaves in writing in any manner whatsoever." Georgia, in 1770, passed a similar law, which imposed a fine of twenty pounds upon any person teaching a slave to read and write.

Immediately after the Revolutionary War there was a feeling all over the United States that slavery was soon to pass away. The invention of the cotton gin, however, increased the value of slave labor, caused the belief that it was necessary to the economic growth

of the South, and finally this belief to become a conviction that slavery was to be a permanent institution in the Southern states. This change in public opinion was reflected in the laws. Virginia, in 1819, passed an act prohibiting all meetings of slaves, free persons, and mulattoes in the night or in any school or schools for teaching them reading and writing. In 1829 Georgia passed a law forbidding any person of color to receive instruction from any source. In 1830 Louisiana passed a law forbidding free negroes entering the state and persons of color being taught. North Carolina, in 1835, abolished the schools for free persons of color, and enacted a law that no descendants of negro parents to the fourth generation should enjoy the benefits of the public school system. Mississippi and Missouri passed similar laws. In spite of these severe laws, negroes in one way or another managed to receive some education. In New Orleans, Charleston, Savannah, and other places there were clandestine schools attended by the children of free negroes and sometimes of slaves. Schools for free colored people were never abolished in Maryland, Kentucky, Tennessee, Florida, and Texas.

Up to a few years before the Civil War, there was almost as much opposition to negro education in the North as in the South. In 1831, at the First National Convention for Colored People, steps were taken to found a college for colored youth. In the course of the next year three thousand dollars was raised for establishing "a school on the manual labor plan." Several acres of land were bought in New Haven, Conn., for this purpose. The citizens of that city, however, raised a great cry and protested vigorously. At a public meeting presided over by the mayor it was resolved by a vote of seven hundred to four that "the founding of colleges for educating colored people is an unwarrantable and dangerous undertaking to the internal concerns of other states and ought to be discouraged," and that "the mayor, aldermen, common council and freemen will resist the establishment of the proposed college in this state by every lawful means." On the 3d of July, 1835, a town meeting was called in Canaan, N.H., and a committee chosen to remove Noyes Academy because it had enrolled several colored students. About a month later, the committee, aided by three hundred persons and a hundred yoke of oxen, literally carried out the instructions of the town meeting. Because Prudence Crandall, in 1833, at Canterbury, Conn., admitted colored girls to her boarding school, a law was passed making it a crime to open a school for negroes in that state, and she was imprisoned and mobbed. In spite of the opposition to negro education, the number of negro schools, primary and secondary, steadily increased. Of the secondary schools there exist the Insti-

tute for Colored Youth, Cheyney, Penn.; the Avery Institute, Allegheny City, Penn.; and the Ashum Institute, now Lincoln University, Chester, Penn.

The outbreak of the Civil War increased the negroes' opportunities for education. Almost as soon as any portion of the seceding states was occupied by the Union Army, efforts were begun to give the refugees some schooling. In September, 1861, under the guns of Fortress Monroe, a school was opened for the "contrabands of war." In 1862 a number of similar schools were operated in Virginia, North Carolina, and South Carolina. On Dec. 17, 1862, Colonel John Eaton was ordered by General Grant to assume general supervision of freedmen in the departments of Tennessee and Arkansas. Under him, schools multiplied. In October, 1863, General Banks created commissioners of enrollment, who established the first public schools in Louisiana. March 22, 1864, he created a board of education "for the rudimental instruction of the freedmen." In December of this same year this board reported 95 schools, 162 teachers, and 9571 scholars. Education was also going on in the negro regiments, where thousands of soldiers persuaded their officers to become schoolmasters, and in this way learned to read, write, and cipher.

Congress on March 3, 1865, created the Freedmen's Bureau (*qv*). It was authorized to cooperate with benevolent or religious societies in the education of the negro. Numbers of these societies had done good work before the establishment of the bureau, and afterwards continued their work. Some of these organizations were the American Missionary Association, Western Freedmen's Aid Commission, American Baptist Home Mission Society, and the Society of Friends. After the surrender of Vicksburg and the occupation of Natchez, other teachers were sent by the United Presbyterians, Reformed Presbyterians, United Brethren in Christ, Northwestern Freedmen's Aid Commission, and the National Freedmen's Aid Association. Apart from the general government, the American Missionary Association was the chief body that supplied the educational needs of the negro. Up to 1866 the Freewill Baptists, the Wesleyans, the Congregationalists, and Friends in Great Britain sent their aid through the American Missionary Association.

After Appomattox the whole race started to school. The freedmen could not wait for schoolhouses to be built or for teachers to be provided. School was held anywhere and everywhere. The enthusiastic learners got up before day and studied in their cabins by the light of pine knots. They sat up until late at night, drooping over their books trying to master the secrets they contained. By a fire in the woods at night, a dozen or more people of both sexes and of all ages sat about



with books in their hands studying their lessons. Sometimes they would fasten their primers between their plow handles, so that they could read as they plowed. Negro coal miners tried to spell out the words of a little reading book by the dim light of a miner's lamp, hundreds of feet below the earth. In the early days of freedom, public schools were not infrequently organized and taught under a large tree. Some of the early schoolhouses consisted of four pieces of timber driven into the ground and brush spread overhead to keep out the sun and rain. Night schools were very popular, men and women, after a hard day's work in field, shop, or kitchen, would spend two or three hours at night in school. Many got their first lessons in reading and writing in the Sunday schools, which frequently had more spelling books than Bibles. The teacher was likely to be any one who knew something some one else did not know. It sometimes happened that those who could read better than they could write became teachers of reading, and those who could write better than they could read, teachers of writing.

The number of regular schools rapidly increased; white teachers of all classes and both sexes came from the North. There were also numbers of negro men and women who, having escaped from slavery and gained some education in the North, now returned to become teachers of their race. There were also many Southern white people who, being left without occupation directly after the war, were glad to teach the freedmen in order to eke out a livelihood. In 1866 there were 975 schools and 90,778 pupils, the next year there were 1839 schools and 111,442 pupils. Ten years from this time the number of colored children enrolled in public schools of the sixteen former slave states and the District of Columbia was 571,506. In 1908 the number was 1,712,137, and the number of public school teachers was 30,334.

Immediately after the war many schools for higher education were established. In 1865 the Sixty-second and Sixty-fifth United States colored regiments generously contributed from their wages \$6000 to found Lincoln Institute at Jefferson City, Mo. The same year Shaw University was started at Raleigh. Hampton Institute (*qv*) was founded in 1866 by General Samuel Chapman Armstrong. Fisk University was established at Atlanta, Biddle University at Charlotte, and Howard University, named after General O. O. Howard, at Washington, D. C. In 1869 Straight University was established at New Orleans; Tougaloo University at Tougaloo, Miss.; Talladega College at Talladega; and Claflin University at Orangeburg, S. C. (*qqv*). At present (1912) the United States Commissioner of Education reports 189 institutions devoted to secondary and higher education. No one of these institutions is devoted entirely to collegiate work, but in all

of them are found some students of secondary grade, and in the most of them students of elementary grade. In almost all of these institutions some form of industrial training is given. There were, in 1910, 2941 teachers, and 57,915 students, of whom 23,896 were of elementary grade, 19,654 of secondary grade, 13,124 of collegiate grade, and 2080 professional students; 29,954 of the students were receiving industrial training, 11,943 males and 18,011 females. The Helen B. Cobb Industrial Institute, at Barnesville, Ga.; Ingleside Seminary, Burkesville, Va.; Mary Allen Seminary, Crockett, Tex.; Mary Holmes Seminary, West Point, Miss.; the Hartshorn Memorial College, Richmond, Va.; Scotia Seminary, Concord, N. C.; Spelman Seminary, Atlanta, Ga.; and St. Frances Academy, Baltimore, Md., are devoted exclusively to the training of females. Gammon Theological Seminary, Atlanta, Ga., and Stillman Institute, Tuscaloosa, Ala., are exclusively theological seminaries. Thirteen other institutions have theological departments. Two institutions have departments of dentistry, three of pharmacy, four of law, and seven schools of medicine.

Special funds which have done much for the promotion of negro education are the Peabody Fund (*qv*), created in 1867 and 1869, and devoted to the education of whites and blacks in the South, the John F. Slater Fund (*qv*), created in 1882 for the purpose of "uplifting the lately emancipated population of the Southern states and their posterity", the Daniel Hand Fund, created in 1888 to aid the American Missionary Association in its work in the South, and the Anna T. Jeanes Fund (*qv*), created in 1907 to aid in the maintenance and assistance of elementary schools for negroes in the South.

When the negro was emancipated, probably not more than 5 per cent of the race could read or write. In 1900, after less than forty years of freedom, 55½ per cent could both read and write. In 1910, 30.5 of the negro population is illiterate. Although the negroes constitute over 11 per cent of the population and still have the largest proportion of ignorance, yet they receive only about 2 per cent of the total amount expended for education. The total yearly income of all negro schools for industrial and higher education is not more than two and a quarter million dollars, which is less than the income of Harvard University in 1908. The yearly expenditure per capita of total school population for common schools is \$15, for colored schools it is \$1.71.

The most pressing needs of negro education are better common schools, particularly in the rural districts. There should be more careful and complete supervision of the common schools and more teaching of the fundamental industries, agriculture, cooking, sewing, etc. Some of the larger institutions should be endowed so that, by means of extension work

and continuation schools, they would be able to come into touch with the actual needs of the masses of the people. There should be more technical and industrial schools. Particularly is there need of a normal high school where teachers may be thoroughly prepared to do the work of supervision in the common schools and where they may learn by actual practice something of the methods which are being worked out in various parts of the country for carrying the influence of the schools outside of school buildings and connecting it with the practical work and life of the community. See SCHOOL PLANT, WIDER USE OF

The present tendency of negro education is to develop along those lines that minister to the actual needs of the people. This is seen in the growth of medical and nurse training schools, the attempt to adjust the courses of colleges and universities to present-day needs, and the growth of what is known as "extension work." In this connection it should be remembered that negro education has already contributed something to the people of the United States. Before the beginning of Hampton Institute, no educational institution gave any systematic instruction in the industries. Industrial education for the negro antedates even manual training, which was not introduced into the United States until 1876. The success of Hampton and Tuskegee institutes and of other and similar negro schools has made industrial education popular, and has not only changed the sentiment of the masses of the negro people in regard to labor with the hands, but has also helped in introducing it into Northern schools and white schools of the South. The present tendency is to connect all forms of education in some way with the daily life and needs of the people. B T W

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**NEO-HUMANISM** -- A term sometimes applied to the revival of the Hellenic ideal in German thought in the latter part of the eighteenth century. It differed from the humanism of the fifteenth century in its attachment to Greek rather than Latin culture; in a greater interest in Greek antiquities and art in general as compared simply with literary records, and in appeal to Greek culture as affording an ideal conception of life. Serenity, balance, a recognition of the inevitable limitations of life, the striving for a symmetrical development within these limits, the idea of the central place of a free play of the intellectual powers in securing this proportionate development of all human powers, are some of the traits emphasized and attributed to the Greek view of life. To these must be added the claim of spiritual and intellectual kinship with the Greeks which the Germans put forward. Winckelmann and Goethe are the chief names in this new humanism, the former with his archæological researches, and the latter in his reaction against romanticism signalized by his *Italian Letters*. In nineteenth-century English thought, Matthew Arnold is a typical representative of the spirit of Neo-humanism in his conception of culture and his appeal for recognition of Hellenism as well as Hebraism.

In the gymnasiums and universities of Germany, Neo-humanism exercised a powerful influence. A new vigor was imparted to the classical studies, but more especially to the study of Greek. No longer content with the merely linguistic, an effort was made to imbibe the Greek spirit by a study of Greek life and literature in all its phases. In Germany this is the period of her most brilliant classical scholars. J D.

See CULTURE, HUMANISM AND NATURALISM; GERMANY, EDUCATION IN; GOETHE, HERDER, WOLF, F A., etc.

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**NEO-PLATONISM** -- Neo-Platonism is the final form of Hellenic philosophy as it employed, in the latest or religious phase of

ancient philosophy, the leading principles of Platonism, though not a little modified, combined with elements derived from Aristotle, Stoicism, and Neo-Pythagoreanism, and possibly even from the East, to solve, by a philosophy resting upon a religious basis, the problems of knowledge and virtue which later Stoicism had presented but could not answer. The ethical philosophies of the period immediately before and after the Christian era had ended in the confession of the impossibility of man's attaining virtue by his own effort, on account of the inherent evil in his nature, and a skeptical tendency as to the attainment of ultimate truth by any purely rational process. Neo-Platonism attempted to overcome this result by a metaphysical system which at once explained it and showed the way to attain the highest knowledge and good by a suprarational experience in which the individual obtained an immediate experience of the divine. The elements not proper to Greek thought appearing in Neo-Platonism are in harmony with the religious speculation current in Alexandria and derived possibly from oriental religions. They certainly first appear in the philosophy of Philo, and although no direct relation between that Jewish philosopher and Neo-Platonism can be traced, the resemblance must be more than a chance coincidence.

There are three schools of Neo-Platonism distinguished as to time, locality, and character. Of these the Alexandrian is the earliest and most important in the history of thought. It is the creative period of Neo-Platonic speculation and finds its expression in the works of Plotinus (204-270) and his disciple Porphyry (233-c. 304). It was at Alexandria that Plotinus developed the first elements of his system under the influence of Ammonius Saccas, the traditional founder of Neo-Platonism. It was at Rome, however, that Plotinus lived and taught in his school of philosophy. Here also Porphyry lived, editing the works of his master and teaching philosophy, not merely that of his master, but that of Aristotle, on whose work he wrote valuable commentaries. The Roman period of Neo-Platonism is by far the most interesting, as its aims were predominantly metaphysical and ethical. Religious as it was in its fundamental principles, it yet did not surrender philosophical interests to further positive religion. The Syrian school of Neo-Platonism is represented by its founder Iamblichus (d. 330), who degraded Neo-Platonism by exaggerated emphasis upon the magical or theurgic elements which had only been lightly touched upon in the works of Plotinus. In this phase, Neo-Platonism became less a philosophy and more a religious dogmatic system, a justification of theurgy and a guide to proficiency in magical arts. The Athenian school is represented by a group of teachers at Athens, the leading seat of the later study of heathen philosophical classics, and it flourished until

the closing of the school in 529 by Justinian. Of these teachers by far the most important was Proclus (410-485) one of the scholarchs. In his works we have a quasi-scholastic attempt to weld into a consistent body of doctrine the teaching of the various philosophers of the school, avoiding the alliance with positive heathen religion, as there was not longer any hope for its resuscitation. Proclus gave the form through which Neo-Platonism affected Christian Mysticism (See MYSTICISM). But though these three phases are clearly distinguishable in the history of Neo-Platonism, the movement was very widespread, and schools of philosophy were to be found in many cities sharing the common impulse given by Plotinus to metaphysical speculation and differing in many minor points.

Neo-Platonism came into conflict with Christianity first in the period just before the end of the heathen empire, when Porphyry attacked Christianity with vigor and great critical ability. Yet Porphyry himself turned with increasing hostility against the crudities of heathenism and was as unsparing as any Christian apologist in denunciation of the immoral mythology of heathenism. He acknowledged the personal worth and character of Christ, but denounced the practice of Christians of worshipping him. The Christian writings were to him base forgeries. But the breach between the two systems, which in metaphysical outlines had been hardly apprehended as hostile, widened, and, under the influence of Iamblichus and his teaching, Neo-Platonism began to associate its fortunes with the fortunes of paganism, and everything was done to establish paganism upon a speculative basis.

Neo-Platonism failed in several points as a system likely to become generally acceptable. Its appeal was necessarily restricted to a select few. However low it might descend with Iamblichus, it always remained a metaphysical system. It failed to meet the simple popular demand for an historic personality to whom the heart could turn. In this the nearly allied system of Neo-Pythagoreanism had an advantage. And the attempt to employ Apollonius of Tyana as such was based upon sound judgment. Then, again, the doctrine of God in Neo-Platonism was so transcendent, colorless, and vague, so much like an hypostatized zero, that it could not touch the heart. Even when the language of St. Augustine (*qv*) is strongly reminiscent of Plotinus, there was always the personal touch established by the Incarnation and the personality of God. The ecstacy of Neo-Platonism might be an experience for the intellectual élite, but it had no promise for the multitude.

Although Neo-Platonism was always limited in its appeal, even in the school of Iamblichus its enthusiastic adherents had hopes of making it a universal religion under the patronage of Julian (361-363). But though the philosophi-

cal religion of that emperor gave free play to the superstitious and polytheistic elements of paganism, Neo-Platonism proved a dismal failure as a popular religion. It was naturally hated and despised by Christians, but it was ridiculed and contemptuously rejected by the heathen. The dull ceremonies and joyless services prescribed by Julian after a Christian model failed to satisfy their religious cravings and habits of worship. Its interminable philosophical harangues in imitation of Christian sermons gave nothing their minds could grasp. The very failure of Julian's attempt to make Neo-Platonism the State religion led to a reaction and to that relative sobriety which characterized the later school of Athens and found its expression in the writings of Proclus.

Though Neo-Platonism failed as a religion, as a philosophy it left a permanent impress upon the Christian world. In the East, the Pseudo-Dionysius made it the basis of his mystical theology. In the West, it left an abiding impression upon the theology of St. Augustine and his followers, especially in the doctrine of God and the negative character of evil. It was revived repeatedly by both heretics and teachers of unblemished orthodoxy in the Middle Ages, being identified with Platonism. Elements were introduced through the Arabians, Avicenna and Averroes. At the time of the Renaissance it was studied afresh in the original documents. Of its teachers under the Medici, the Greek philosopher Gemistus Pletho was the most important. Marsilius Ficinus (*q.v.*) translated Neo-Platonic works. Pico di Mirandola and Reuchlin also studied it. Giordano Bruno and Jacob Bohme show its influence. Fichte and Hegel, and especially Schelling, show many affinities with the speculative elements and methods of Neo-Platonism, and it has become a common possession of various forms of mysticism.

J. C. A., Jr.

See INNATE IDEAS, MYSTICISM.

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**NEPOS, CORNELIUS** — A Roman historian of the first century B.C. (c. 100-24), wrote, among other works a series of parallel biographies of famous Greeks and Romans in sixteen books (*De viris illustribus*). There remain only the part treating of foreign generals, and the lives of Cato and Atticus.

These biographies are as a rule very brief and have long been a favorite material to put into the hands of young students of Latin. The style, however, is not pure, and the tendency to abstract analysis of character renders the mill adapted to children. Their contents, too, are often dull and uninspiring. Partly for these reasons, Nepos has been read less and less in schools in recent years, except for supplementary study. When read he belongs to the second year, alongside of Cæsar. There is no lack of adequate school editions. An exhaustive study has been made of his style by Lupus (*Der Sprachgebrauch des Cornelius Nepos*, Berlin, 1876).

G. L.

**NERVE** — See NERVOUS SYSTEM.

**NERVE IMPULSE** — See NERVOUS SYSTEM.

**NERVOUS CHILDREN** — See DEFECTIVES, NEURASTHENIA.

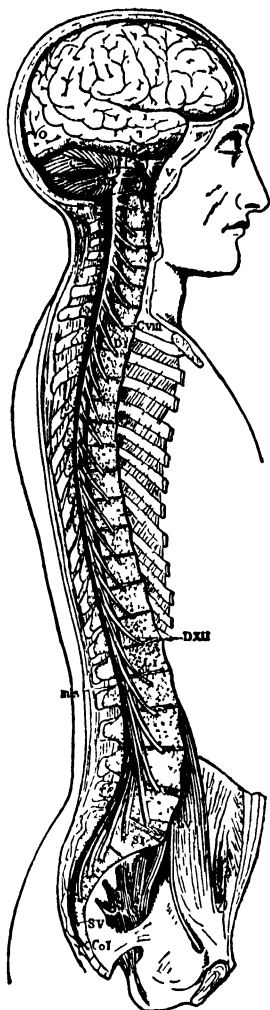
**NERVOUS DISEASES** — See MIND, DISEASES OF, NEURASTHENIA.

**NERVOUS SYSTEM** — All nervous tissue in the body, whether in the nerves or in the nerve centers, forms a single connected system. Formerly the "sympathetic system," with its ganglia and nerves supplying the viscera, blood vessels, etc., was regarded as relatively independent of the cerebrospinal system, but present information indicates that the sympathetic is simply an adjunct of the other. The sense organs, though not reckoned as parts of the nervous system, are connected with the sensory or afferent nerves — the retina with the optic nerve, the organ of Corti with the auditory nerve, the taste buds with the nerves of taste, and the touch corpuscles and other sensory end-organs in the skin and throughout the body with numerous sensory nerve fibers in the mixed nerves. The muscles and many of the glands are connected with the motor or efferent nerves. Thus the system, as a working whole, contains, besides the nervous system, the "receptors," through which the environment acts on the organism, and the "effectors," by which the organism reacts upon the environment. The part played by the nervous system is primarily that of affording a quick means of communication between the receptors and the effectors.

**Spinal Cord** — From the brain and spinal cord, nerves ramify to all corners of the body.

## NERVOUS SYSTEM

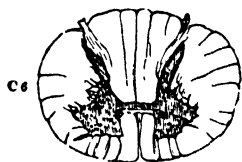
The brain, protected by the skull, and the cord, extending down the back within the spine, are continuous with each other through a hole in the base of the skull. The cord appears like a large nerve, one half



to one third of an inch in diameter, with "enlargements" at the height of the shoulders and at that of the loins. The upper enlargement is the source of the nerves to the arm, and the lower enlargement of those to the legs, and they are the lower or local centers for reflexes of the limbs.

The cord is white outside, as the nerves are, but a cross section reveals something not found in the nerves, namely, gray matter. The cord is nearly divided into right and left halves by grooves or fissures extending along both its dorsal and its ventral surface, but there remains a connection or "commissure" between the two lateral halves. In each half, the gray matter shows dorsal and ventral portions or "horns," the ventral being, in the enlargements, large and fat, while the dorsal horn is always rather slender. The nerves come off from the

cord by the dorsal and ventral "roots," of which there are a whole series on either side of the cord. It is a remarkable fact that though the nerves as they run through the limbs and other parts of the body are "mixed nerves," containing both sensory and motor constituents, these are segregated on entering the cord, and all the sensory nerve fibers enter the dorsal root, close to the dorsal



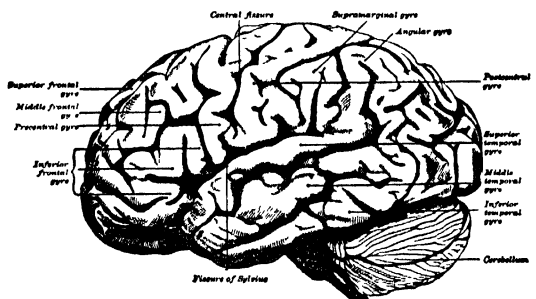
horn of the gray matter, while all of the motor fibers enter the ventral roots. In fact, during the embryonic growth of the nervous system, the motor nerves grow out from the ventral

## NERVOUS SYSTEM

horn of the gray matter, while the sensory nerves grow, not out from the cord itself, but from the "spinal ganglia," masses of nerve cells lying close outside the dorsal portion of the cord.

The white matter of the cord, lying outside the gray, is spoken of as divided into "columns," dorsal, ventral, and lateral. The dorsal columns are direct continuations of the dorsal roots, and consist, therefore, of sensory fibers which have come in from the nerves and are proceeding towards the brain. The lateral and ventral columns contain many sets of fibers, some conducting upwards and some down, some being short and others long.

**Brain** — The brain consists of the "brain stem," a continuation of the cord, and two large outgrowths, the cerebrum and cerebellum. The brain stem lies along the floor of the skull, from back to front. Its rear or lower portion, next to the cord, is the "medulla" or "bulb," in front of this is the "pons" and next the "midbrain," then the "inter-brain" or "thalamus," and finally the basal



portion of the "end-brain." The great bulk of the end-brain consists of the cerebral hemispheres, which are outgrowths from the more primitive basal portion of the end-brain; the cerebellum is an outgrowth from the pons.

The nerves of the head issue from the brain stem, that to the nose from the end-brain, that to the eye from the inter-brain, those to the muscles of the eyeball chiefly from the mid-brain, that to the skin of the face from the pons, those to the ear and to the throat and rear of the mouth from the medulla. Where the nerves from any part enter, there are the lower centers for that part. The medulla receives the "vagus" nerve, which supplies the heart, lungs, and stomach, and the medulla accordingly contains the respiratory center and the cardiac center, as well as a vasomotor center which regulates the constriction and dilatation of the blood vessels, and a center which influences the activities of the stomach. The medulla, it will be recognized, is an extremely vital part, without it, respiration is impossible, and accordingly destruction of the medulla is, in one form or another, a favorite means of capital punishment.

The end-brain, or cerebrum, is almost sepa-

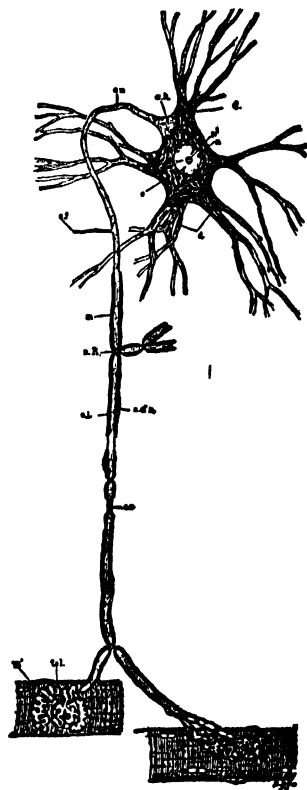
rated into hemispheres, these are, however, joined at the base, and are connected also by the "corpus callosum," a large bundle of nerve fibers, which practically unites the hemispheres into one organ. In the cerebrum, as well as in the cerebellum, the arrangement of white and gray matter is different from that which obtains throughout the cord and brain stem, in that the gray matter lies on the external surface, forming a bark or rind or "cortex." The external surface of both the cerebrum and cerebellum is much folded, with the result that the area of the cortex and the amount of gray matter are much larger than would be the case with a smooth surface. The surface of the cerebrum is spoken of as divided into the frontal, parietal, occipital, and temporal lobes, the frontal and parietal being separated by the central fissure (or fissure of Rolando), and the frontal and temporal by the lateral fissure (or fissure of Sylvius). There are many minor fissures, subdividing each lobe into convolutions or gyres. Thus, from above downward, the frontal lobe contains the first, second, and third frontal convolutions, and the temporal is similarly divided. The precentral and postcentral convolutions border the central fissure. These subdivisions have value as landmarks, but do not usually indicate inner or functional division of the brain.

**Growth of the System** — The development of the nervous system begins, very early in embryonic life, with the appearance of a "neural groove" extending along the back, and a little later arching over into a tube, the "neural tube." It is the outer layer of the embryo from which the neural tube originates, but this is crowded inwards and surrounded by the growth of muscle and bone. The neural tube at its forward end becomes expanded into a series of five vesicles, which develop into the five principal parts of the brain — end-brain, interbrain, midbrain, hind-brain (including pons and cerebellum), and after-brain or medulla. In spite of the complicated form into which it grows, the neural tube remains always a tube, with a hollow extending along the spinal cord and brain stem and into each cerebral hemisphere. The hollow of the tube is expanded into the "ventricles" of the brain. Along with the neural tube, there are infolded two little strips of the external surface of the embryo, and these give rise to the sensory and sympathetic nerves and ganglia. The motor nerves arise from the neural tube itself. It is interesting to note that the retina, the sensitive surface of the eye, arises from the neural tube, and is therefore to be regarded as part of the brain, it has indeed a distinctly nervous structure.

**Nerves.** — The minute structure of the nervous system is more important to understand than the gross structure which has already been sketched. Microscopic study of the nerves shows them to be bundles of fibers

running parallel to each other, like wires in a telephone cable. The white matter of the cord and brain is essentially the same as the nerves, being composed of nerve fibers. The unit is the fiber, which, on microscopic examination, is seen to consist of a central core, called the axon, surrounded by one or two sheaths. In most of the nerves, each axon has two sheaths, called medullary and primitive, the latter being outside. In the white matter of the cord and brain, the primitive sheath is lacking, but the medullary is present, while in sympathetic nerve fibers the reverse is true. The medullary sheath is composed of a white, fatlike substance, which has some of the physical properties of an insulator and may have a somewhat similar function. It is this substance which gives whiteness to the white matter.

The gray matter differs from the white in the absence of the medullary sheath, and in the presence of nerve cells, which are absent from the white matter and from the nerves, except for the sympathetic and spinal ganglia attached to the nerves. The fine branches of the nerve cells and of the fibers are also confined to the gray matter. The gray matter consists of numerous nerve cells embedded in a meshwork of minute fibers. It presents a most complicated problem to the microscopic anatomist who would analyze it, but, considering the difficulties involved, extraordinary progress has been made. It is found that every nerve cell, if at all fully developed, sends out a long, slender branch, the axon, which, becoming invested with a medullary sheath, emerges from the gray matter into the white, and appears there as a nerve fiber. The axon, in other words, is a branch of a nerve cell, and there seems little reason to doubt that all the axons of the nerves and white matter originate from cells in the gray matter. Besides the axon, the nerve cell has other branches of a different sort, short and branching like a tree,



from which fact they have received the name of "dendrites" These differ from the axon, also, in receiving no medullary sheath and in never extending beyond the bounds of the gray matter The axon, in general, branches much less than the dendrites, and its branches (called "collaterals") are slender and usually at right angles to the main trunk But the axon, and each of its collaterals, finally comes to an end in a tuft of fine branches, always turning into the gray matter to terminate in this manner, there are no terminations of axons within the white matter Apparently the numerous fine fibers of the gray matter are accounted for as dendrites and fine terminations of axons, and if so, we can conceive the gray matter as consisting of nerve cells embedded in a dense mat of their own branches and of the branches of other cells and axons

Under high magnification, the inner structure of the nerve cell shows a nucleus, similar to that found in every living cell, and — what is peculiar to the nerve cell — numerous delicate fibrils, coursing in different but definite directions through the cell body and out into the axons and dendrites In the axon, these fibrils run strictly parallel to one another. It is believed by some authorities that the fibrils are the ultimate conducting agents The cell body and larger dendrites show another feature that is absent from the axon: granules of triangular or spindle-shaped outline, called the chromatic bodies The substance which gives this mottled or "tigroid" appearance to the nerve cells may be of the nature of fuel, at least, it has been observed to become diffused throughout the cell during prolonged activity, so that the fatigued nerve cell shows a diffused instead of a mottled color Certain drugs and abnormal conditions also produce this condition, which is called chromatolysis

**Neurones** — A nerve cell, with its axon and dendrites and all the ramifications, is often called a *neurone* This term is bound up with the "neurone theory," according to which the neurones remain separate one from another, and are not united into continuity In embryonic development, the nervous system starts as a collection of unbranched cells, which later put forth axons and dendrites, and the question is whether the branches of different cells unite in the course of their development into a continuous meshwork The best methods yet available fail to show any anastomosis of the branches of different nerve cells, though there is sometimes close adhesion But some authorities oppose to the neurone theory a "fibrillar theory," according to which the minute fibrils already mentioned pass freely from one neurone to another, and, possibly, form in the interstices between neurones a network of the utmost tenuity, which, these authors think, is worthy to be called the essential part of the gray matter, since it would

be the means of making connections between different nerve fibers and so between different parts of the body As the evidence stands today, the neurone theory has a better standing and wider acceptance than the fibrillar theory, for the passage of fibrils from one neurone to another, or their presence in the spaces between neurones, has not been demonstrated

**Function of Nervous System** — The primary function of the nervous system is, without doubt, to conduct not materials, as the circulation does, but something in the nature of messages or stimuli, capable of arousing activity in the organs to which the nerves run The "message" carried by the nerve is called, in the absence of any sure knowledge of its real character, the "nerve impulse" It may be an electrical change that moves along the nerve, since such a change can be detected in an active nerve, and nothing else — movement, heat, or chemical action — has been demonstrated The speed of the nerve impulse can be measured, but in man the values obtained have varied all the way from 100 feet to 350 feet per second, with the more recent and improved methods favoring the higher values

The function of the nerve fiber, and accordingly of the nerves and white matter, is certainly to conduct and nothing more. Axons appear to be insulated one from another in the nerves and white matter, so that no communication from sensory to motor, no switching or distribution of impulses, occurs except in the gray matter It is likely, though not universally believed, that all nerve fibers act much alike, being indifferent conductors What is called the "specific energy of a nerve" refers to such facts as that a jarring or any sort of stimulus to the optic nerve produces only sensations of light, but the specific energy may reside not in the optic nerve, but in the visual area of the cortex to which the nerve leads. The white matter and the nerves seem to be mere passive conductors Everything that is active or variable with conditions or modifiable by experience is an affair of the gray matter An adequate conception of the action of the gray matter can certainly not be formed in the present state of knowledge, but what seems a probable outline of its mechanism can be based on its structure along with the notion that the fundamental function of all nervous tissue is to conduct impulses

Where formerly the nerve cells were looked upon as the essential things in the action of the gray matter, of late the view has gained force that they are nutritive in function, serving to keep their branches alive and in good working condition, and that the branches which interlace in the gray matter do the actual work There is, in any minute portion of the gray matter, an intermingling of the dendrites of the cells located there with the terminations of axons which enter from other parts For example, the axons coming into the cord or

brain stem from a sense organ terminate within some mass of gray matter, in close contact with the dendrites of the cells of that gray matter, and in some cases it is perfectly clear that the incoming axons must transmit their activity (their "messages") to the dendrites of these cells. It is probable that the dendrites are receptive and the terminations of axons excitatory or transmissive, so that a nerve impulse, entering the gray matter by an axon, passes from the terminations of this axon to the dendrites of another cell, and thence to the axon of that cell and so away to some other part of the gray matter or to some organ outside. The function of the terminations of axons and of the dendrites seems, therefore, to be that of effecting connections.

Since an axon, in its termination, may make connections with the dendrites of several cells, there is a chance for that distribution of influence which is the essence of coordination. Since several axons may terminate in proximity to the dendrites of a single cell, there is opportunity for the convergence and combination of impulses. The importance of a convergence of neural paths is especially seen in facilitation and inhibition. Two stimuli, acting on different sense organs, may reinforce or facilitate each other's action, or, one stimulus may prevent or inhibit the action of another. Thoughts and emotions, having their seat in the cerebrum, may either hasten or slacken the rate of breathing, and this means that they have reinforced or inhibited the reflex effect of sensory stimuli reaching the respiratory center in the medulla. There must be in all such cases a convergence of influences from two or more sources upon that part of the gray matter which is directly connected with the effector organs.

Sleep, drowsiness, and unconsciousness under the influence of drugs are conditions primarily of the gray matter, and are probably to be conceived as a temporary impairment of the connections between axons and dendrites. Learning, a process which seems to concern almost entirely the cerebral cortex, may be conceived as consisting in the improvement of connections through use, and forgetting as an atrophy of connections through disuse. Exercising dendrites or the terminations of axons may probably cause them to grow and improve in condition for work, as is known to be the case in muscular tissue.

The neurone theory, though primarily concerned with the structure of the gray matter, has proved a great aid in reaching a conception of the function. The name *synapse* has been applied to the junction, without continuity, of the termination of an axon with the dendrites of another cell. The proximity of the two may be very great, yet it does not amount to continuity such as holds between different portions of the same neurone. There is always a breach of continuity, or "surface of separa-

tion" between the interlacing branches of two neurones. Hence, it is probable that conduction through the gray matter is much slower than along a nerve fiber, and that impulses go in only one direction through the gray matter. The synapse has a sort of valve action on nerve impulses, permitting them to pass only in the direction from termination of axon to dendrites. The synapse is the susceptible part of a neural path or connection, where varying influences, such as are seen in facilitation and inhibition, take effect. The synapse it is, according to this conception, which is improved by learning and which deteriorates by disuse.

Since all sensory axons lead into the gray matter, and all motor axons originate in gray matter, the simplest form of action involving the nervous system is the reflex, in which a stimulus to a sense organ, acting through a sensory nerve, arouses to activity the gray matter from which issue the motor nerves to the reacting muscles. The "reflex arc" consists of the sensory or afferent nerve fiber, the synapse between this and the dendrites of a motor nerve cell and the axon of this cell. This is the simplest possible reflex arc, but it is probable that most reflexes have longer and more elaborate paths than this.

**Localization of Functions** — It is clear from all that precedes that the nervous system does not act as a mass, in the way that the liver may be thought of as acting, but in detail, by means of particular paths and connections. Hence a large share of the vast amount of study that has been given to the brain and cord is concerned with the localization of function. In the white matter attention has been directed to disentangling the tangle of bundles that course through it, and that are called *tracts*. Purely anatomical methods need to be supplemented by physiological and pathological methods in order to trace out a tract from its origin, *i.e.* the portion of gray matter containing the cells from which its axons arise, to its termination, *i.e.* the portion of gray matter which its axons finally enter and where they terminate. Among sensory tracts in the cord may be mentioned the dorsal columns, which are apparently concerned with the muscle sense and not with the cutaneous senses, and the "spino-thalamic tract" in the lateral column, which is apparently the path of cutaneous sensation. Among motor paths, the one best worth mentioning is perhaps the cortico-spinal or pyramidal tract which, originating in the giant cells of the motor area, passes down through the brain stem, "decussates" or crosses, for the most part, in the medulla, and runs down the cord in the lateral column, terminating all the way along in connection with the motor cells of the ventral horn. "Decussation" is a curious fact regarding the tracts that lead into or out of the cerebrum. The decussations occur in various



parts of the cord and brain stem, but all have for their effect to bring the right half of the body into connection with the left hemisphere and the left half of the body with the right hemisphere. Therefore, the left hemisphere controls the movements of the right hand, and also receives sensations from it.

The first indication of a localization of functions in the cerebral cortex — since the earlier effort of the phrenologists to localize the various faculties had proved abortive — was Broca's announcement that the third frontal convolution in the left hemisphere was connected with speech, and that its injury entailed aphasia (*qv*). Next, the "motor area" was roughly located, and since then areas for vision, hearing, touch (in the broad meaning), and smell have been determined. These sensory and motor areas are directly connected by fibers with the lower centers, which in turn are directly connected with the sense organs and muscles. The visual area, adjoining the calcarine fissure on the median surface of the occipital lobe, receives impulses from the retina, and any seen object that influences the cortex acts first on this area, and then, by association fibers, on other parts of the cortex. All sensory impulses first reach the cortex in certain limited areas and radiate thence by the very numerous association fibers to other parts. The motor area, extending along the front side of the central fissure, is the origin of the corticospinal and similar tracts, and the principal gateway through which the influence of the cortex is exerted on the muscles. The motor area must be aroused by association fibers whenever the movement of the hand is directed by the eye or ear, or by some internal thought. The visual area in the occipital lobe, the auditory area in the first temporal convolution, the "touch" or "somesthetic" area just behind the central fissure, and the olfactory area in the pyriform lobule, along with the motor area, cover only a small fraction of the cortex, and the remainder is by no means so certainly mapped out. In general, it appears that regions immediately adjoining a sensory area have functions closely related to that of this area, but "higher" or more intellectual. Thus the recognition of familiar objects by sight, reading, etc., depends on the occipital lobe; and the understanding of heard speech and the appreciation of music depends on a temporal region near to the auditory area. The region immediately behind the somesthetic area seems to be concerned with the perception of form, texture, size, weight, etc., by touch; and the region just in front of the motor area may have, besides its function of speech, control of writing and other similar coordinations. Even with these vaguer localizations added to what is clearly established, a large share of the cortex still remains uncharted.

The size or weight of the brain probably

influences mental capacity, though the correlation is far from close. The brain develops earlier than any other organ except the sense organs, it is always forward in foetal life, and at birth has fully a quarter of its adult weight, this increases to two thirds during the first year, and to nine tenths at four years, after which there is a slow increase to about the fifteenth year. The adult weight varies considerably in different individuals, with an average not far from 1400 grains (50 oz.), in women it is about 10 per cent less. (See GROWTH.) Studies of the cortex at different ages seem to show that the little fibers — dendrites and terminations of incoming axons — which constitute the working parts continue to grow till the fortieth year at least. In old age there is a shrinking in the weight of the brain. R S. W.

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#### NERVOUSNESS — See NEURASTHENIA

#### NETHERLANDS, EDUCATION IN THE

— The Kingdom of the Netherlands is divided into eleven provinces, namely, North Brabant, Guelders, North and South Holland, Zealand, Utrecht, Friesland, Overijssel, Groningen, Drenthe, and Limburg. The names recall the independent dukedom, bishopric, and counties whose contests mark the early history of the country. The area of the kingdom is 12,648 square miles, and its population in 1910 was 5,945,429. It is a kingdom of large towns, having no less than thirty with populations above 20,000. The colonial possessions of the Netherlands, which have been a source of wealth, comprise an area of 783,000 square miles and a population of approximately 38,000,000.

The religious denominations have exercised great influence in educational matters. The royal family and the upper classes, generally, belong to the Reformed Church, which numbers above 2,588,000 adherents; other Protestant denominations comprise 746,000. The Roman Catholics number 2,052,781; Jews 106,402, Jansenists, 10,082. Complete religious liberty prevails, and each denomination receives an annual subvention from the treasury. The people of the Netherlands are nearly all natives by birth and ancestry, foreigners forming only 1 per cent of the total.

**Historical Development** — The first school within the limits of what is now the Netherlands, so far as the records show, was established at Utrecht by Willebrord, missionary from England to the Frisians. He was ordained Bishop of Utrecht in 695 at the instance of Pepin, father of Charlemagne, who desired to found a bishopric in that part of Friesland which had been brought under the Frankish rule. Thus Utrecht became a center of enlightenment in the empire of Charles the Great. The monastery schools of Egmond, Nijmegen, Middleburg, Zeeland, and Adouwert were famous in the ninth century. The breaking up of the Empire after the death of Charles the Great was followed by invasions of the Northmen and the consequent rise to power of the great nobles who opposed their ravages, and of the towns to which the people fled for safety. It was in the eleventh century that the Count of Holland by his successful resistance to the Emperor, Otto II, gained overlordship in Nether-Lotharingia, and from William I, the Count of Holland who bore a notable part in the fourth crusade, the chief towns secured charters that guaranteed civic liberty and privileges to the burghers. Among the latter was the right to establish schools, and thus early in the thirteenth century, beside the Cathedral and monastery schools, appeared "public" or town schools. These were styled *School en Schryfambacht, Scholen en Kosten* (school and writing office, school and clerks' houses). The *schoolmesters* (schoolmasters) were looked upon as professional men. They formed distinct guilds and fraternities and were highly respected by their fellow citizens. Public schools were divided into *grooten en kleine scholen* (higher and lower schools). Latin was taught only in the higher schools, which had generally the largest number of pupils. One of them, the school of Zwolle, numbered 1000 pupils from the Netherlands and Germany. The Brethren of the Common Life (*q.v.*), whose first school was founded by Gerhard the Great of Deventer (1340-1384), did much for the promotion of education in different European countries. Thus the different classes of schools which maintain their distinctions under the present system of public instruction, namely, church schools, town or public schools, and schools belonging to private societies, all originated before the close of the fourteenth century.

In the century following, the provinces were controlled by the Dukes of Burgundy, but although their political life was stifled, the arts and the learning of the Renaissance flourished, especially in Flanders and Brabant. The States-General of the provinces, instituted by Philip of Burgundy, became, in time, the embodiment of their national will and purpose. From the last of the Burgundian rulers, the Duchess Mary, the cities secured the "Great Privilege" (1477) which affirmed their right to hold diets, reserved to the Estates a voice

in the declaration of war and the imposition of taxes, established one high court of justice for Holland, Zeeland, and Friesland, and made Dutch their official language. Thus the leading provinces entered upon the century of struggle against Charles V and Philip of Spain with a measure of internal union. This period was marked by a wonderful outburst of talent and learning. The fame of great scholars, Erasmus, Grotius, Barneveldt, to name only those who most profoundly affected human thought, is linked with that of William the Silent, founder of the Dutch Republic, and of his son Maurice, its military genius. The University of Leyden (*q.v.*), the bulwark of Protestant doctrine in the United Provinces, was founded by William the Silent in 1575 to commemorate its heroic defense against the Spanish besiegers. Ten years later (1585) a second university was created at Franeker, and in the seventeenth century three universities were added, namely, Utrecht, 1638, Groningen, 1644; and Herderwijk, 1648. Franeker and Herderwijk were closed in 1811.

The fall of the Dutch Republic is connected, indirectly at least, with the bitter controversy between the extreme Protestant sects, the Arminians and the Calvinists, which broke out in the University of Leyden early in the seventeenth century. The rivalries and contests of the different provinces completed the disaster, and the political life of the United Provinces became inextricably mingled with that of neighboring Powers. Nevertheless, a certain distinction was preserved to the Provinces by the achievements of their university teachers and by the refuge they afforded to men of science and learning exiled from their native lands.

*Antecedents of the Present System of Primary Education* — The early zeal for education in this kingdom had little effect upon the common people, the first movement in their interests was begun by John Nieuvenhuysen, a Mennonite clergyman of Groningen, who founded in that city, in 1784, the Society of Public Good (*Maatschappij tot Nut van't Algemeen*), whose object was to promote elementary instruction — moral, social, and religious. The society established schools, published simple textbooks, and awakened great interest in the subject of popular education.

At this time the provinces were comprised in the Republic of Batavia (1795-1806), and the political spirit gave impetus to the efforts of the society. A special commissioner, the celebrated Van den Ende, was appointed to devise means for promoting the general instruction of the people. The outcome of his labors was the law of 1806, which forms the basis of the primary school system. Napoleon had already extended his conquests to Holland, and a few months after the promulgation of the law the Emperor made his brother Louis king over the province. Fortunately, however, Louis had no disposition to interfere with the

educational movement. In 1810 he abdicated, and Napoleon then incorporated the provinces into the Empire and took measures for assimilating their educational system to that of the Imperial University. The report of Cuvier, one of the two commissioners appointed for this service, was so favorable to the system of primary education that it was continued with Van den Ende as its chief. After the fall of Napoleon and the establishment of the kingdom of the Netherlands, comprising Holland and Belgium, a decree was issued (March 6, 1815) which ordered that the school law of 1806 should be the basis for further regulations concerning public instruction. This early measure settled for the Netherlands the principle of public inspection of schools. It provided for the appointment of school inspectors who were to constitute in each province a permanent school board. The largest communes were required to form local school boards. No school could be established without the special permission of the provincial or communal authorities. The course of primary instruction comprised reading, writing, arithmetic, Dutch, French or other modern language, geography, and history. Schools were to be entirely independent of ecclesiastical influence. The schoolbooks were to be authorized by the school boards. Nobody was allowed to teach without passing the prescribed examinations.

The intervention of the State in education and the prohibition of religious teaching in the schools were vehemently opposed by the Roman Catholics, who formed the majority in the southern provinces (the present kingdom of Belgium). Their dissatisfaction grew from year to year, and finally gave rise to the revolution of 1830, which was followed by the permanent separation of Belgium from Holland. Before this event the school system had received two important extensions. In 1816, through the influence of M. Van den Ende, a normal school was established at Haarlem as an integral part of the system, and government recognition was extended to the normal school at Groningen, previously established by the Society of Public Good. Up to this time the teachers of Holland had been trained by serving an apprenticeship, from the age of fourteen to sixteen or eighteen, as assistants in the larger schools. During the same time they were given instruction for an hour every evening. This pupil-teacher system, which was subsequently introduced into England, never developed its worst features in Holland and in a restrained form is still employed there as a means of training. The pupil teachers form no part of the regular school staff.

The second measure of extension was the establishment of a higher class of primary schools, the *burgerscholen*, to meet the demand of the middle classes that the State should provide schools suited to their children. The law of 1806 had placed public schools and pri-

vate schools on the same basis as regards inspection by the state and the qualification of teachers. Fees were charged in the public schools, but free provision was authorized for poor children, and thus the public schools became in practice charity schools, and the middle classes, who bore the greater part of the school tax, were forced to patronize the more expensive private schools. The higher order of public schools, established in response to the natural demand of the middle classes, included modern languages, French and English, as well as the sciences, in their curriculum. These burgher schools were condemned in Cuvier's Report as superficial and tending to draw students away from more solid branches. Time has shown that they anticipated, in a measure, the modern type of secondary school which is now found in every country.

Although the northern provinces were strongly Protestant, there was a Roman Catholic minority which showed the same opposition as the Belgians to the purely secular school system. The ultra-Protestants were in accord with them on this point and both together succeeded in restoring a measure of clerical influence to the schools. A royal decree of January 2, 1842, ordained that the religious faith of candidates for the teaching service should be taken into account, and authorized the examination of textbooks by the clergy before they should be adopted. Religious instruction was still excluded from the course of study, but the clergy were allowed the use of the schoolrooms for that purpose before or after the school hours.

The constitution of 1848, which replaced the earlier constitution of 1815 and is still in force, comprised the following clauses respecting education. Public instruction shall be an object of incessant care on the part of the government. Public instruction shall be regulated by law, with due deference to all religious creeds. The legal authorities shall provide for sufficient public elementary instruction throughout the kingdom. Instruction is free, and it is to be under the supervision of the secular authorities, whose functions shall be regulated by law. A report on the state of higher, middle class, and elementary instruction shall be submitted to the States-General (legislature) every year by the Crown (Art. 194).

*The School Law (1857)* — In accordance with the constitutional provisions, reports and projects of law for the regulation of elementary schools were submitted, but it was not until 1857 that a law dealing with the subject was successfully carried through the legislature. The underlying principles of the law as regards the scope and support of elementary schools and the qualification of teachers are as follows.

Art. 1. Elementary instruction is divided into ordinary and more extended instruction. Ordinary instruction includes reading, writing, arithmetic, the Dutch language, history, the rudiments of natural

philosophy, and singing. The more extended instruction is considered to include the rudiments of modern languages, of mathematics and agriculture, gymnastics, drawing, and needle work.

Art. 2. Elementary instruction may be given either in schools or in the dwellings of the parents or guardians.

Art. 3. Public schools are those established and maintained by the communes, the provinces, and the government, severally or in common, all others are private schools. Subsidies may be granted to private schools on the part of the communal, provincial, or state authorities. Schools thus assisted shall be open to all children, without distinction of religious creed.

Art. 6. Nobody is allowed to give elementary instruction who does not possess the proofs of capacity and morality. Foreigners must have a special permission from the government.

Art. 8. Any person giving elementary instruction without being qualified shall be prosecuted.

Art. 12. For the education of teachers there shall be at least two state training schools. The education of elementary school teachers shall be promoted by the government as much as possible.

Art. 16. In every commune elementary instruction shall be given in a certain number of schools, sufficient for the number and requirements of the population, and the schools shall be open to all children without distinction of religious creed.

In addition to the essentials set forth in the articles above quoted, the law authorized the State to intervene if communes neglected its demands, determined the maximum number of pupils allowed for one teacher, the minimum salary for head teachers and for assistant teachers, and the mode of examining and certifying teachers, both men and women. The appointment of teachers was left to the communal authorities, but they were regarded as State officials and were entitled to pensions from the government under the following provision of the law.

Art. 26. The right to a pension is acquired after an honorable discharge at the age of sixty-five, and after forty years' service. A pension may also be granted to those who after ten years' service have become invalid. Those who have not received an honorable discharge forfeit their right to a pension.

The expenses of elementary schools were to be borne by the communes, fees were authorized in all schools, but free tuition was required for indigent children. It was further provided that the State should give special aid to poor communities for the establishment of primary schools.

The system of school inspection provided by the earlier law of 1806 was continued and strengthened under the law of 1857. The general supervision of education throughout the kingdom was committed to the Minister of the Interior, who is represented by provincial and district inspectors in the exercise of the supervisory functions. The duties of inspectors, both State and local, were minutely prescribed in the law.

When the law of 1857 was pending in the legislature, the question of religious instruction was the chief subject of discussion. In the end the nonsectarian character of the schools was maintained; but it was expressly provided in the law that:

The system of education shall be made conducive to the development of the intellectual capacities of the children and to their training in all Christian and social virtues. The teachers shall not teach anything inconsistent with the respect due to the religious opinions of others. Religious instruction is left to the several religious denominations. The schoolrooms shall be at their disposal for that purpose out of the regular school hours. [Art. 23.]

With a single exception the main provisions of the law of 1857 have proved satisfactory to all parties, and the subsequent laws of August 17, 1878, and December 8, 1889, have simply improved the system by strengthening the inspection service and raising both the standard of qualification and the minimum salaries for teachers.

The status of private schools, as determined by the law of 1857, has been the subject of bitter controversy and has been modified repeatedly as the opposite parties, Liberal and Conservative, have come into power. The law of 1878, enacted by the Liberals, ordered that every school receiving a subsidy from the State, however small, should be considered a public school and should be subject to the same regulations. The part of the State in the school expenses was fixed at 30 per cent for all schools classed as public. The Conservative party came into power in 1883, but it proved difficult for them to obtain subsidies for sectarian schools. In 1889 this was indirectly accomplished by including the proposals in a financial bill. This measure provided that the State appropriation, which had been fixed at 30 per cent of the total school expenditure by the law of 1878, should be proportioned to the number of pupils, alike in public and in private schools. Fees are required in all schools, but not to exceed the actual cost per pupil and are to be remitted in case of necessity. The additional appropriation for school buildings was fixed in every case at 25 per cent of the total cost. While State subsidies were thus sanctioned for private schools, the communes were prohibited from making appropriations to them. The immediate effect of this measure was to increase the number of parochial schools and reduce the attendance upon public schools.

The denominational difficulty having been settled by the law of 1889, support was secured for the compulsory principle which was introduced by a law of July 7, 1900, carried by the Liberals. Parents and guardians were required to secure the education of their children and the duties and powers of school attendance committees were accordingly extended.

**Elementary Education** — *School administration and supervision.* — The State administration of schools is in charge of the Minister of the Interior, at the head of the inspection service are three general inspectors, and subordinate to them are twenty-five district inspectors; ninety-four inspectors of arrondissements, and from 200 to 300 communal

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committees All these officials are appointed by the sovereign and receive their salaries from the State The communal committees maintain close relation with the local school boards and local supervisors and report to the provincial inspectors The latter make annual reports to the Minister of the Interior, and at his summons meet as an advisory council to deliberate upon the interests of elementary education

The local administration of the schools rests upon the local civil authorities, communal burgomaster and council The law requires that a school board shall be formed in every

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commune, but small communes may unite to form a board in common The school board maintains constant supervision over the schools and reports to the communal council their condition and needs

*Statistics* — Primary instruction (*lager Onderwijs*) includes day schools for children of the obligatory age (seven to thirteen years), repetition or continuation schools; and evening schools Elementary schools for defective children and infant schools are partly supported by public funds, but they do not come under the same regulations as the ordinary schools. The following statistics pertain to the latter only.

DAY SCHOOLS	NUMBER OF SCHOOLS	ENROLLMENT			TEACHERS		
		Boys	Girls	Total	Men	Women	Total
Public . . . . .	5229	313,000	249,824	562,824	11,100	5201	16,301
Subsidized private . . . . .	1889	150,347	190,971	341,318	4997	4775	9772
Non-subsidized private . . . . .	127						
Total . . . . .	7215	463,347	440,795	904,142	16,097	9976	26,073

The 2016 private schools in the above table were classified as—Charity and orphan schools. Protestant, 30, Roman Catholic, 31, Jewish, 2 Corporate schools: Protestant, 949, Roman Catholic, 867, Jewish, 2 Private schools Protestant, 54, Roman Catholic, 10, other schools, 71

The number of children between the ages of seven and thirteen enrolled in the schools January 15, 1910, was 727,854, which was 95 per cent of the total number of children of the ages named The small number of children between seven and thirteen years of age not enrolled on the date mentioned were under the supervision of the school authorities The total number of pupils having free instruction in 1909 was 277,792 or 30 per cent of the total enrollment Boys and girls attend the same school and are instructed together

The classification of the teachers and number in each class were as follows —

### PUBLIC SCHOOLS

MEN		WOMEN	
Head teachers	3195	Head teachers	63
Teachers	7905	Teachers	5138

### PRIVATE SCHOOLS

MEN		WOMEN	
Head teachers	1148	Head teachers	535
Teachers	3517	Teachers	4240

The regulations call for one head teacher for every school, if the number of pupils is

between 41 and 90 there must be a second teacher, if from 91 to 144 a third, and for every additional 55 pupils, an additional teacher The minimum salary for head teachers ranges from 750 fl (\$301.50) to 950 fl (\$382), for teachers from 500 fl (\$201) to 700 fl (\$281.40) The salaries depend in a measure upon the number of pupils

All teachers who have reached the age of sixty-five years, and those who are mentally or physically disabled, after ten years' service, are entitled to pensions The pensions are paid quarterly, and amount to one sixtieth of the annual salary for each year of service, but must never exceed two thirds of the former salary

The enrollment in the other schools included in the primary system, 1910, was as follows —

EVENING SCHOOLS	PUPILS		
	Male	Female	Total
Public	2796	2132	4928
Private	1477	1055	2532
Total	4273	3187	7450

The pupils in the elementary evening schools are generally also attending day schools, hence the former are an adjunct to the latter.

CONTINUATION SCHOOLS	PUPILS		
	Male	Female	Total
Public	26,169	13,360	39,529
Private	5344	1374	6718
Total	31,513	14,733	46,247

The regulations require that primary schools shall be open without intermission the whole year, except on holidays. During class hours the master shall be present from the opening of school to closing; he must not engage in extraneous duties, nor absent himself except in cases of absolute necessity. Pupils must be enrolled, as far as possible, for fixed terms. An examination is held once a year at each school and qualified pupils are then promoted from the lower to the higher grades, if circumstance permit, rewards are given for diligence and merit. A deserving pupil, when leaving school after completion of the course of study, is presented with a certificate of honor. A code of regulations must be drawn up for each school, and this, whether written or printed, is displayed on the board, hung up in the classroom, and from time to time is read and explained by the master. School savings banks are maintained in nearly all schools.

*Religious Instruction* — The lessons in religion are intrusted entirely to ministers and special teachers of theology. Regular teachers must refrain from teaching, doing, or permitting anything at variance with the respect due to the religious convictions of other sects. A teacher guilty of offense in this respect may be suspended for a term not exceeding one year, but in case of repetition of the offense he may be suspended for an indefinite period from the duties of a public-school teacher. The introduction of religious instruction into common schools is no departure from the principles of the law. It has been allowed on account of the difficulties experienced by parents who cannot obtain religious instruction for their children in other suitable places, but precautions are taken so that religious teaching shall not interfere with other lessons.

*School Buildings* — The modern school buildings are commodious and well planned and the furnishings excellent. The sanitary conditions of the buildings are strictly regulated, and in a few cities the schools are supplied with bathing facilities. In fifty-eight communes medical inspection of schools is maintained.

*Expenditure for Elementary Schools* — The total expenditure (current and capital) for elementary schools amounted in 1909 to 33,790,839 fl (\$13,583,917). Of this amount the State bore 62 per cent, the communes 28 per cent; and school fees, examination fees, etc., the remaining 10 per cent. The fees are small, often as low as four cents a week, and ranging up to twenty cents. The expenditure was equivalent to \$14.18 per capita of the enrollment (957,839) in the elementary schools, *i.e.* day, continuation, and evening, and to \$2.32 per capita of the population. There were also expended 39,124 fl (\$15,728) in the support of four public, and three private schools for the feeble-minded, and

20,908 fl (\$8,405) for a school for idiots. Of the latter amount only 6000 fl were from public appropriations.

The provision of elementary instruction is completed by infant schools (*Bewaarscholen*) which are chiefly private in character. In 1910 they numbered 165 public, enrolling 30,073 children, and 1092 private with an enrollment of 102,970. This would raise the total number of children at school to nearly 18 per cent of the population.

*Normal Schools* — The need of special preparation for teachers was recognized by the Society for Public Good and was impressed upon the authorities from the time public elementary schools were first established. The school law of 1857 provided that two State normal schools should be maintained, and subsequent laws, supplemented by general regulations, have greatly increased the provision for this work. In addition to the normal schools and normal classes maintained by the State, both schools and classes of this order are established by communes and by private bodies. These receive aid from the State if they comply with the official requirements. The importance of the service is recognized by the entrance examinations and by the final examination which entitles to a diploma. The standard of qualification for directors and teachers, and in the case of State normal schools appointments to these positions, must be confirmed by the sovereign.

The courses of study and training in a complete normal school cover four years. The subjects included are writing, arithmetic, composition, the Dutch language, general and national history, geography, natural science, singing, violin and piano, principles of the French, German, and English languages, mathematics, pencil drawing, gymnastics, agriculture, theory of teaching and pedagogy. Teachers must require all students to attend religious instruction, which is given at stated hours, and also their respective churches. Books and school material are furnished free of cost. Normal schools for young men are day schools, those for young women are generally boarding schools.

*Statistics* — The salient particulars respecting these schools and classes as reported for 1910 are summarized in the tables on following page.

There were in addition to the above fifty-nine students (forty-five young men, fourteen young women) in training under the head teachers of schools. Of these seven men and one woman passed the diploma examination.

Special courses of training are maintained by the State, communes, and private associations for those intending to qualify as teachers of gymnastics, drawing, manual work, agriculture, etc. Candidates for appointment as principals of schools must pass a higher examination than that for ordinary teachers.

## NORMAL SCHOOLS

CLASS	NO OF SCHOOLS	ENROLLMENT			NUMBER OF STUDENTS AT FINAL EXAMINATION			AMOUNT OF STATE APPROPRIATION (UNITED STATES CURRENCY)
		Men	Women	Total	Men	Women	Number passed	
State	7	503	83	586	115	20	119	\$199,506
Communal	3	59	225	284	16	57	59	17,531
Private								
Protestant	12	368	371	739	68	30	47	29,000
Roman Catholic	37	492	1531	2023	100	265	263	96,379
Others	5	14	2294	2308	4	80	59	18,013
Total	64	1436	4504	5940	303	452	547	\$360,432

## NORMAL COURSES

CLASS	No	ENROLLMENT			NUMBER OF STUDENTS AT FINAL EXAMINATION			AMOUNT OF APPROPRIATION (UNITED STATES CURRENCY)
		Men	Women	Total	Men	Women	Number passed	
State	86	1556	1858	3414	314	425	463	\$208,024
Communal	4	113	240	353	14	39	44	9006
Private	129	1515	1360	2875	230	219	267	48,162
Total	219	3184	3458	6642	558	683	774	\$265,192

At Leyden there is a college for the training of kindergarten teachers, the only school of this class which is subsidized by the State. It receives from this source 3500 fl (\$1407) annually and from the city 2000 fl (\$800). In consideration of these funds, the college supplies teachers for the kindergarten schools of the city without charge. In addition to twenty-five resident students there is an average attendance of seventy day students. A noticeable feature of the training is the adaptation of the Froebelian methods and material to the conditions of child life in the kingdom.

**Secondary Education** — Secondary education (*middelbaar Onderwijs*) is organized in accordance with a law of May 2, 1863, amended by laws of June 28, 1876, and April 25, 1879. Included under this head are the burgher schools, higher burgher schools, agricultural schools, and industrial, trade, and technical schools. As in the case of primary schools, the secondary institutions may be of either public or private origin.

**Supervision** — The Minister of the Interior, the supreme educational authority, exercises his control of this department through the agency of three general inspectors who are appointed upon his recommendation by the sovereign, one of these has special superintendence of the State agricultural schools. Local committees are appointed by the commercial councils with the approval of the minister, for the immediate supervision of public secondary schools. In the case of industrial or technical schools for girls, women are generally appointed on the boards. The supervision of the higher burgher schools is committed to their respective directors.

**Teachers** — Only persons holding a diploma from a university or from a State examining board, and a testimonial of good moral standing, as required by law, are allowed to engage in secondary instruction. From this rule are exempted (1) persons who instruct children of one family only, (2) those who do not make teaching their profession but have obtained royal authority to teach without remuneration (members of religious orders). Directors and teachers of secondary instruction must receive authorization from the Minister of the Interior before they can be appointed to a position in any public or private institution, or for giving private lessons. Directors and teachers of higher burgher schools supported by the communes are appointed by the local council from a list of eligible candidates recommended by local authorities. Only male teachers are employed in the higher burgher schools. The teachers of secondary schools receive pensions upon practically the same conditions as those of primary schools.

**Scope of the Burgher and Higher Burgher Schools** — The burgher schools, intended particularly for the children of tradesmen, mechanics, and agriculturists, are divided into day and evening schools. The course of study of the day schools extends through two years and embraces the following branches: Mathematics, physics, chemistry, theoretic and applied mechanics, natural history, elementary principles of technology and agriculture, geography, history, the Dutch language, political economy, drawing, and gymnastics. In each community of 10,000 inhabitants or more, one burgher school at least must be established by the communal authorities, but the burgher day schools

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are giving place to higher burgher schools and hence the lower grade is represented chiefly by evening schools

The higher burgher schools are divided into schools with five years' course and schools with three years' course. The law requires that there shall not be less than twelve higher State burgher schools in operation in the country, and in at least five of these the course must be of five years' duration. The schools are fully equipped with laboratories, and with illustrative museums and are distinguished for the methods and thoroughness of the instruction in science and modern languages. The actual scope of the schools of this class is illustrated by the typical program given below

PROGRAM OF THE STATE HIGHER BURGHER SCHOOLS AT UTRECHT

SUBJECTS	CLASSES AND HOURS PER WEEK <sup>1</sup>					Totals
	I	II	III	IV	V	
The Mother Tongue	3	3	2	2	2	12
French	4	3	3	2	2	14
German	3	3	3	2	2	13
English	4	4	3	2	2	15
History	3	3	3	2	2	13
Geography	3	2	2	1	1	9
Communal, Prov and National Institutions			1	1	1	3
Political economy			0	1	1	2
Mathematics	7	8	6	6	3	30
Mechanics	7	6	6	4	3	26
Physics or Technology			2	2	4	8
Chemistry			2	4	4	10
Biology or Geology	2	2	1	1	1	7
Cosmography	1	1	2	2	2	8
Commercial Law				1	1	2
Bookkeeping				1	1	2
Caligraphy	1	1				2
Freehand Drawing	2	2	2	1	1	8
Geometrical Drawing	2	2	1	1	1	7
Gymnastics	2	2	2	2	2	10
Totals	30	32	32	32	32	158

<sup>1</sup> The smaller figures in the columns are from other programs. They serve to illustrate the slight differences that exist

Candidates for admission to the higher burgher schools must be at least twelve years of age, and must pass an entrance examination. Promotion from one class to a higher is made by examination, and at the termination of the course the students are examined by a government board: if successful, they receive a cer-

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tificate which has great value for those seeking commercial or civil appointments

For the latest year reported (1910) there were 81 higher burgher schools, of which 27 were State schools, 47 communal, and 7 private. The total number of pupils was 10,663, of whom 2347 were girls. For the final examination 1839 pupils were presented, the number who passed was 925, including 146 girls. The number of teachers was 1402, of these 395 had the Doctor's degree, 21 that of *candidaat* (corresponding to the French *licence*), 869 had special diplomas. There were also 15 secondary schools for girls maintained by communes or private bodies, enrolling 1646 pupils. This makes a total of 3993 girls in the secondary grade of studies.

The salaries of directors of the higher burgher schools range from 2750 fl to 4000 fl (\$904.80 to \$1608), salaries of teachers from 1000 fl (\$402) to 3050 fl (\$1225). The total expenditure for the schools of this class in 1909 was 1,922,770 fl (\$772,954). Of this amount 12.6 per cent was covered by State appropriation; the balance, by communal appropriations and fees.

The diploma of the higher burgher school is required as a preliminary qualification for engineers, architects, and technologists who aspire to enter the State service. The diploma admits to the polytechnic school at Delft, to the special course of the Indian service schools at Delft and Leyden, to the military school at Haarlem, and to the artillery course at Delft.

**Industrial and Technical Schools** — The higher burgher schools are the only institutions comprised in the division of *middlebaar Onderwijs* which are intended for general education of the secondary type. The term, in fact, pertains to administrative rather than to scholastic relations and the great proportion of schools belonging to this department are industrial or technical in character. Hence they may be considered as forming part of the system of technical instruction. Many of these schools are burgher evening schools, others belong to special classes of technical schools. As regards control they may be public, *i.e.* established and maintained by communal authorities, or private. In any case they may receive State subsidies. The scope and variety of the schools of industrial arts are indicated by the following particulars of those maintained in two towns selected from a list of sixty-four institutions:

COMMUNE	NAME OF SCHOOL (ENGLISH EQUIVALENT)	NO OF TEACHERS	NO OF PUPILS
AMSTERDAM	(1) Evening drawing school for manual workers	27	554
	(2) Industrial school of the society of workers	13	106
	(3) School of drawing for the artistic industries	13	350
	(4) Seminary for mechanics	21	175
	(5) Industrial school for young women	24	282
HERTOGENBOSCH	(1) Royal School for useful and fine arts	11	219



In all the schools of this class, drawing occupies the chief place, mathematics and the mother tongue come next in importance, other branches respond to local needs.

Of the more highly specialized schools, the Trade School (*Ambachtsschool*) at the Hague ('s Gravenhage) may be taken as a typical example. It was established in 1873 by an Association for the "Advancement of the Building Trades." It receives municipal support and is amply equipped for the accommodation and instruction of 300 boys. To the general subjects mentioned above, the Trades School adds special courses in wood and metal work and construction. The program covers three full years.

The specialized schools include eleven schools of navigation and ten for training fishermen. Commercial education is provided for by courses in the higher burgher schools and by special classes maintained by private societies, chambers of commerce, etc.

The schools of household industry for girls form one of the most important groups in this department. They number thirty, established by communes or by private associations and all but four subsidized by the State. Nineteen of the number are day schools, the remainder, generally, have both day and evening sessions. The duration of the course of training varies from one to three years, the range of fees is from 25 francs to 650 francs (\$5 to \$130) a year.

Included in this same administrative department are the communal institutions for the deaf-mute at Rotterdam and Groningen and one for the blind at Amsterdam, all subsidized by the State. The children committed to their charge receive their living and tuition gratuitously, excepting those whose parents are able to meet the expenses. "St. Michael's Gestel" is an institution for the deaf-mute maintained by the Catholic Church, but receiving state appropriations.

The department of *middelbaar Onderwijs* includes also several schools of a professional character which do not, however, require the same order of preliminary training as the university faculties. Among these schools are (1) The State Academy of Applied Arts at Rotterdam; (2) the state schools for the training of drawing teachers at Amsterdam and the Hague; (3) state training schools for midwives at Amsterdam and Rotterdam; (4) military and naval schools.

**Agricultural Education** — The system of agricultural education in the Netherlands, which has attracted wide attention, forms a subdivision of this same department (*middelbaar Onderwijs*), although its transfer to the department of agriculture has been under consideration. In all matters relating to agricultural education the government is advised and assisted by the general Inspector of Secondary Education in charge of agricultural schools.

The system includes (1) state establishments, (2) courses of instruction, theoretic and practical, maintained by the Provincial Agricultural and Horticultural societies, with the assistance of state subsidies. The state establishments are (1) the Agricultural College at Wageningen, (2) the Agricultural and Horticultural winter schools, (3) the Veterinary College at Utrecht, (4) Instructors of Agriculture and Horticulture appointed by the government in the various provinces, to give instruction in their respective subjects.

The well known State Agricultural College at Wageningen consists of four sections, the Agricultural School, the Horticultural School, the High School, the High School for Agriculture and Forestry. An important feature of the institution is the thorough course in colonial agriculture intended for students who desire to go out as assistants or managers of sugar, coffee, tea, and other plantations in the colonies (Java), and who require, in addition, an elementary knowledge of colonial agriculture, laws, and customs. The college is controlled by a board consisting of the directors of the four sections. One member of the board is appointed by the Government as president with the title of *Hoofd-directeur* (Chief Director). He acts as the executive officer of the college. There are forty professors and teachers and an average of 250 pupils. The annual expenses of the college are about 1,100,000 fl. (\$442,200).

**Higher Education** — The present system of higher education (*hoger Onderwijs*) is based upon the law of April 28, 1876, amended and modified by laws of May 7, 1878, June 28, 1881, June 15, 1883, and July 23, 1885. The institutions included in this department are either of public or private origin. The former are established and maintained by communes and the State, separately and conjointly, the latter may be subsidized from public funds. In accordance with the law of 1876, the public institutions are the gymnasia and Latin schools, the three state universities, and the communal university of Amsterdam, the denominational "seminaria" and other private institutions answer to the universities, but only the latter can confer academic degrees. The fundamental law established the principle of liberty in higher education, but all persons engaged in this service are subject to supervision by the educational authority. Foreigners must obtain authorization from the sovereign before they can be employed as teachers of the higher branches, in either public or private institutions.

*The Gymnasia* — The classification of the gymnasia under the head of higher education is a peculiarity of the Netherlands system which follows historic precedents. The gymnasia have replaced in the modern system the classical schools which were preparatory to the universities. The higher burgher schools, classed as secondary, start at the same level as

the gymnasias and admit pupils at the same age, i.e. twelve years. To a certain extent the courses of the two classes of schools are parallel, as is shown by the programs. But the graduates of the higher burgher schools cannot enter the university faculties without at least a year's preparation in Latin and Greek. Authorities in Holland are divided in their opinion as to the wisdom of maintaining this distinction of degree between the burgher schools and the gymnasias, but so far the advocates of Latin and Greek as affording a higher order of intellectual discipline than the modern studies have prevailed.

The law requires that every community of over 20,000 inhabitants shall equip and maintain a gymnasium; other communities may take the same action. The supervision of each gymnasium devolves upon a communal council, styled College of Curators. The head

of a gymnasium, the Rector, and also the Co-Rector must possess the doctor's degree in classical philology; the professors must have either a university diploma or certificate from the State Examining Board. Appointments to these positions are made by the communal authorities; if the institution receives a state subsidy, the choice must be approved by the Minister of the Interior. The professors are present simply for their class instruction, and their salaries are regulated by the number of hours' instruction which they must give. The government inspectors report annually to the Minister of the Interior as to the condition of the public institutions of this order. Private gymnasias exist, also under authorization from the Minister, to whom they must send an annual report. The public gymnasias follow an official program, which is given below. The private institutions are independent in this respect.

CURRICULUM OF THE GYMNASIA

SUBJECTS	CLASSES AND HOURS PER WEEK									TOTALS		
	I	II	III	IV	V			VI				
					Hum <sup>2</sup>	All	Real <sup>3</sup>	Hum <sup>2</sup>	All	Real <sup>3</sup>	Hum	Real
Greek	8 5 } <sup>1</sup>	6	6	7	2	4		3	4		32	27
Latin	8	6	6	6	3	5		4	4		42	35
Dutch	3	2	2	2		2			1		12	12
French	4	2	2	2		1			1		12	12
German		0 <sup>1</sup> 3 }	2	2		2			1		9	9
English			3	3		2			1		9	9
History	4	3	3	3	1	1		1	2		18	16
Geography	3	2	1						1		7	7
Mathematics	4	3	3	3		2	3		2	3	17	23
Physics						2			2	1	4	6
Chemistry							1			1		2
Natural History	2	2					2			2	4	8
Total	28	28	28	28	27	28	28	27		26	166	166

<sup>1</sup> Eight hours per week for part of year, five hours for remainder. Similarly as regards 0 and 3 in Class II.

<sup>2</sup> Extra for humanists.

<sup>3</sup> Extra for "real" students.

*Statistics* — There is a public gymnasium in each of the thirty principal cities of the kingdom and thirty-one additional private gymnasias. The former had in 1910 a total of 2250 students (1647 young men, 603 young women). The private gymnasias had in the same year 2048 students. Altogether there were 4298 students in this stage of higher education. The teaching force of the public institutions numbered 456 professors; of these 240 had the doctor's degree, fifty-five the title of docent, the remainder had certificates from state examining boards. The expenditure for the public gymnasias in 1910 amounted to 907,594.54 fl. (\$364,853) to which the State contributed 262,319 fl., or 28 per cent.

*The Universities* — There are three state universities, Leyden, Utrecht, and Groningen, comprising each the five faculties of theology, law, medicine, science, letters, and philosophy. The internal administration of each university

is in charge of a college of curators, the members of which are commissioned by the sovereign. The university senate, which determines the scholastic arrangements, consists of members representing the several faculties, the choice being in each case sanctioned by the Minister of the Interior. The curators through their secretaries make detailed reports of the affairs of their respective institutions to the Minister of the Interior and submit each year an estimate of expenditures for the coming year. The Minister, in turn, presents the estimate to the legislature and disburses the appropriation allowed.

Professors in the state universities receive their appointment from the crown and may be suspended or dismissed by the Minister for incompetency or misdemeanors. On reaching the age of seventy, university professors are pensioned. The amount of pension is determined by the number of years of service, but

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it may not exceed the sum of \$1206 per annum. Professors in the higher institutions belonging to the Catholic Church are also pensioned by the government.

STATISTICS OF THE UNIVERSITIES, 1910-1911

UNIVERSITY	No OF STUDENTS	NUMBER OF PROFESSORS AND TEACHERS	EXPENDITURE	
			Fl	U S Equivalents
<i>State</i>				
Leyden	1195	76	1,119,280	\$482,102
Utrecht	1082	69	1,061,774	426,833
Groningen	551	51	817,519	328,643
<i>Municipal</i>				
Amsterdam	1139	109	632,500	254,265
Total	3967	299	3,711,053	\$1,491,843

The faculty of medicine has the largest registration in all the universities. Leyden is particularly distinguished for law, which claims the greatest number of students after medicine. Utrecht leads in theology. The Doctor's diploma, which is conferred by the universities, carries mention of the Faculty in which the student has completed his studies.

The universities all have extensive libraries and are well equipped with laboratories and museums. Clinical facilities are afforded the students of medicine, in hospitals connected with the universities.

The provision for higher education is completed by a private university at Amsterdam, and about twenty-six denominational institutions in various places, some of which receive subsidies from the State. They are designated as seminaries, colleges, Latin schools, training schools. Their aim is generally the training of young men to serve as ministers in their respective churches and as teachers of higher branches.

**The Polytechnic School** — The Polytechnic School at Delft affords the highest order of technical training for engineers, architects, and architectural engineers. The number of students in 1910 was 1235, including 705 not following a complete course. The faculty numbered fifty-four professors, there were also six private docents and eight assistant professors. The expenditure was 680,803 fl (\$273,683). Every student of the polytechnic school pays \$80 in advance for the annual course, which entitles him to all the advantages of the school. Those taking elective studies pay only for the subjects chosen, at the rate of \$4 per annum for each study, with one recitation per week. For four or more recitations per week the fee is \$16 per annum for each study. The students who have taken the course of the polytechnic school at Delft, and wish to go to the East Indies as government officials, prepare themselves for such positions by taking a two or three years' course in the school at Leyden for the training of officials.

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in the East Indian service. Here they are taught the Java, Malay, and Boegine languages.

The instruction is under the general supervision of a college of curators, and the head master and teachers are appointed by the sovereign. The yearly program arranged by them must be submitted to the Minister of the Interior for his approval. The total expenditure for higher education in 1909 was 5,773,138 41 fl (\$2,320,802) derived as follows —

	Fl	PER CENT
State appropriation . . .	4,634,867 23	80.2
Province of North Holland	10,000 00	0.3
Communes . . . . .	1,128,271 18	19.5
	5,773,138 41	

**Summary** — The system of education in the Netherlands is marked throughout by the harmonious action of somewhat incongruous elements combined in a rather loose organization. The effective working of the system is due, first, to the inspection service, second, to the high standard of the teaching force, third, to the examination tests which meet the student at every important stage of his progress. It is noticeable further that while the highest order of intellectual discipline is fostered, provision is made for training every aptitude which finds its exercise in the varied industries of modern life.

A. T. S. & C. H. P.

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**NETHERLANDS, COLONIES OF, EDUCATION IN THE** — With the exception of the British Empire of India, the colonial possessions of the Dutch in Malaysia form the greatest empire of dependent people in the world. This territory includes the major part of the two largest islands of the world, New Guinea and Borneo, the richest and most populous island, Java, and the famed and long-coveted "Spice Islands," the Moluccas. Four fifths of the entire Malay race inhabit these islands, and nearly three fourths of the entire number, or about 30,000,000, are on the island of Java, which is the seat of the Dutch administration. The smaller islands of the group are inhabited by black people. Arab settlements are found in important ports like Batavia, Samarang, Surabaya, and Makassar, or journeying as traders and proselyters. Through their religious faith, which they have communicated to the Malay race, they possess great influence over the entire population. The other important foreign element is the Chinese, who are settling in nearly all the towns of the archipelago, although restricted as to dwelling and place of business to certain quarters. They number about half a million, the majority of them residents of Java.

Until near the middle of the last century the education of the natives received little attention. But in 1848 after the Dutch States-General obtained control of the government of the colonies, an appropriation of 25,000 fl was made for native education. In 1854, the *Regeerings Reglement* provided that the governor-general should establish schools for the native population, but the provision was vague and practically inoperative for many years. At last interest awoke, the Department of Education, Worship, and Industries was created in 1868, and about 1872 the organization of schools for the native people began in earnest. In 1884 a reaction set in and progress ceased.

But a reorganization of the education work was finally seen to be necessary, and in 1892 and 1893 there was sanctioned and put into effect a scheme of native instruction which had been proposed some years earlier by the director of education, Mr W. P. Groeneveldt. Under this scheme two kinds of public instruction are maintained, one patterned upon the European system (*Europeesch Onderwijs*), the other native education (*Onderwijs voor Inlanders*).

**European Schools** — Schools for the European population have long been provided. Under the new conditions they are more closely organized and are assured of government supervision and support. Their characteristic features are similar to those of the schools in the mother country. The public lower schools, in 1909, numbered 190 with 732 European teachers and 21,714 pupils. Of these 9120 were boys, and 7371 girls of European birth, 3693 were natives, 3190 being male, 1530 were Asiatic foreigners, largely Chinese, 1101 being male. There are also 40 private European lower schools aided by the government, with over 5000 pupils, mostly girls.

The rapid increase of native attendance in the European schools was one cause of the establishment of the native schools. Compared to the number of European or mixed European people for whom the former schools are created, the system must be regarded as exceedingly liberal. This population was reckoned a few years ago at 80,000, and its children were in public or private primary schools to the number of over 20,000, or more than 25 per cent of the corresponding population.

For secondary education of the European type, there are several schools, of which the most important is the Gymnasium William III at Batavia. This institution has a five years' course corresponding to that of the higher burgher schools in Holland, and in addition a special course preparing students for the civil service. The studies pertain to the languages, the geography, and ethnology of the Indies. Similar schools are founded at Surabaya and Samarang. The Queen Wilhelmina School is the name applied to a group of schools at Batavia giving secondary instruction of a technical character.

**Native Schools** — The schools for Europeans are all open to natives, but they reach only a very small proportion of them. The scheme that was put into operation in 1892-1893 provided for a system of lower primary schools for natives only. These schools are of two classes, first and second. The latter offer a four years' course only in the common branches, instruction being given in the native dialect and Malay. The first-class lower school offers a six years' course and, besides instruction in the native dialect and Malay, gives three years' instruction in Dutch. The introduction of Dutch marks the return to a policy abandoned

twenty years ago. The language has proved indispensable as a basis for higher training, especially on administrative, technical, and professional lines, as well as for the intellectual development of the native. The authorities are convinced that the diffusion of the Dutch language among the peoples of their great Empire will be a political factor of the highest value, hence they have deliberately given up the former policy of discouraging its use in native education.

These graded schools will be located chiefly in the more populous places, but in 1906 a plan was adopted for establishing rural schools, *desa* schools, within reach of every hamlet, for it is admitted that until the rural population is taught to read, write, and keep accounts the mass will remain incapable of further advance. In accordance with this plan, schools are being rapidly established in all the islands. It is estimated that Java alone will require 30,000 *desa* schools. This development will call for an increased number of teachers from Holland and renewed efforts for the training of native teachers.

*Normal Schools* — In the reaction of 1884 the number of normal schools for natives was reduced to four, situated respectively at Bandoeng and Probolinggo in Java, Fort de Kock in Sumatra, and at Ambona, a fifth school was added at Djokjakarta in 1897 and a sixth at Oenarang in the residency of Samarang in 1905. In these schools the government furnishes free instruction to students and provides them with furnished rooms and an allowance of 10 fl (\$4.20) a month for food and clothing. The course of study in the normal schools is arranged for five years and comprises the Dutch language, Malay, and one other native tongue, arithmetic, geometry, land measuring and surveying, including leveling and waterways, geography, history of Netherlands-India, natural sciences, including elementary physics and meteorology, plant and animal life, writing in Arabic, in Javanese, or other native characters, and in Roman letters, music, and very thorough work in drawing, which is pursued for five years. In the fourth and fifth years instruction is given in pedagogy and school administration, the sixth and last year is devoted to general review and to practice teaching in a well-organized training school.

*Schools for Native Officials* — Another important feature of the system is the establishment of training schools for native officials. The idea is not new, as schools of this class were created as early as 1878, but the entire character of the training has been changed, and to the four older schools, three new schools have been added since 1909. In several of the schools a normal department for training native teachers is included, and in the higher section the student pursues jurisprudence, public and administrative law of the Indies, political economy, land surveying, waterways, line and

map drawing. In 1909 a professional school intended to prepare native magistrates was opened at Batavia. It forms with the medical school at Batavia, which was reorganized in 1902, the nucleus of a native university.

*Chinese Schools* — Special mention should be made of the Dutch-Chinese schools intended for the children of the extensive Chinese population by whom the practical value of education is fully realized as shown by their attendance upon the European schools. Such schools were organized in 1908 at Batavia, Samarang, Surabaya, and Makassar. In 1909 seven more were opened, at Menado (Celebes), Bandjermassin (Borneo), Singaraja (Bali), Padang (Sumatra), and at Malang, Surakarta, and Bandoeng, Java. These schools have the same organization and offer the same course as European lower schools.

*Cost of Education* — The government expenditure for public schools in 1907 amounted to 2,678,353 fl (\$502,252). The estimated cost for 1910 was 3,570,200 fl (\$2,158,820), including subsidies to private schools. These sums do not cover the cost of construction of new buildings, which, except for *desa* schools, is borne by the State, and will amount in the next few years to large sums annually.

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**NEUCHÂTEL, UNIVERSITY OF, SWITZERLAND** — Although the present university was only created in 1909, the municipal and cantonal authorities have for the last two centuries striven to provide an institution of higher learning. In 1659 a proposal was made to the town council to appoint instructors and professors to teach philosophy. In 1712 the council ordered four ministers to draw up a plan for the appointment of a professor of philosophy, and in 1731 Louis Bourget was appointed to this position. In 1737 a professor of literature was appointed. But there was as yet no definite institution. It was not until 1830 that serious efforts began to be made to establish an academy, inspired by the general movement to provide higher education in Switzerland. In 1838 it was proposed to found an academy to give courses preparatory to the universities and professional studies. In 1839 public lecture courses were given, and in 1841 the academy was established with seventeen professors in arts, science, and law, and additional chairs were provided in the next few years. Only the faculties of arts and science granted degrees. It is interesting to note that both Agassiz and Guyot (*qqv*) were members of the teaching staff at this time.

The academy, however, was closed in 1848, only to be reestablished on a more permanent footing in 1866, with the same three faculties, and gymnasiums or secondary school departments. The latter were organized into a cantonal gymnasium in 1872. In 1874 a faculty of theology was established, and 1883-1884 the faculty of law was empowered to grant degrees. In 1878 a course in French for foreigners was organized and later was converted into the *Séminaire de Français moderne pour Étrangers* (1892). In 1886 a building was erected for the academy, and in 1887 the first laboratories were added. But in spite of the rapid progress, the academy did not yet possess the same rank as other Swiss universities and still continued to give what properly belonged to the secondary schools. In 1894 a reorganization took place, and this deficiency was remedied to meet the standards generally prevailing in the country. In 1896 the laboratories were increased in number, and various collections were acquired. In 1909 the academy was raised to the rank of the university, with faculties of letters, science, theology, and law. One year's work is given for medical students. The *Séminaire* for foreign students has grown in popularity and attracts many foreigners. A *Diplôme pour l'Enseignement du Français moderne à l'Étranger* is given after a course of two semesters in the *Séminaire*. The enrollment in the summer semester of 1911 was 226 matriculated students and 76 auditors.

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**NEURASTHENIA** — According to Beard, the first to describe the disease, "neurasthenia is a chronic functional disease of the nervous system the basis of which is impoverishment of nervous tissues in excess of repair," and, according to Ziemssen, "it is a functional weakness of the nervous system varying from the slightest degree in certain localities to an entire loss of strength in the whole nervous system." No disease is as prevalent as neurasthenia, if with it we group its mental counterpart which is discussed under the title psychasthenia (*q v*). Although neurasthenia has been considered a typical American disease, it is not confined to those Americans who lead fast, energetic lives, but is found at all ages and among all civilized races.

Neurasthenia is a most insidious affection, since the symptoms resemble so much those which are to be found in normal children and adults as the result of ordinary work and fatigue. In fact, the symptoms in neurasthenia are principally those corresponding with fatigue and exhaustion. The individual

who suffers from neurasthenia has these symptoms, extending, however, over comparatively long periods, and it is because of the long-continued character of the symptoms that we consider them a disease.

The symptoms in neurasthenia are both subjective and objective, but it is upon the subjective ones that the diagnostician must depend for his chief information. The individual feels worried, he has a feeling of hopelessness or sometimes a simple and vague depression similar to that which is found in melancholia. Associated with these we find obsessions or fixed ideas. In connection with these subjective feelings we find an apparent lack of strength; there is less movement on the part of the individual and when movements are produced, they soon lead to weariness or fatigue, usually the appetite fails and there is a loss in weight. As an evidence of the lack of control of the nervous system, we find variations in the vasomotor system. The heart also is affected, we find cardiac palpitations and quickenings, sometimes a weakening of the force. In another field we find hyperesthesia, which is evidenced by restlessness or nervousness, the individuals are irritated by the slightest stimulation; parasthesias are frequent (feelings of itching and of burning, *e g* animals in abdomen, etc.). Headache is common, sometimes localized above the eyes, but most often at the occiput and extending down the spine along its entire length. We find on the motor side, a slowing in movement (retardation), the individual does not want to move, he takes a long time to start a particular movement, and when the movement is performed it is usually slow and of little force.

In the disease, fatigue is commonly noticed in the morning after sleep (morning tiredness). This is replaced after some hours with the ordinary feelings, so that the individual in the morning is less capable of carrying on work than in the latter portion of the day. Neurasthenia is especially common in women and children. At times when the demands upon the nervous system and the body are greatest, it is most likely to occur, *e g* at puberty. Although neurasthenia may arise in an otherwise healthy individual, it is usually to be found in individuals of nervous type, and in those upon whom hereditary influences are acting. The treatment of the disease is mainly that of rest.

Since many of these conditions start as the result of excessive stimulation and of excessive work during periods of strain, it will be understood that the condition is to be found commonly associated with the periods of growth and of great functional activity. At such times children should be protected as far as possible from excessive fatigue, and they should be permitted to carry on a minimum of school work, lessons should be short and easy and long periods of rest should be taken between

them Such children must be kept out of doors as much as possible, and should be compelled to take a mudday rest and go to bed early The time lost in this way is really a gain because it prevents a general breakdown which may require a complete cessation of all activity for six months or a year The permitting of such children to try for prizes in school is hygienically criminal Children who show symptoms of fatigue beyond the normal from the work of the school day should be referred to the school physician for a careful examination Their condition should be reported to the parents with a recommendation regarding the stopping of the school work

The neurasthenic state is commonly found as a prodrome to many mental diseases Whenever the symptoms are found they should be considered with suspicion, because if they are not neurasthenic they are generally the symptoms of disease of a grave character It should be noted that the feeling of early weariness and of fatigue with depression are commonly early stages in a number of diseases, such as measles, scarlet fever, etc., and the reference by the teacher of such a pupil to the school physician will sometimes help to prevent an epidemic in her class or in the school

S I F

**NEUROLOGY** — See MEDICAL EDUCATION, PHYSIOLOGY

**NEURONE** — See NERVOUS SYSTEM

**NEUROSIS** — A term used to designate a nervous state In combination, as psychoneurosis, to indicate a disease that has nervous, in contradiction to mental, symptoms in addition to the mental Among the best known psycho-neuroses may be mentioned epilepsy, (*q v*), hysteria (*q v*), and neurasthenia (*q v*)

S I F

**NEVADA, STATE OF** — Organized as a territory in 1861, and admitted to the Union as the 36th state in 1864 It is located in the Western Mountain Division, and has a land area of 109,821 square miles. In size it is about the same as the combined areas of the states of New York, Pennsylvania, New Jersey, and Maryland For school administration the state is divided into 5 supervisory districts, and these in turn into 15 counties and about 325 school districts In 1910 Nevada had a total population of 81,875, a school census (5-18 years) of 12,319, and a density of population of 0.7 per square mile Though exceeded in size by but five states, Nevada has the smallest population and the smallest number of people to the square mile of any state in the Union

**Educational History.** — The first territorial legislature in 1861 enacted as the first school

law one which contained all the provisions necessary for the beginning of a state system of schools, and laid down the fundamental outlines of the subsequent school system of the state. To a Territorial Superintendent of Public Instruction, to be elected in 1862, was given the general oversight of the educational system of the state To assist him, an *ex officio* State Board of Education, composed of the Territorial Superintendent, Territorial Auditor, and Territorial Treasurer, was created For each county a county superintendent of common schools was to be elected for two-year terms, to have general oversight of the schools of his county, and the usual administrative duties He was to divide his county into school districts, for each of which three trustees were to be elected, to have general supervision of the schools of the district They were to provide for the school, elect the teacher, take a school census, levy taxes, and visit and inspect the schools A permanent state school fund, to be created from the sale of lands, was provided for, and fines were to be added to it The system as thus early outlined has persisted in its main outlines until within the last ten years

By the constitution of 1864, under which the territory was admitted to the Union, and which, with minor amendments, still stands, rather full provision was made for the future state school system The legislature was enjoined "to promote intellectual, literary, scientific, mining, mechanical, agricultural, and moral improvement" and a uniform system of schools, with a term of six months as a minimum, was to be established in each school district of the state A State Superintendent of Public Instruction was ordered to be elected, all school lands were declared to be an inviolable trust, sectarian aid was forbidden, a state university was to be established, and a state tax provided for it, and power to establish a normal school was granted The first school law under the new constitution, enacted in 1865, carried these provisions into effect, and in addition created a State Board of Education, county superintendents for the counties, and county boards of examination, composed of the county superintendent and two persons appointed by him The revisions of the school laws made in 1873, 1877, and 1879, made only minor changes, retaining the essential outlines of the system The law of 1873 contained the first compulsory school law for the state The State Teachers' Association was first organized in 1880.

The University of Nevada was created in 1873, to be located at Elko A state normal school was also created in 1887, to be a department of the State University

As a state, Nevada has had a slow and irregular growth, and this has influenced the development of the state's educational system At the time of the admission of the state, the

school census, 6-18 years of age, was but 2,601. This increased slowly up to 1880, when the school census reached 10,592. After this a slow decrease in school census set in, owing to the decline in importance of the mining interests. After 1890 this decrease became a little more marked, the lowest figure, 8,996, being reached in 1898. Since 1903, through the opening of new mines of importance, the building of a number of new railway lines, and the development of agriculture through irrigation, the state has begun to increase in population more rapidly than at any time in its previous history. The number of school census children is now close to 12,500.

It is only since the recent increase in population and business that any real interest in educational legislation and development has been shown. During the period of decline and stagnation little was done, and some backward steps were taken. In 1887 the county superintendency and the county boards of examination were abolished, and the county district attorney was made *ex officio* county superintendent, but without salary. This virtually abolished all supervision. For the twenty-five years between 1880 and 1905, one State Superintendent after another recommended new legislation and asked for a new school code in vain. Minor changes were made from time to time, mostly relating to teachers' certificates, but no legislation of a fundamental or markedly progressive order was obtainable. It is practically only since 1907 that any marked progress has been made. State Teachers' Institutes were created in 1893, and state aid was granted to them. In 1895 a county high school law was enacted, but it was more than ten years before more than one school was established under this law. In 1903 the Virginia City School of Mines at Virginia City was created by the State, and placed under the control of the State Board of Education. In 1905 a public school library law was enacted.

In 1907 and 1909 important educational legislation was enacted and in 1911 a new School Code. These are embodied in the present system.

**Present School System** — At the head of the system is an *ex officio* State Board of Education, consisting of the Governor, the President of the State University, and an elected State Superintendent of Public Instruction. The State Board of Education must meet at least twice yearly, prescribes the course of study to be followed in all the schools of the state, appoints all Deputy State Superintendents, on recommendation of the State Superintendent, and may similarly remove the same for cause, prepares all questions for the examination of teachers, and grants all teachers' certificates; determines the amount of money to be apportioned to the school district library funds; approves all apportionments to districts from the

State Emergency School Fund, appoints trustees for all free county libraries established, and acts as a Board of Trustees for the State School of Mines at Virginia City. The State Board also acts *ex officio* as a State Normal School Training Board, for all high schools offering normal training, and determines the qualifications for admission, establishes the course of study, grants the diplomas of graduation from the normal course, and makes rules and regulations for the management of such schools. Together with four others, principals or superintendents of schools, to be appointed by the Governor, the State Board unites to form a State Textbook Commission, which adopts all textbooks for the state for four-year periods, and contracts with publishers for the same.

The State Superintendent of Public Instruction is elected for four-year terms, and receives a salary of \$2,000 a year and an allowance of \$400 for traveling expenses. On his recommendation the State Board appoints a State Deputy Superintendent for each of the five supervisory districts into which the state is divided. They receive the same salary, a traveling allowance of from \$800 to \$1,200, and from \$400 to \$600 for office expenses. The State Superintendent is required to visit each county at least once each year, to prescribe forms, to make minor rules and regulations, to apportion the school funds to the districts, to approve all schoolhouse plans, to recommend the consolidation or enlargement of school districts, to make arrangements with California or Utah for the schooling, at state expense, of all deaf, dumb, or blind children in the state. He also must hold a State Teachers' Institute biennially, for which \$200 is appropriated by the state, and a district institute in each supervisory district in alternate years, for which \$150 is appropriated. He may also hold county institutes if the county commissioners approve, and will pay for the same. He must make a biennial report to the Governor, and edit and print the school laws.

Each deputy superintendent must be a resident of his district, must hold a high school teacher's certificate, must have had forty-five months' experience (nine in Nevada), and must devote his entire time to school supervision in Nevada. He must visit each school in his district at least twice yearly, examine all records, advise teachers, hold teachers' meetings, confer with trustees, examine all records and accounts of the district, and may suspend teachers or certificates for cause. He also acts as a deputy examiner at teachers' examinations, as a member of the State Board of Educational Examiners, and assists the State Board in preparing the state course of study for the schools. He attends meetings of the State Board, to advise as to affairs in his district, and acts for the State Superintendent in educational matters as directed.



There are no county school officials, except county boards of education in such counties as have voted to establish county high schools. Where this has been done, a county board of three is elected to manage the high school, under the supervision and direction of the State Superintendent and the State Board of Education, and their powers are about the same as those of district boards of school trustees. For each school district a board of three district school trustees is elected, one for two years and one for four years, at each biennial election. To these boards are given the power to employ teachers and to fix their salaries, to visit the schools, to enforce the course of study, and the adopted textbooks, to provide supplies and apparatus, to suspend and expel pupils, to enforce discipline and sanitary regulations, to provide for the schooling of indigents, to appoint a school census marshal each year, and to levy an annual district tax, up to 25 cents, for maintenance. If the district has 300 children, a kindergarten may be established, if 10 or more teachers, a superintendent may be employed, and if 1500 census children, a board of trustees, numbering 5, is to be elected. Vacancies, if not filled by election, are filled by appointment by the Deputy State Superintendent for the district.

**School Support** — The state received the 16th and 36th sections of land for schools on its admission to the Union. In 1882 these lands, less a small amount sold, were exchanged with the government for 2,000,000 acres, to be located by the state on any free government land. The 500,000 acres of land granted to new states, the 5 per cent of public land sales, and all fines collected under the penal laws were also added to the permanent state school fund. This fund now amounts to approximately 2½ million of dollars, and the income, due to the small state school census, gives a large per capita apportionment. The salaries and expenses of the state office and deputies, the Emergency Fund, and the library fund, are all deducted before apportionment. In addition a state school tax of 10 cents on the \$100 (raised from 6 cents in 1911) is levied and added to the income from permanent funds. The distribution is made semi-annually to the counties on the basis of census children, 6–18 years of age. State money can be used only for teachers' salaries. A county tax of from 15 cents to 50 cents (average 25 cents) is also levied for contingent expenses, and a special district tax up to 25 cents may also be levied. All state and county school money is distributed to the districts within the county on the basis of 70 per cent on teachers (1 teacher calculated for every 30 census children, or fraction thereof) and 30 per cent on school census. Also a sum of from \$3 to \$5 per teacher and, in addition, from 5 cents to 10 cents per census child, as determined by the State Board of Education, is apportioned for school library purposes.

**Teachers and Training** — The state has about 500 teachers, few of whom are paid less than \$70 per month, and salaries of \$100 and \$110 are common. Primary, grammar, and high school certificates are granted upon examination, though the primary certificate is fast passing out. The standards for these examinations are high. A State Board of Educational Examiners, composed of two from the State Board of Education, the five deputy state superintendents, and three others appointed by the State Superintendent, examine and grade all examination papers, and report to the State Board of Education, which then grants the certificates to teach. About 40 per cent of the teachers certificated for the state have been certificated on credentials (normal school, college, or state life diplomas) from other states. The state is relatively liberal in the matter of inter-state recognition of diplomas and credentials from other states. The state normal school is a department of the University of Nevada at Reno. The state has also recently begun the establishment of normal school classes in the high schools of the state for the training of teachers for the rural schools. This course must be thirty-six weeks long, the candidates for entrance must have a high school diploma or a primary teacher's certificate, and at graduation a three-years' certificate, not renewable, and good in only a one-room school, is granted.

**Secondary Education** — Within recent years there has been a marked gain in the number of high schools in the state. In 1890 there were 7 district high schools in the state, in 1900 there were 9 district high schools and 1 county high school, while in 1910 there were 11 district and 10 county high schools. The number of secondary school students has increased much faster than the number of secondary schools, and practically all of the schools now have a four-years' high school course. County high schools may be formed in any county by petition of one fourth of the voters, and a majority vote at an election. For these a county board of education of three is elected, who manage the school, under the direction of the State Board of Education, and determine the annual tax for the same. Such schools are open to any eighth-grade graduate in the county.

**Educational Conditions** — Educational conditions in the state are now very good. The state system of supervision and inspection is efficient, there is a higher degree of centralization of authority than is found in many states, the school laws as a whole are good, and good provisions for the education of all children are made. Whenever five children can be found near enough together to maintain a school, the state sees to it that one is provided. The standards for teachers' certificates are higher and better than in most eastern states, the salaries paid are good, and the instruction

## NEVADA, UNIVERSITY OF

offered is very good, considering the sparse population. There are a number of good high schools in the state. School libraries exist in each school district, and free textbooks may be provided by vote of the district. A six months' term of school is mandatory on all districts, and eight months if the funds at hand will provide it. The educational obligations of the state are well recognized in the large state and county taxation for education. Four cities and towns have city superintendents. Of the total population, 83.7 per cent live in rural districts.

E. P. C.

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## NEVADA, UNIVERSITY OF, RENO, NEV

— The State University and the only institution of higher learning in the state. It had its inception in the Federal land grants to Agricultural and Mechanical Colleges and Universities. There was no immediate demand for such a college, and it was not until 1873 that the State Legislature provided for its establishment at Elko. The University was opened in 1874 and existed for twelve years as a preparatory school with but few pupils. In 1886 the school moved to Reno, where after a lapse of one year it opened with the title University. Since then the growth has been gradual. At present the University comprises the following schools and colleges: college of arts and science, college of agriculture, including the schools of agriculture and of domestic science, the college of engineering, including the Mackay school of mines, the school of mechanical engineering, the school of civil engineering, and the college of education. The University campus covers an area of 49 acres, on a site which gives a commanding view of the city, valley, and mountains. The buildings number 15, all built by the state except the Mines Building, the gift of C. H. Mackay. The value of the University grounds and buildings is \$78,197 for grounds, \$528,476 for buildings, of which sum \$72,266 is for dormitories. The total receipts for the biennial period 1911 and 1912, according to the regular appropriations, exclusive of additions and buildings, will be \$412,180, of which sum \$220,000 is from Federal grants and \$192,130 from state appropriations. The enrollment of University students in 1912 was 223. The faculty numbers 48.

G. O.

**NEVIN, JOHN WILLIAMSON** (1803–1886) — College president; was graduated from Union College in 1821, and the Princeton Theological Seminary in 1826. He was professor at the Western Theological Seminary, Allegheny, Pa., 1820 to 1840, at the German Reformed Theological Seminary, Mercersburg, Pa., 1840 to 1853, and president of Franklin

## NEW HAMPSHIRE, STATE OF

and Marshall College, 1866 to 1876. He was the author of several religious works.

W. S. M.

**NEW ATLANTIS.** — See **BACON, FRANCIS**; **UTOPIAS, EDUCATION IN.**

**NEW BRUNSWICK, EDUCATION IN.** — See **CANADA, EDUCATION IN.**

**NEW BRUNSWICK, UNIVERSITY OF, FREDERICTON, N. B.** — Founded in 1800 as the College of New Brunswick. From 1805 the institution received annual grants from the Provincial Treasury, and from 1829 grants from the Crown. A Royal charter was obtained in 1828, incorporating the College as King's College. In 1845 all religious tests, except for the professor of theology, were abolished. After a commission of inquiry had reported, the University of New Brunswick was established in 1859 in place of the College. Four-year courses leading to the B. A. and B. Sc. degrees are offered to students, men and women, who have satisfactorily passed the entrance examinations. The courses are divided, according to the English system, into ordinary and honor courses. In the department of applied science courses are offered in the various branches of engineering and in forestry and lead to the degree of B. Sc. The University also confers all the usual higher degrees, including the B. C. L. and D. C. L. The University is affiliated with the universities of Oxford, Cambridge, and Dublin. The enrollment in 1910–1911 was 241.

**NEW CALEDONIA** — See **FRENCH COLONIES, EDUCATION IN.**

**NEW COLLEGE** — See **LONDON, UNIVERSITY OF.**

**NEW ENGLAND ASSOCIATION OF COLLEGES AND PREPARATORY SCHOOLS** — See **COLLEGE EXAMINATION AND CERTIFICATION BOARDS, COLLEGE ENTRANCE REQUIREMENTS.**

**NEW ENGLAND COLLEGE ENTRANCE CERTIFICATE BOARDS** — See **COLLEGE EXAMINATION AND CERTIFICATION BOARDS.**

**NEW ENGLAND JOURNAL OF EDUCATION.** — See **JOURNALISM, EDUCATIONAL.**

**NEW GUINEA, EDUCATION IN** — See **NETHERLANDS, COLONIES OF, EDUCATION IN THE.**

**NEW HAMPSHIRE, STATE OF** — Originally a part of Massachusetts, but organized as a separate territory in 1680. En-

tered the Federal Union in 1788 as one of the thirteen original states. It is located in the North Atlantic division, and has a land area of 9031 square miles. It is about one fifth the size of the state of New York, and about three fourths as large as Holland. For administrative purposes the state is divided into ten counties, but these have no educational significance. The counties are in turn divided into 231 towns and 26 originally independent school districts, and these are the educational administrative units of the state. In 1910 New Hampshire had a total population of 430,572, and a density of population of 47.7 per square mile.

**Educational History** — The famous Massachusetts laws of 1642 and 1647 applied to New Hampshire, and continued to be in force for nearly a century. Dover, Exeter, and Hampton early provided for schools, and, what was unusual at that time, for girls as well as for boys. In 1680, the year of separation from Massachusetts, the first school law was passed, requiring the selectmen of the town to raise money, by assessment, for erecting and repairing houses of worship, parsonages, and schoolhouses, and for securing a teacher for the town. The old Massachusetts laws were continued in force, by common consent, and in 1719 the Massachusetts law of 1647 was definitely reenacted, but with the fine increased from £5 to £20. Two years later it was enacted that selectmen failing to enforce the law should be liable in their personal estates.

During the first fifty years of the independent existence of the territory, the Massachusetts policy of granting land for education was continued, and grants of a school lot in each township were made quite generally. In a few towns there are local funds which are the product of these grants.

Education in New Hampshire, as elsewhere in New England, declined during the eighteenth century. Little was done in the matter of schools, few grammar schools were in existence, fines were cut down, and laws were not enforced. The first state constitution of 1776 made no mention of education. New state constitutions were adopted in 1784 and 1792, and in each of these the general section relating to the encouragement of literature and learning, embodied in the Massachusetts constitution of 1780, was incorporated with only two words changed, and this has remained to the present as the sole constitutional requirements with reference to education.

In 1789 the first state law with reference to education was enacted, and all former laws were repealed. The rate of school tax which a town must raise was fixed for the first time, at the ratio of \$5 for every \$1 received from the state; an English Grammar school was ordered to be established in the smaller towns, and a Latin Grammar school in the larger

towns, and an examination of teachers, by ministers, college professors, or schoolmasters, was instituted for the first time. In 1791 the rate of town taxation was changed to  $7\frac{1}{2}$  to 1; in 1795 to 35 to 1, in 1804 to 45 to 1, in 1806 to 75 to 1, in 1808 to 70 to 1, in 1818 to 90 to 1, and in 1840 to 100 to 1. By 1855 it had reached 200 to 1, by 1870, 350 to 1, and now stands at 750 to 1. This reveals how the burden of school support has gradually been shifted to the towns, until to-day the share carried by the state is very small. Only within recent years has the state begun to make special subsidies and equalization grants to overcome some of the defects of this method of school maintenance.

Up to the nineteenth century the town had been the unit in all school administration, but in 1805, following the lead of Massachusetts, the towns were empowered to subdivide into school districts. Town unity was partially retained for a time by the law of 1808, which directed that each town at its annual meeting should elect a school committee of three or more to visit and inspect the schools. Should the town fail to elect, the selectmen were to act as a school committee. In 1827 the number was fixed at three to five, and a district committee of one, to be chosen by the towns, was to be appointed to look after the schools in each district. To the town school committee was given the power to examine all teachers for the towns, to dismiss incompetent teachers and unruly pupils, to determine the textbooks to be used, to make an annual written report to the town meeting, and they were directed to visit and inspect the schools twice yearly, to encourage scholars to attend. The first statistics date from this time. In 1829 the town control was still further undermined by a law which authorized each school district to appoint its own district committee, of from one to three residents, and to give to this district committee power to select teachers, to provide board and fuel, and to supervise the school. In 1833 the culmination of the district system was reached in a law which permitted the towns, on account of expense, to dispense with the superintending town school committee, and thus leave the schools under district control. This condition of affairs continued for fifty years. A few of the cities escaped by organizing under special laws, Portsmouth in 1826 being the first. In 1857 two or more contiguous districts were authorized to unite. In 1870 permission to return to the town system of school administration was granted to the towns, and in 1885 the district system was abolished by legislative act, reducing at once the number of districts and district boards from 1890 to 275, and resulting in the immediate abandonment of 495 small schools.

In 1826 schoolmistresses were first recognized in the law, and in 1858 they were required to

meet the same standards as men for certification. In 1827 children whose parents did not provide books might be supplied by the school committee, and in 1833 the law directed school committees to provide destitute children with free books. In 1883 towns and districts were authorized to supply free textbooks to all. In 1829 the Literary Fund, established in 1821 by a tax on banks, for the endowment of a college, was ordered distributed among the towns, on the basis of state taxes paid, for the support of free public schools. In 1847 the basis of distribution was changed to school enrollment.

In 1830 the first high school was established at Portsmouth, in 1848 the third district of the town of Somersworth was permitted to establish one, and later in the same year any district was authorized by vote to establish and maintain a high school, and to elect a high school committee of from five to seven. In 1846 towns were permitted to contribute as much as 5 per cent of their school money for the aid of teachers' institutes, which were then first established by law. In 1851 this was reduced to 3 per cent, and in 1857 to 2 per cent, and in 1861 they were abolished as ineffective. In 1868 they were again ordered held, and state aid for them was granted, but in 1874 they were once more abolished. In 1883 they were again reestablished and have since remained. A State Teachers' Association was organized in 1854.

The beginnings of state school supervision were made in 1846, when a State School Commissioner, to be appointed by the Governor and Council, was authorized. He was to spend twenty weeks each year among the counties, encouraging education, was to collect educational statistics, and was to make an annual report to the General Council. In 1850 the office was abolished, and county commissioners, one for each county, took his place as supervisory officers, and together they constituted an *ex officio* State Board of Education. Despite efforts to reestablish the state office, this system of county supervision continued until 1867, when the county school commissioners were legislated out of office, and the office of State Superintendent of Public Instruction was established. The new Superintendent was to be appointed by the Governor for two-year terms, and the State Superintendent, Governor, and Council together were to constitute an *ex officio* State Board of Education. In 1874 the State Board was abolished, but the State Superintendent has been continued to the present time.

In 1848 the first law relating to truancy was enacted, and all children working in factories were required to have had three months' schooling each year. In 1870 all children eight to fourteen years of age were required to attend school for twelve weeks each year, six weeks of which must be consecutive. The

law was further amended in 1901 to make it practically conform with the truancy and child labor laws of the other New England states. In 1866 the State Agricultural College was established as a department of Dartmouth College, but in 1891 the connection with Dartmouth was severed, and the College was moved to Durham and given an independent status. In 1870 a state normal school was established and located at Plymouth. In 1895 the State Superintendent was authorized to institute a system of examinations for state teachers' certificates. In 1895 the employment of a superintendent by two or more towns was authorized, and in 1899 supervisory unions of two or more towns for the purpose were provided for, and state grants for the partial payment of the salary of the superintendent were begun. In 1899 annual state appropriations were begun, from the state treasury, to be used in equalizing the local tax rate for schools in those towns where the burden was excessive, and in making state grants in aid of supervision. In 1901 towns not maintaining a high school were required to pay the tuition of their pupils in high schools elsewhere, and state aid for the purpose, to those whose tax rate exceeded a certain rate, was begun. These grants have since been materially increased.

**Present School System** — At the head of the school system is a Superintendent of Public Instruction, appointed by the Governor for a two-year term. To him is given general supervision and oversight of the educational interests of the state. He is authorized by law to prescribe the forms of blanks, reports, and registers to be used in the state, to receive and preserve all school documents, to investigate educational conditions in the state, to visit the schools and lecture in the towns, to hold at least one institute in each county each year, to audit the expenses for such, and to draw on the state treasury to pay for the same out of the income of the institute fund, to recommend to school boards desirable books for instruction in temperance physiology and hygiene, to prepare a biennial report of his work and to issue biennially the school laws of the state. He also approves high schools for tuition grants and supervisory unions for supervisory grants, holds examinations for and grants state certificates to teachers, acts *ex officio* as one of the Board of Trustees for the state normal school, and as regent (secretary) of the State Board of Medical Examiners.

Below the state are 231 towns and twenty-six independently organized districts. Since 1885 each town has been constituted a single school district, except that the independent school districts in existence at that time were permitted to continue, unless they voluntarily gave up their existence and united with the town. Each district is required to hold an

annual school meeting for the election of officers, hearing the annual reports and voting funds. Women may vote at these meetings. The meeting each year elects a moderator, clerk, one or more auditors to examine all books and accounts, and one member of a school board of three, to serve for a three years' term. Any district, by vote in annual meeting, may require the trustees to employ a superintendent of schools, and two or more towns having twenty to sixty teachers may unite to form a supervisory union for the same purpose. If a high school is maintained, there may also be a high school board of three, six, or nine, as determined by vote, or the high school district may be consolidated with the district or town and placed under the control of the school board.

Districts (or towns) may raise money for current expenses, buildings, repairs, equipment, and debts, may borrow four fifths of the money necessary to erect a building, payable in five years' time, may vote to maintain a high school, or unite with another town in doing so, or contract with a high school, academy, or seminary to educate their high school pupils for them, may determine the conditions of admission to the schools, and must raise by local taxation a sum not less than \$750 for every \$1 of money received from the public treasury.

The district or town school boards are to select, employ, and for cause dismiss all teachers, must provide a sufficient number of schools, and may expend 25 per cent of the money raised for the conveyance of pupils, must include temperance physiology and hygiene and the constitutions of the United States and of New Hampshire among the required studies in the schools, must provide free textbooks for pupils, and fix prices at which parents wishing to provide their own may buy them, are supposed to hold examinations for teachers in June or July of each year, issuing one-year local certificates to those found satisfactory, must visit the schools twice each term, must appoint truant officers for one-year periods, and fix their compensation, and must prosecute violations of truancy or child labor laws, and must make annual reports to the selectmen of the town and to the State Superintendent of Public Instruction. If a superintendent of schools is employed, most of the duties devolving on district boards are delegated to him. On a petition of 5 per cent of the voters in any district of 5000 inhabitants or over, evening schools must be established for the education of children over fourteen.

**School Support** — The state received no land for education from the general government, and the Surplus Revenue distributed in 1837 was spent for general state purposes. The state has never established a permanent common school fund. The proceeds of some state lands, ordered to be sold in 1867, now known

as the Institute Fund, constitutes the only permanent state fund, and the annual income from this is used to defray the expenses of teachers' institutes. The Literary Fund is the proceeds of an annual tax levied on bank, building and loan, and trust company deposits of persons not resident in the state, and at present produces about \$40,000 each year. This is distributed to the towns on the basis of the number of children enrolled in the schools for at least two weeks each year, and is worth about sixty cents per pupil. Any districts existing within the towns receive their proportion on the basis of valuation. The state also makes grants annually to assist poor towns in paying the tuition of high school pupils; for assistance in paying the salaries of superintendents (the state paying one half the salary), and for giving extra aid to towns having less than 3500 total population, and whose valuation is less than \$7000 per child in average daily attendance. This last is granted to the towns in direct proportion to the average daily attendance, and in inverse proportion to the valuation per child. All other school expenses are paid by the towns and districts, and the amount so raised averages about one half more than that required to be raised.

Of all school revenues raised during the last year for which statistics are available, 7 per cent came from state sources, 88.2 per cent came from local taxation, and 4.8 per cent came from local funds, tuition fees, gifts, excess of dog taxes, town treasury payments, and other miscellaneous sources. The inequalities under this system, due to inequalities in wealth, are large, and these inequalities the state has attempted to equalize in part by a wise system of state aid.

**Educational Conditions** — Of the total population of 1910, 22.4 per cent were of foreign birth. But few of the native-born population are illiterate; but for the foreign born about one fifth are so classed. Of the foreign born, 50 per cent were French Canadians, 16 per cent were English Canadians, and 90 per cent were from Canada or the British Isles. The percentage of children five to eighteen years of age in the total population is lower than in any other state of the Union except Nevada. There are practically no negroes in the state, the whites constituting 99.8 per cent of the total population, 40.8 per cent of the people live in rural districts, and 42 per cent in cities of over 8000 inhabitants. The attendance and child labor laws are good. Truant officers must be appointed by each town and district, and they may be directed to inspect factories. Three state inspectors also assist in the enforcement of the truancy and labor laws. No child under twelve can work at all in any manufacturing establishment, and no child under sixteen during the hours the schools are in session with-

out an age and schooling certificate, showing that he can read and write the English language. If over sixteen and unable to read and write, such pupils must attend evening schools, up to twenty-one, unless excused on account of health. All children under sixteen must attend school unless employed. Attendance at a private school is accepted only when the school is taught in the English language, and has been inspected and approved as equal in instruction to the public schools of the town, and when attendance is looked after as required by law.

There are no statutory school studies, aside from temperance-physiology and hygiene, humane education, and the constitutions of the United States and of New Hampshire. About 60 per cent of the schools of the state are classed as graded schools. Four cities maintain evening schools, and about twenty-five supervisory unions have been formed. The laws for the location of schoolhouses, change of property from one district to another, power granted to the annual district meeting, etc., show the same oversensitiveness for the feelings of communities and for a small and aggrieved minority that characterizes much of the New England school legislation.

**Teachers and Training** — Teachers' certificates are of two kinds. The local certificates, granted by local school boards, supposedly on an examination in the subjects which the teacher is to teach, but in practice usually without an examination, and valid for one year and only in the district, constitute one kind, and are held by most of the teachers of the state.

The other kind is granted on the basis of a written examination, given under the direction of the State Superintendent, and to graduates of the normal school. This form is required of all district superintendents, and is valid anywhere in the state. The local district examinations are so easy or so nearly extinct that there is little to impel teachers to attempt these state tests.

For the training of new teachers, the state maintains the normal schools at Plymouth and Keene, and four cities (Concord, Manchester, Nashua, and Portsmouth) maintain city training schools. For the training of teachers in service the State Superintendent is directed to hold at least one teachers' institute in each county each year, or to appoint the principal of the normal school to do so, to audit the expenses, and to draw on the state treasury to pay the same from the income of the Institute Fund. From twenty to twenty-five one-day teachers' institutes are held each year, with about one half of the teachers in attendance. An institute for superintendents is also held, and an eight weeks' summer institute at the normal school. Attendance at a teachers' institute is optional, though teachers may close their schools and attend

one day each term, and receive pay for attendance. The last report of the State Superintendent shows that from thirty-nine towns no teacher has attended an institute in two years, from nine towns in four years, and from six towns in six years. Many other towns have been represented by one, two, or three teachers only.

**Secondary Education** — Seventy-two public high schools were reported in 1910 as existing in the state. A high school, once established, cannot be changed in location or discontinued except by order of the Superior Court for the town, and on petition of the school board. To be approved, a high school must maintain at least one four-year course, embracing such subjects as are required for entrance to colleges, and including the constitution of the United States and of New Hampshire. In special cases, the State Superintendent may approve partial courses for partial state aid. A number of academies and seminaries have been approved for the attendance of pupils at public expense.

**Higher and Special Education** — The New Hampshire College of Agriculture and Mechanical Arts at Durham is the only higher institution supported by the state. This institution offers instruction in general science, agriculture, and engineering, and is the only college in the state open to women. Dartmouth College (*qv*), at Hanover, a nonsectarian institution opened in 1769, and St. Anselm's College, at Manchester, a Roman Catholic institution opened in 1893, are two additional higher institutions, for men only. The State Industrial (Reform) School, at Manchester, is the only special institution maintained by the state.

E. P. C.

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**NEW HARMONY** — See PESTALOZZIAN MOVEMENT IN THE UNITED STATES, OWEN, ROBERT.

**NEW JERSEY, STATE OF.** — One of the thirteen original states. It is located in the North Atlantic Division, and has a land area of 7514 square miles. It is about one seventh the size of the state of New York, and about one half as large as Switzerland. For administrative purposes the state is divided into

twenty-one counties, and these in turn into 458 cities, independent boroughs, and school townships. In 1910 New Jersey had a population of 2,537,167, and a density of population of 333.7 per square mile. Excepting Rhode Island and Massachusetts, it is the most densely populated state in the Union.

**Educational History** — Situated near the center of the different colonies, the development of education in New Jersey was the product of a number of influences. The Dutch crossed from New Amsterdam, the English came from Connecticut, Scotch and Scotch-Irish Presbyterians came from Great Britain, the Swedes settled along the Delaware, and the Quakers came over from Pennsylvania. The population was thus a compound of these various elements. The first school was established by the Dutch at Bergen in 1661 or 1662, and in 1673 it was ordered that all the inhabitants be compelled "to pay their share toward the support of the precentor and schoolmaster," thus making it a publicly supported school. There seems to have been much difficulty in enforcing this, however, as the people "obstinately refused to pay their quota." After the transfer of New Amsterdam to the English in 1664, the English soon extended their control over northern New Jersey, and the English language and English methods ruled in the schools. See section on early education in NEW YORK, STATE OF.

As early as 1665 an English colony had settled at Elizabeth, and in the founding of the neighboring town of Woodbridge in 1669, 100 acres of land were set apart for education. A school was established here in 1689. In 1666 the town of Newark was settled by two migrations from the towns of Milford, Branford, and Guilford, Connecticut, and ten years later a schoolmaster was appointed by Newark "to do his faithful, honest, and true endeavor to teach the children or servants of those as have subscribed, the reading and writing of English, and also arithmetick, if they desire it, as much as they are capable to learn and be capable to teach them within the compass of this year." Other early settlements were made at Middletown, Freehold, Shrewsbury, Piscataway, and Perth Amboy.

In 1693, and in amended form in 1695, the East Jersey Assembly, at Perth Amboy, enacted "An Act for establishing schoolmasters in this province," which authorized the inhabitants of any town, under warrant of a justice of the peace, to meet and choose three men of the town "to make a rate for the salary and maintenance of a schoolmaster." The consent of a majority was to make the rate a binding one on all. What proportion of the towns established schools under the provisions of this law we do not know.

In 1682 the Assembly of West Jersey granted the island of Matinecock, located in the Delaware River, being about 300 acres in extent, to the town of Burlington, "from henceforth and forever hereafter for educational purposes." The early Quaker settlers of this western province were a well-educated people. With them the schoolhouse was the general accompaniment of the house of worship. Schools and meeting houses were accordingly soon established by them in their towns, and the schoolmaster was generally appointed by the church session, instead of the civil authority, as was the case in early Massachusetts history. See MASSACHUSETTS, STATE OF, DISTRICT SYSTEM.

In 1702 the two provinces of East and West Jersey were united and placed under the Governor of the colony of New York. For the following seventy-five years, up to the Revolutionary War, during all of which time this arrangement continued, there was almost no legislation relating to education. (See NEW YORK, STATE OF, EDUCATIONAL HISTORY.) Schools were still maintained in many of the colonies, but they were of a voluntary and private rather than a public nature. A subscription elementary school was maintained in a small number of the towns, a few private grammar schools (of which the Log College of Wm Tennent, at Nashamany, was a type) were provided, and the Friends, in Yearly Meeting, in 1746 and again in 1787, laid down directions concerning education. In their resolutions they declared that "the education of our youth in piety and virtue, and giving them useful learning under the tuition of religious, prudent persons," was extremely desirable, and they therefore urged that the Society's meetings "be excited to proper exertions for the institution and support of schools." The main acts of educational importance in New Jersey during the first three fourths of the eighteenth century were the establishment of the College of New Jersey, now Princeton University, in 1746, the founding of Rutgers College, at New Brunswick, in 1766, the confirming in 1769 of the 100 acres for schools, granted a century earlier to Woodridge township by George III, and the appointment of a Board of Trustees for the management of the lands, to insure their application to the original purpose of the grant. The War of the Revolution put an end to English control and to the early colonial schools.

New Jersey adopted a state constitution in 1776, but this contained no mention of education. The Federal Constitution was ratified in 1787, but no new state constitution was adopted at that time. A new interest in education seems to have been awakened after the establishment of the new Federal Government, and many academies were founded in different parts of the state. It was not until 1816, however, that any official

state action was taken. In this year an act was passed which made the beginnings of a state school fund for the support of schools. An annual state appropriation of \$15,000 was made to start the fund. This was to be invested in United States 6 per cent bonds, and the interest was to be added to the principal and reinvested. In 1818 the chief state officers were made trustees for the growing fund, in 1824 this was changed to an annual addition of one tenth of the income from state taxes, and, in 1829 it was further provided that taxes from banking, insurance, and other corporations should be added to the fund. In 1820 the townships (or towns, as they were frequently called) were first authorized to raise money by taxation for school purposes, though until 1838, excepting the one year from 1830 to 1831, money raised for support was limited to the education of "such poor children as are paupers." In 1828 townships were further permitted to raise money, by vote at township meetings, for the erection and repair of school buildings.

An extensive investigation was made in 1828, which showed that one third of the school children of the state were growing up without any chance of an education. The law of 1829, the first to provide any organized plan for a school system for the state, was the result of this investigation. Each township was to elect a school committee who should divide the township into school districts, examine and license teachers, visit the schools, at least every six months, and make a report to the annual school meeting and to the Governor of the state. Three trustees for the districts, a district school census, and annual district meetings were provided for, and a state appropriation of \$20,000 annually for support was made. This latter was to be distributed to the counties on taxables, and to the districts on census. The next year, however, this newly established school system was abolished, largely through the influence of the friends of private and church schools. By the laws of 1830 and 1831 the old limitation of support to the education of poor children was reestablished, the distribution of the state appropriation was so changed as to include all private and parochial schools, as well as the township schools, and both district lines and the examination of teachers were abolished. It was not until 1838 that these reactionary laws were finally repealed. In that year a convention of the friends of public schools free from all denominational control, issued an address to the people, and the result was such a popular manifestation that the legislature repealed the law of 1831 and enacted a new one, which contained many of the features of the law of 1829. The religious orders were still aided, the licensing of teachers was made optional; the mention of pauper children as the only ones entitled to state aid was finally

abandoned, and the annual state appropriation was increased to \$30,000.

In 1844 a new constitution was adopted for the state, and in this, under the head of legislative powers, a paragraph was inserted which declared the school fund to be a perpetual fund, and the income to be appropriated only for the support of public schools. In 1875 this was further amended by inserting the word "free" between "public" and "schools," and adding a mandatory clause requiring the legislature "to provide for the maintenance and support of a thorough and efficient system of free public schools for the instruction of all children in the state between the ages of five and eighteen years." These remain the only constitutional provisions relating to education which the state has ever adopted.

In 1845 the beginnings of state supervision were made by the passage of a law permitting the appointment of a State Superintendent of Public Schools for the counties of Essex and Passaic, with liberty to the other counties to avail themselves of this state supervision. The following year a new school law was enacted which extended state supervision to the entire state, provided for local supervision by townships, by supplanting the township school committees by a town school superintendent, made the licensing of teachers obligatory, and required the townships to levy a local tax double the amount of any state school funds received. From 1846 to 1866 the State Superintendent was elected by the Trustees of the School Fund, but since 1866 he has been elected by the State Board of Education. Only four different men have served the state as State Superintendent during the forty-five years from 1866 to 1911. In 1848 the townships were permitted to use the interest on the Surplus Revenue for schools, in 1851 the state appropriation was increased to \$40,000, and a limit of \$3 per census child placed on district taxation, in 1854 teachers' institutes were first established, and a state appropriation of \$100 for each was made, in 1855 the first state normal school was established, and in 1858 the state appropriation was further increased to \$80,000. Here matters rested until after the Civil War.

In 1866 an *ex officio* State Board of Education, consisting of the Governor and state officers, was created, and the State Superintendent was changed to be its executive officer and secretary. In the following year a new school law was enacted, which practically created the modern system, and has formed the basis for laws since that time. The State Board of Education was reconstructed and given enlarged powers, county superintendents were created to supersede the township superintendents; state, county, and city boards of examination were provided for, and a certificate from one of the three



required of all teachers, the various district trustees in each township were constituted a township board of trustees, corporal punishment was forbidden, the state appropriation was increased to \$100,000 annually, and the limitation of \$3 per census child on district taxation was removed. In 1871 the rate bill (*qv*) was finally abandoned and the schools made entirely free. To accomplish this and to provide a nine months' term as required, a state tax of two mills was imposed, in addition to the appropriation, and additional township taxes were permitted, when necessary, to meet the demands of the law. In 1874 a compulsory education law was enacted, and in 1876 all state aid to private or parochial schools was finally forbidden.

In 1881 the first of a long series of constructive legislative acts was passed, whereby any district, raising by subscription or taxation a sum of not less than \$3000 a year and not over \$5000 for industrial training, was to receive an equal amount from the state, for the same purpose. In 1887 the same provisions were extended to districts raising from \$500 to \$5000 a year for manual training. In 1888 the school districts of any township were permitted to consolidate and to provide a township form of organization, and in 1894 transportation was permitted. The same year the district system, except for cities and boroughs, was abolished by law, and a form of the townships-county system was instituted. In 1894 scientific temperance was required in all schools, and a free textbook law enacted, and in 1896 the State Board of Education ordered a uniform course of study and uniform standards of promotion to be instituted by counties. In 1896 a teachers' retirement law was passed. In 1898 the State Board of Education established a "Bureau of Information for Teachers and School Officers," which it has since conducted.

Beginning with 1900, constructive legislation has been even more marked than during the previous decade. In that year the State Board appointed a supervising architect, and began the state supervision of all schoolhouse plans, and annual grants of \$600, to any district or township which appointed a superintendent of schools or a supervising principal, were begun. County superintendents were required to hold a state teachers' certificate, and their salaries were changed from a school census to a teacher employed (\$7 per teacher, in 1902 increased to \$8) basis, and materially increased; the normal school course was extended and improved, a more liberal policy in the recognition of diplomas and training in place of examinations was begun, and kindergarten classes were first authorized. In 1901, after ten years of investigation of the results of the school census, the state school tax was increased to two and three fourths mills, and the basis of apportionment changed from school census to a combination of teachers

and attendance. In 1903 all school districts were made corporations, independent of the local municipal governments, thus erecting the school system as a state rather than as a local undertaking. In 1904 the State Board of Education appointed a high school inspector, and began the inspecting and grading of high schools. In 1905 county superintendents were given a uniform salary of \$2000, and schooling for all children in the state until twenty years of age was made possible. In 1906 an additional source of state taxation for education was provided, which has doubled the state appropriation for schools, in the form of a railway tax on all main-stem and first-class railway property in the state. With this increase in funds, the appropriation for teachers in high schools was doubled, and a grant of \$25 of state aid per pupil was made to all districts sending pupils to schools elsewhere. A new state normal school was also established at Montclair in this same year. In 1909 a teachers' tenure act was passed, giving indefinite tenure to teachers after three years of continuous employment. In 1911 an important law reconstructed the State Board of Education, abolished the office of State Superintendent of Public Instruction and created instead the office of Commissioner of Education, with Assistant Commissioners, as outlined below. All city boards of education were made appointive by the mayor, instead of in part elective, provision was made for the instruction of sub-normal and defective children, city teachers' certificates were abolished, and tenure and the civil service act were extended to all employees of school departments.

**Present School System** — The New Jersey system, as it exists at present, is a somewhat closely organized state school system. At the head is a State Board of Education of eight members, appointed by the Governor with the concurrence of the Senate, and for eight-year terms (after the first appointments). The general duties of this State Board are to make rules and regulations for the carrying out of the school laws, for the management of teachers' institutes, and for the examination and certification of all teachers, to appoint all county superintendents, and to approve their expense accounts, to prescribe a uniform system of bookkeeping, to hold hearings, to appoint a supervising principal for union schools, and to consolidate or discontinue high schools, when deemed desirable, and to determine tuition rates and compel districts to receive pupils. In its power to make such rules and regulations as from time to time are found necessary, or deemed important in carrying out the provisions of the school laws, the State Board is enabled to determine many details in the administration of the school system of the state which in nearly all other states require legislation.

The State Board also acts as a Board of Trustees for the two state normal schools, for the New Jersey School for the Deaf, for the State Manual Training and Industrial School for Colored Youth, for the summer school for instruction in manual training, agriculture, and home economics, and the Farnum Preparatory School. The Board approves all books and apparatus to be bought for schools, approves the course of instruction and grants of money to schools offering courses in manual training or industrial work, and approves the courses of instruction in high schools, and inspects and grades the schools.

Probably the most important function of the State Board of Education is the selection and appointment of a Commissioner of Education for the state, who acts as the executive officer of the Board. He receives a salary of \$10,000 a year, is appointed for five-year terms, and no residence restrictions are to be insisted upon in making the appointment. With the advice and consent of the State Board, he appoints four Assistant Commissioners at \$4500 salary, and the State Board also appoints an Inspector of Buildings and an Inspector of Accounts, each at \$2000, the first of whom approves all school plans and buildings, and the other inspects the accounts of the district officers. Three of the Assistant Commissioners act as inspectors of high schools, of elementary schools, and of industrial and agricultural education, and the fourth Assistant Commissioner hears all controversies and decides all appeals on school law questions. The specified duties of the Commissioner of Education are to ascertain whether the system of education provided is thorough and efficient; to prescribe a minimum course of study for both elementary and high schools, to prescribe rules for the promotion of pupils in the elementary schools, and to prescribe uniform examinations for eighth-grade graduation and admission to the high schools, which shall be open alike to public and private school pupils, to prescribe the Binet, or other tests, for use in the schools, to withhold funds from any school district not obeying the law, to provide instructors and lecturers for teachers' institutes, to hold an annual convention of all city and county superintendents, to make a monthly report to the State Board of Education, and an annual report for the Board. The State Commissioner acts *ex officio* as a Trustee of the State School Fund, and apportions the income to the counties, as a member of the State Board of Examiners, and as a member of the Board of Trustees for the Teachers' Retirement Fund.

For each of the twenty-one counties of the state the State Board of Education appoints a county superintendent of schools. The appointment is for a three-year term, the appointee must hold a state teacher's certificate,

and a uniform salary of \$2000 is paid to each, by the state, with an added allowance for expenses and clerical assistance. Each county superintendent has the general supervision of the schools of his county, cities under city superintendents excepted, is to visit and examine all schools, and to note the condition of the school property, is to advise and counsel with the boards of education within the county, may recommend, with reference to courses of instruction, methods, management, or buildings, appoints members of Boards of Education, when the people fail to elect, carries out the instructions of the state office, and makes an annual report to the State School Commissioner.

Each township is a school district, but any city, incorporated town, or borough may be organized as a separate school district. For each, a board of education of nine members is elected or appointed for three-year terms, one third going out of office annually. In all cities the board is appointed by the mayor (since 1911), and in all townships, towns, or boroughs the members are elected by ballot at an annual school election. The general powers of all such Boards include the power to employ and dismiss teachers, to make rules and regulations, not inconsistent with law or the rules and regulations of the State Board, to purchase, lease, and sell school-houses, and to condemn land for school purposes, to select and provide textbooks and supplies, to admit and expel pupils, and to make an annual report to the county superintendent. Township, town, and borough boards may also appoint a supervising principal, or superintendent, or unite with other such boards to do so, and all such boards must meet together, semiannually, with the county superintendent for the consideration of school matters. Two or more townships, towns, or boroughs may hold an election and vote to consolidate their schools, the board of education for the consolidated district having the same powers as the boards of the districts voting to unite. Similarly, boards of education in two or more adjacent school districts may unite to provide a union graded school.

Boards of education in cities must appoint a city superintendent, who has the right of a seat and speech in the meetings of the board, but no vote. City boards of education are also to appoint a business manager to have general charge of all matters relating to school buildings, and a secretary, who acts as a secretary and general accountant for the school system. Each head of a department appoints all of his subordinates. The board may also appoint, on nomination of the superintendent, such assistant superintendents as it may desire, and fixes the salaries and tenure of all employees. The board must print an annual report and make an annual report to the State Commissioner. A board of school estimate,

consisting of two members of the city board of education, two members of the city council, and the mayor of the city, determines the rate of city school taxes, which the council must levy, regardless of any charter restrictions

**School Support** — The school fund, begun in 1816, now amounts to about  $4\frac{1}{2}$  millions of dollars, and produces an income fixed by law at \$200,000. Any deficit is made up from the state treasury. The surplus revenue of 1837 was distributed to the counties and in part used up, but the interest on the total received is a charge for which each county must provide. The income from this source is about \$28,000 a year, and is used for schools. The chief support of the schools comes from a state tax of  $2\frac{1}{4}$  mills on all property, and from state railroad and canal taxes. This property tax is materially reduced each year by an appropriation, made by the legislature from the state treasury. Approximately 5 million dollars came from this source in 1910, and  $2\frac{1}{4}$  millions of this came from state railway taxes. Excepting 10 per cent of the  $2\frac{1}{4}$  mills state tax, which is set aside as a reserve fund, all state money is distributed to the counties on the basis of their taxable wealth. The 10 per cent is also distributed to the counties by the State Board, in such a manner as in their judgment best equalizes the inequalities of the distribution of the other 90 per cent.

Within each county the county superintendent apportions the school money to the different townships, towns, boroughs, and cities on the following bases: —

For each superintendent or supervising principal	\$600
For each assistant superintendent or supervising principal	400
For each teacher in a four-years' high school	400
For each teacher in a three-years' high school	300
For each teacher in all other kinds of schools	200
For each temporary teacher, for 4 months or more	80
For each evening school teacher	80
For each pupil attending high school in another district	25
For each pupil attending elementary school in another district	5
For each teacher dispensed with by transportation	200
For transportation to other district, if school not close, 75 per cent cost	

All that remains after setting aside the above sums is apportioned equally on the basis of attendance, and at the rate of so much per pupil per day. These apportionments provide for a very good equalization of burdens and advantages within the different counties. Any township, town, or borough may vote additional sums for maintenance, and city boards of school estimate may levy additional sums, as needed. All state money can be used only for salaries, fuel, transportation, and the payment of tuition.

In addition to the above, the state makes a number of annual grants, each one of which must be preceded by the district concerned raising an equal sum. These annual grants are as follows: —

For school district libraries, \$20 the first year, \$10 yearly thereafter  
 For teachers' libraries, \$100 the first year, \$50 yearly thereafter  
 For manual or industrial training, from \$250 to \$5000.  
 For evening schools for foreigners, over 14 years old, up to \$5000

**Educational Conditions** — The conditions surrounding education in New Jersey may be said to be good. The state is densely populated. Only about one fourth of the population live outside of cities and towns of 2500 inhabitants and over, while one half of the total population live in cities of over 25,000 inhabitants. Three and one half per cent of the total population is negro, and 25.9 per cent is foreign born; 75.2 per cent live under urban conditions. The state is largely a manufacturing one, with many residential towns and extensive country estates.

The school system is one of the better centralized state systems, and the county is an important unit. The school laws make good provision for education. A nine-months' school term is required of all districts. Suitable accommodations and proper sanitary appliances must be provided by each district. All schoolhouse plans must be approved by the State Board of Education, and may be obtained from the state free. Definite standards and requirements as to school buildings are insisted upon. Any board may establish kindergartens, evening schools for pupils over 12 years of age, or for foreign born over 14 years, and any city of over 10,000 inhabitants may establish schools for workingmen. Every board may employ a medical inspector. Vaccination is insisted upon, unless excused for certain statutory reasons, and the cost of this is to be paid by the school authorities, if the parents are unable to pay. Textbooks and supplies must be provided free in all schools. All children in the state must be provided with free education, between the ages of 5 and 20, and no exclusion from any school may be made on the basis of race, religion, or color. Free high school education must be provided for all children applying for it, within or without the district. The kindergarten has made great headway since its adoption as a part of the state school system, and 30 per cent of the children now have been kindergarten trained. Corporal punishment is forbidden in all schools, public and private. All state prisons must provide schools offering an elementary school course, to be approved by the State Board of Education. All children, 7 to 17 years of age, must attend school regularly. Pupils over 15, properly employed, and who have completed the grammar school course, may be excused, but if under 17 and unemployed, they must attend a high school. Truant officers and parental schools are provided for, and any county may establish a school for the detention of juvenile offenders. A State Board of Children's Guardians exists.

for the care of indigent, helpless, dependent, abandoned, friendless, and poor children.

**Teachers and Training** — A State Board of Examiners, consisting of the Commissioner of Education, the principals of the normal schools, and one other appointed by the State Board of Education, examines candidates and grants all state teachers' certificates. Diplomas of a university or college may be accepted in any examination in lieu of subjects covered. Three grades of state certificates are issued. Normal school and teachers' college diplomas, and state certificates from other states are recognized. A Bureau of Information for Teachers and School Officers, serving as a state teachers' bureau, is maintained by the State Board of Education.

Each county may have a county board of examiners, consisting of the county superintendent and three teachers appointed by him, for one-year terms, who then conduct three examinations yearly, for the three grades of county certificates issued. The examination and certification of teachers is done under rules and regulations of the State Board, and little is specified in the law. In 1911 the city boards of examination and city certification were abolished. All city school teachers must now hold a county or state certificate. All superintendents and assistant superintendents of schools, both county and city, must hold state teachers' certificates. Seventy-five per cent of the teachers in the state have had normal school or college training, or have advanced by study and hold a state teacher's certificate. For the training of future teachers, the state maintains two state normal schools, at Trenton (1855) and Montclair (1906), and the cities of Elizabeth, Jersey City, Newark, and Paterson also maintain city normal schools. Each Board of Education may make its own rules and regulations regarding the employment and tenure of its teachers, though, theoretically, teachers are supposed to have indefinite tenure after three years of service in any one position. There is a state salary schedule, fixing reasonably good salaries for all positions, which may be adopted by any city by a referendum vote. A State Teachers' Retirement Fund has been created, by which teachers paying 2 per cent (in some cases as high as 3 per cent) of their annual salaries may be pensioned after 20 years of service, if incapacitated. A city may retire any teacher on half pay after 35 years of service, 20 of which have been in the city.

**Secondary Education** — Of the 458 school districts of all kinds in the state, 109 had approved four-years high schools, at the date of the last report, and 51 other districts had partial high schools. Most of these schools are large and well equipped. The state inspection and approval is more thorough than is found in most states. Any private high school may be inspected, on application, and

if approved may be registered, which enables its graduates to be admitted to the state normal schools on the same terms as pupils from approved public high schools.

**Higher and Special Education** — New Jersey maintains no state university, the two state normal schools being the culmination of the public school system of the state. The agricultural college grant is given to Rutgers College (*q. r.*), where the state maintains 120 state scholarships, and pays Rutgers \$15,000 annually for the purpose. These are competitive, and county superintendents conduct examinations for them, each county being allowed as many appointments as it has members in the state legislature.

The following private institutions provide for the collegiate instruction within the state, though all are for men except the last, which is coeducational:—

INSTITUTION	LOCATION	OPENED	CONTROL	FOR
Princeton University	Princeton	1746	Nonsect	Men
Rutgers College	New Brunswick	1766	Reformed	Men
Seton Hall College	South Orange	1856	R. C.	Men
Stevens Institute of Technology	Hoboken	1871	Nonsect	Men
St. Peter's College	Jersey City	1878	R. C.	Men
Upsala College	Kenilworth	1893	Luth.	Both sexes

As institutions for the education of special classes, the state maintains the New Jersey School for the Deaf, at Trenton, the New Jersey Training School for Feeble-Minded Girls and Boys at Vineland; the State Home for the Care and Training of Feeble-Minded Women at Vineland, the State (reformatory) Home for Boys at Rahway, the State (reformatory) Home for Girls at Trenton; and the State (secondary) Manual Training and Industrial School for Colored Youths, at Bordentown. E P C

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**NEW LANARK** — See OWEN, ROBERT

**NEW MEXICO COLLEGE OF AGRICULTURE AND MECHANIC ARTS, MESILLA PARK, N. MEX.** — A coeducational institution established by the legislative as-

sembly of New Mexico in 1889 under the provisions of the Morrill Act of 1862. The nucleus of the College which was opened in 1890 was the Las Cruces College, organized in 1889. The College receives the usual federal appropriations for agricultural and mechanical institutions and an annual state appropriation. The following courses are given: agriculture, mechanical engineering, electrical engineering, civil engineering, household economics, commerce, general science. In addition, college preparatory and industrial courses in agriculture, mechanics, domestic science, and business of high school grade are provided. Musical and preparatory departments are also maintained. The enrollment in all departments in 1911-1912 was 372, of whom 66 were in the college courses. The entrance requirements for the college courses which lead to the B S degree are fifteen units of high school work.

**NEW MEXICO, STATE OF** — Ceded to the United States by Mexico in 1848, and organized as a territory in 1850. In 1863 the territory of Arizona was organized from the western half of New Mexico territory. In 1912 New Mexico was admitted to the Union as the forty-seventh state. It is located in the Western Division, and has a land area of 122,503 square miles. In size it is twice as large as the six New England states combined, and about the same size as the British Isles. For administrative purposes the state is divided into 27 counties, and these in turn into school districts. In 1910 New Mexico had a total population of 327,301, and a density of population of 2.7 persons per square mile.

**Educational History.** — When the United States acquired New Mexico in 1848 the people spoke only the Spanish language, and there were few, if any, schools in the territory. The Mexican government had made small annual appropriations for schools in six of the towns, but these grants ceased with the passing of sovereignty. Such schools as were provided for the next decade, at least, were provided by the Catholic Church. In 1859 St. Michael's College, a school established by the Christian Brothers (*q v*), was opened in Santa Fé.

The first mention of education by the legislative assembly of the territory is in a memorial to Congress in 1853, asking for a penitentiary, roads to the state, and "the creation and support of public schools throughout the territory." Congress taking no action, the legislature memorialized Congress again in the following year, appealing for adequate assistance in starting a school system. The memorial recites that there are but one or two schools in the territory, and these private; that the reserved sixteenth section lands are of no value, and that there are 25,000 adults in the territory (seven eighths of the population) who cannot read or write.

The legislature asked for an annual appropriation, which was not made. The first school law, passed at the session of 1855-1856, provided for schools to be supported by taxation, for county boards of education, schools in each county, compulsory education, and fixed the salaries for teachers. A referendum was allowed in four counties, which later rejected the law by a vote of 5053 to 37. The next year the law itself was repealed by the legislature, and the taxes collected were returned to the people who had paid them. In 1857 the territorial legislature again memorialized Congress, this time asking for a grant of \$500,000 to establish a school fund, and offering to pledge the school lands as collateral security, but again without avail. In 1860 a new "Act providing means for the education of children" was passed. This law required the justices of the peace of each plaza to act *ex officio* as school trustees, to employ teachers, and to provide a six-months' term of school, and also provided for salaries, compulsory education, and free schools. Very few, if any, schools seem to have been organized under this law. In 1863 an *ex officio* Territorial Board of Education was created, with the Bishop of New Mexico as one member, with authority to make rules and regulations and to require schools to be established in each county. The Governor was also to appoint a Territorial Superintendent of Schools, to supervise the schools, and to report to the Territorial Board and to the Governor. The Territorial treasurer was made custodian of all school monies. In 1863 another memorial, asking for money to establish schools, was sent to Congress with a statement that 60 per cent of the people could not read or write, and that "there is not a public common school in the Territory." This and subsequent memorials met the same fate as the preceding. In 1867 a new law made the probate judges *ex officio* county superintendents of schools, and the justices of the peace *ex officio* school superintendents of their election precincts, each of which was constituted a school district. Two persons in each county were to be appointed to solicit subscriptions from the wealthy, and all fines for the violation of the school law were to be used for schools.

In 1872 laws which really first organized the school system were passed. By these a state tax of  $\frac{1}{4}$  of 1 per cent was levied for school purposes, — the first taxation for education, — and a poll tax for schools was specified. It was further provided that if any county had a surplus of \$500 or more in its treasury, after paying all current expenses, the surplus should be used for schools. A board of supervisors and directors of schools was to be elected in each county, and they, together with the probate judge, were to have the establishment and management of the schools of the county. A number of counties took advantage of this

law, and proceeded to the organization of public schools. In 1874 the law was amended to require the making of full annual reports by the county boards to the Territorial Superintendent; to provide for the election of school officers and the Territorial Superintendent of Public Schools was also designated as *ex officio* Territorial Librarian at a salary of \$150 a year. In 1876 a number of fines were designated to be used for the support of schools. By 1875 reports show that there were 138 schools in the territory, with 147 teachers employed. Most of the schools were still for boys only, and were in part religious schools. A bill providing for a nonsectarian school system was considered, but defeated in 1875. The above legislation practically established the public school system in the territory, and no further legislation of any importance occurred until 1884.

In 1884 the old laws were repealed, and a new school law was enacted creating the school district in place of the election precinct, and establishing the district system of management. County superintendencies were created, and the school studies specified. In this condition the educational organization remained until 1891. In 1891 a new school law was passed, which not only inaugurated the present school system, but may be said to have created a real school system for the first time. Previous to 1891 "there were not 50 public schools in the territory under the control of competent teachers, and in which the English language was taught," while in 1893 the Superintendent reports 519 such schools. Church schools and academies supplied much of the instruction. The New-West Educational Commission also did valuable work in providing schools, both before and for some time after the territory really began the work of education. By the law of 1891 a new Territorial Board of Education was created, and a new Territorial Superintendent of Public Instruction superseded the old Territorial Superintendent of Schools. Instruction in English was made obligatory, and all teachers were required to hold county teachers' certificates, obtained on examination before a county board of examiners. In addition, the College of Agriculture and Mechanical Arts was established in 1888, the University of New Mexico, and the New Mexico School of Mines were established in 1889, the State Deaf and Dumb Asylum in 1891, two state normal schools in 1893, and the State Military Institute in 1895. In 1893 teachers' institutes and in 1897 territorial normal institutes were authorized. In 1897 the annual appointment of indigent students to the state institutions was begun.

In 1901 the legislature further revised and amended the school laws. The Territorial Board of Education was enlarged, the preparation of all questions for the examination

of teachers in the territory was given to the Board; the attendance of teachers on county institutes was made compulsory; teachers in districts where Spanish is spoken were required to be able to speak both Spanish and English, distinctions based on race or nationality were forbidden, vaccination was required; and increased taxation was provided. Between 1901 and 1909 a large amount of minor legislation was enacted, but little that changed the form of administration. A Spanish-American normal school, for the education of Spanish-speaking young men and women as teachers, was also established in 1909. As the state had been expecting statehood for some time, but little educational legislation was enacted during the last few years under the territorial government.

**Territorial School System** -- The territorial school system as it existed at the close of the territorial period, in 1911, was as follows. There was a Territorial Board of Education, consisting of the Governor and the Superintendent of Public Instruction, as president and secretary respectively, *ex officio*, and seven additional members, appointed by the Governor. Five of the seven were to be selected from the heads of the territorial educational institutions, the president of St. Michael's College of Santa Fé, and the city superintendents of the four largest cities in the territory. One other member was to be a county superintendent of schools. The remaining member was not to be a teacher. This Board apportioned the territorial school fund, specified the duties of county superintendents, prepared all questions for the examination of teachers, selected the uniform textbooks for the schools, and had control of the county institutes. The Territorial Superintendent of Public Instruction was appointed by the Governor, with the consent of the council, for two-year terms. He visited the various counties in the interest of education, conducted teachers' institutes, outlined the courses of study for the territory, and acted as secretary of the Board of Education. His salary was \$3000 per year.

For each county there was a county superintendent of schools, elected by the people for two-year terms. His salary was based on a combination of the number of schoolrooms in session for at least three months each year, and upon the amount collected in his county from the three-mill territorial tax, but with a maximum of \$1200 per year. He had charge of the interests of education in his county, apportioned the school fund to the school districts of his county; visited the schools; and looked after the enforcement of the school laws. For each school district there were three school directors, one elected each year for a three-year term. It was their duty to care for the school property of the district, to provide teachers, and to perform the com-

mon duties of a school trustee. Cities and towns were permitted to organize as such and to elect boards of education of two from each ward, who were to organize, supervise, and maintain a graded system of schools, and levy needed special taxes for maintaining the same.

**The Enabling Act** — In 1898 Congress granted the territory the 16th and 32d sections, and 500,000 acres of land for its public institutions, and in 1908 further granted the right to locate indemnity lands. By 1908 one fourth of these lands were under lease, and beginning to bring in some income for the support of public schools. In 1910 Congress passed an Enabling Act for the admission of New Mexico as a state, and granted to the state sections 2, 16, 32, and 36 in each congressional township, as a permanent endowment fund for common schools, - a total of 8,618,736 acres. Lands in eastern New Mexico were not to be sold for less than \$5 per acre, in western New Mexico for less than \$3 per acre, and lands capable of irrigation for less than \$25 per acre. The 5-per-cent fund (see NATIONAL GOVERNMENT AND EDUCATION) was also given for common schools, 1,160,000 acres additional were also given to the state for the endowment of its higher educational institutions, and for public and charitable purposes, and on the same conditions. A permanent common school fund of from thirty-five to forty-five millions of dollars should eventually be built up from these grants, and from twelve to fifteen millions additional from the grants for higher educational institutions.

A state constitution was framed by a constitutional convention in 1910, and ratified by the people in 1911. The educational system provided for the new state in this constitution does not differ materially from the territorial school system. Women are eligible for school offices and may vote at school elections on the same terms as men, unless a majority of the voters file a protest in writing. A uniform system of public schools, sufficient for and open to all children of school age, must be established and maintained and a five-month school term is made mandatory for all schools. Textbooks are to be uniform throughout the state, and not to be changed oftener than once in six years. The permanent school fund is specified, state and local taxation are permitted, and the income from the permanent school fund and from taxation is to be apportioned to the school districts on school census. A sufficient reserve fund is, however, to be withheld to provide all school districts levying the maximum local tax sufficient funds to provide the required five-month term of school. State educational institutions of all kinds must forever remain under the exclusive control of the state, and no school funds may ever be used in aid of any sectarian, denominational, or private school. A compulsory education law and a child labor law are to be

enacted by the legislature. A State Board of Education, of seven members, is to have the control, direction, and management of all public schools, under such regulations as may be provided by law. The Governor and State Superintendent are to be *ex officio* members, and the other five are to be appointed by the Governor, with the consent of the Senate. Of the five one must be the head of some state educational institution, one a county superintendent, and a third a person engaged in educational work. Other school officers, subordinate to the State Board of Education, and either the district or other form of organization, are to be provided for by the legislature. Normal schools are made mandatory. No religious test is ever to be required of any teacher or student in any public school or state institution. Children of Spanish descent are never to be denied admission to any public school or educational institution, or to be classified in separate schools. All territorial educational institutions previously established are confirmed as state institutions, and for each a bipartisan Board of five Regents is to be appointed by the Governor. A state department of agriculture, under the control of the Regents of the College of Agriculture and Mechanical Arts, is to be created. All school section lands, not contiguous to other state lands, are not to be sold within ten years for less than \$10 an acre.

**Educational Conditions** - Considering the difficulties under which the new state has labored, the schools maintained are very good. The seven incorporated cities and thirteen additional towns maintain schools which will compare favorably with those in other parts of the country. Eighty-five and eight tenths per cent of the population live in country districts, and in these reasonably good schools are provided. The state has a large number of persons of Indian and Mexican birth, or descent, and these greatly complicate the educational problem. An effort is being made to require that all normal-trained teachers are able to speak Spanish, and the ability to speak both Spanish and English is required by law for many districts. The school laws and a guidebook for school directors are still printed in Spanish, as well as in English, editions. Two Indian mission and twelve Government Indian schools were maintained in the territory in 1910. With the development of the public schools, both the Protestant and Catholic Indian schools have decreased much in numbers and in importance, although twenty such schools were still maintained in 1910 by five different denominations. High schools are being developed in the towns and cities, there being eleven four-year high schools and seven shorter-course schools in 1910, as against six and two nine years before.

**Teachers and Training** — About 1600 teachers are required at present for the different public schools of the territory. A

## NEW MEXICO, UNIVERSITY OF

state professional certificate is held by 6 per cent of the teachers, while the remainder hold one of the three grades of county certificates, or are teaching on permits. For the training of future teachers the state maintains three state normal schools at Silver City, Las Vegas, and El Rito, but both the attendance and number of graduates of these schools are small. A teachers' institute of at least two weeks' duration must be held by county superintendents annually, and all instructors must hold certificates granted by the Territorial Board of Education.

**Higher and Special Education** — The state maintains the following higher and special educational institutions: University of New Mexico at Albuquerque, the New Mexico College of Agriculture and Mechanical Arts at Mesilla Park, the New Mexico School of Mines at Socorro, the New Mexico Military Institute, a boarding school of secondary grade, at Roswell, the New Mexico Asylum for the Deaf and Dumb at Santa Fé, the New Mexico Institution for the Blind at Alamogordo, the New Mexico Orphan Childrens' Home at Belen, the New Mexico Orphans' Home and Industrial School at Santa Fé; and the New Mexico Reform School at Springer. There are no private or denominational institutions of collegiate rank in the state.

E P C

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**NEW MEXICO, UNIVERSITY OF, ALBUQUERQUE, MEX** — Established by an act of the Legislature. The first department organized was a normal school which opened in 1892. In the same year the preparatory school was opened and the commercial school added in 1893. The Hadley Laboratory was erected in 1899. The university at present consists of a college of letters and arts, a college of science and engineering, a commercial school, a school of education, a school of music, a sub-freshman division and the summer school. The plant consists of seven buildings. Owing to the extremely favorable situation of the university, many students have come from time to time from distant states and countries.

The university received a grant of 11,000 acres of public land and the grant of the saline lands of the territory for university purposes. By the enabling Act of 1911, a further grant of 200,000 acres was made to the institution and the saline grant was withdrawn from entry. The present appropriation granted by the territory to the university is \$32,000. The

## NEW TESTAMENT, PEDAGOGY OF

institution is coeducational, the number of students of each sex being about the same. The registration for 1910-1911 was 137.

E. M. G.

### NEW ORLEANS EXPOSITION — See INTERNATIONAL CONGRESSES OF EDUCATION

**NEW ORLEANS UNIVERSITY, NEW ORLEANS, LA** — An institution founded in 1872 for the education of the colored youth. It is under the auspices of the Methodist Episcopal church and is one of the twenty-two schools maintained by the Freedman's Aid Society of the church. In 1878 the first class was graduated from the College of Liberal Arts. The number completing this course has been small. In 1887 the first class was graduated from the professional teachers' course. From the beginning this has supplied a great need, for the demand for trained teachers is practically unlimited. In 1889 the medical college was opened, and schools of pharmacy and nurse training are now maintained. In 1898 a hospital in connection with the professional schools was opened. Classes in Biblical instruction have been maintained with more or less permanency since 1890. The University now owns property worth \$150,000 and has an enrollment of between five and six hundred pupils. Its curriculum embraces the entire range of studies from the grades up through the normal, college preparatory, and college courses, in addition to the professional courses above mentioned.

C. M. M.

**NEW SCHOOLS** — A term applied to a series of schools which have been established within the last twenty years in many European countries and are organized so far as possible in accordance with results of recent studies in child life. They all are characterized by great freedom from the national administrative authorities, by greater attention to the individuality of pupils, and by their location in the country, they are close to nature. Among these schools may be mentioned Abbotsholme and Bedales (*qq v*) in England, *École des Roches* (*qv*) in France, and the *Deutsche Landerziehungsheime* (*qv*), established originally in Germany by Dr Lietz and now copied in Switzerland, Russia, and Denmark.

See also BOARDING SCHOOLS, EXPERIMENTAL SCHOOLS.

### References —

See the references given under the articles of which mention is made above.

### NEW SOUTH WALES, EDUCATION IN. — See AUSTRALIA, EDUCATION IN

### NEW TESTAMENT, PEDAGOGY OF THE — It would be idle to seek in the New



Testament a technical pedagogy, although it is doubtful whether any literature of similar origin and character recognizes more practically the importance of instruction. The new religion of Christianity was educational in that it strove to socialize ideals of conduct and to train the Christian communities in the significance of these ideals. This general educational tendency is apparent in the New Testament, the most important literary fruit of the life of the churches.

#### Education in New Testament Times

This is treated in detail in the article on JEWISH EDUCATION. It is enough to recall the following points: (a) By the time the New Testament books were written there were Jewish schools throughout Palestine either in connection with the synagogues or independent therefrom (cf. Josephus, *Ag. Ap.* 2:16). Whether or not these schools existed in the smaller towns or in fact in any of the towns outside of Jerusalem during the lifetime of Jesus himself is uncertain, but that Jewish youths received formal training in their national laws and customs is plain from the statements of Josephus and from references in the Mishnah. (b) In the Hellenistic world educational methods were well developed, though higher forms of instruction were largely in the hands of independent philosophers like Epictetus. (c) The age was not without a general pedagogical philosophy, as is clear from our knowledge of the Greek and Roman literature (cf. Plato's *Republic*) as well as from the writings of Justin Martyr and other early Christian authors. (d) Memoriter methods were highly developed. This fact is characteristic of all periods in which textbooks are not readily available. Oriental training emphasizes verbal memory and extended compositions are preserved unwritten by the students of successive generations. The Jewish scholars furnished no exception to this rule, the Mishnah, for example, not being reduced to writing for centuries. This habit enabled the early church to preserve the memorabilia of Jesus in a quasi-systematic way for approximately a generation before they were reduced to writing and the various streams of tradition were combined into our present gospels.

**The Method of Jesus** — Jesus has universally been regarded as one of the world's great teachers, but such an estimate has been based on the substance rather than upon the methods of his instruction. It would be incorrect to think of Jesus as a teacher in the sense of a schoolmaster who gave systematized instruction in the elements of culture. He was more of a preacher and conversationalist than a teacher, and his teaching was exclusively ethical and religious. Thus he would naturally be classed with the rabbi and the itinerant philosopher. Unlike Paul, however, he seems never to have received definite rabbinical

training (cf. Jn 7:15). The fact that by occupation he was an artisan, very probably a carpenter (cf. Mk 6:3), did not detract from his dignity as a teacher, for all the rabbis had some trade. That he was not uneducated is to be inferred from the fact that he was able to read the Hebrew Scriptures (Lk 4:17-20), although Hebrew was no longer the current language. It is further significant that, so far as we have any record, there was no opposition to his being called "Rabbi," although in his case the term may have been little more than a polite term of address.

Beyond these general conclusions, however, particularly regarding the chronology and language of his sayings, it is impossible to speak with absolute precision. Pains-taking criticism alone will enable us to allow for the apostolic reworking of Jesus' teaching, and even after the most methodical handling, we find ourselves still facing questions of details. Yet thanks to modern scholarship we are able to reproduce with great probability his teaching as a whole and to estimate the methods which Jesus as an instinctive and natural teacher adopted. In general his methods were those of other moral teachers of Judaism, although he differed widely from them in technique and spirit. In his method — or more truly, his manner of teaching — we can discern the following characteristics: —

*His teaching was occasional and conversational rather than formal and systematic* — The Sermon on the Mount as at present arranged in both Matthew and Luke has, it is true, a considerable unity of structure, particularly in its Matthean form. It may be questioned, however, whether this unity is due to the compiler of his sayings or to Jesus himself. Probably a middle view is preferable, to the effect that Jesus at some time set forth in orderly fashion his position on certain points of Jewish ethics and that gradually other sayings of his were nucleated about this material into what appears now as a considerable discourse. But the arrangement of the sayings of Jesus was certainly very unlike the discussions attributed by Plato to Socrates. Even less were they the product of a literary process. To a considerable extent they were the outgrowth of controversy and generally were the apparently unpremeditated expression of his convictions regarding definite matters proposed to him by either friend or enemy. Yet it would be unfair to say that, while his teachings were thus occasional rather than systematized, they lack unity either in point of view or in substance. Their spontaneity and almost anecdotal quality give them much of their charm and efficiency without detracting from the unity of impression due to their radiating from a central conviction. However various the circumstances which occasioned their utterance, the sayings of Jesus are astonishingly easy to

group schematically, for his thought was lucid and consistent. The repetition of important truths not only was necessitated by this occasional method, but serves to give the student the perspective of his thought, at least as it appeared to his immediate hearers, for repetition is one of the most common modes of emphasis in earnest instruction.

*His teaching was analogical and poetic rather than literal and scientific* — Speaking generally, Jesus has left us no sayings dealing with the world of nature except as illustrative of moral and religious truths. His central positions are expressed more literally than are their amplifications, but his method is not that of scientific exposition. Compare only his teaching as to virtue with that of Aristotle's *Ethics*. Judaism had developed a literary form of power and beauty in its Wisdom literature. This equivalent of the Greek poetical composition had a definiteness of structure marked by parallelism and strophic arrangement. Such teaching was highly figurative as well as epigrammatic and may be illustrated by the sayings of Jesus concerning the supremacy of the eternal life over all physical goods (Mk 9:47 sq.). The use of this literary form was in thorough accord with the anti-legalistic, inspiring spirit of Jesus himself.

Another type of such analogical teaching is the parable. Such a form was not unknown to the rabbis, but in its use by Jesus it reached an incomparable literary beauty. As a pedagogical device a parable is a story of facts, judged to be real or at least not impossible by the speaker and hearers, which is used to enforce or illustrate a spiritual truth. It is generally introduced by some word of comparison such as "like." This form of teaching is of particular value in bringing unaccustomed truths home to men in that it appeals at once to their experiences. It further serves, as Jesus himself seems to say (Mk 4:11), to lodge a truth in the mind of one's auditors even before it is fully understood. The analogy is thus made germinal conviction,—and its use thus appears an element of a consciously adopted method of teaching. This method of instruction Jesus seems to have used almost exclusively during the few months of relatively peaceful instruction after the Galileans began to regard him with favor, and while he was beginning to unfold his constructive ideals.

Other forms of his analogical teaching are similes and the apocalyptic imagery of his day. On this latter point it is not necessary to dwell as criticism shows that Jesus used the form only rarely, and then as a point of contact with his Jewish hearers.

*His teaching was progressive and to some extent cumulative* — If one will compare the teachings of Jesus as he took up his work with those which he uttered in the latter part of his ministry, it will be apparent that he passed from the heralding of the message that the

Kingdom of God was immediately to come to the less dramatic exposition of the bearing of his central position of God's Fatherhood upon social relations as well as of the indispensable virtues of love and forgiveness. In this transition a genuine progress can be seen from the appeal to the preconceptions of his unlettered audience to the inculcation of his characteristic positions. Its justification in large measure lay in the fact that he had gathered about him a group of disciples who were increasingly sympathetic with his own aims, and, despite the persistence of their earlier naive expectations, were ready to accept his teachings as authoritative. In the fourth Gospel (Jn 16:12) we have preserved a distinct tradition of a saying of Jesus to the effect that he had practiced self-restraint in his teaching and that he must leave the completion of his instruction to the work of the Holy Spirit in the hearts of his disciples. Such progress made possible the most valuable of the contributions of Jesus to religious thought. He might have left others, if only the disciples had been capable of abandoning more completely their inherited prejudices. In a number of instances Jesus speaks of the disciples' slowness and dullness shown in grasping his real meaning. Like any other teacher, Jesus found himself handicapped by the incapacity of those whom he instructed, e.g. by the fear of his own disciples to ask questions concerning even so vital a matter as his announcement of his approaching death. Thanks to this timidity on the part of his disciples, the world has never known precisely how Jesus himself interpreted his death.

*His teaching was conditioned by the degree of intimacy which existed between Him and those whom He instructed* — On the outside of his circle of friends were the Pharisees. To them Jesus stood in unalterable and fundamental hostility. He never undertook to instruct them. On the contrary, in order to exhibit distinctly the difference between their legalism and his own belief in religious freedom, he criticized them mercilessly and endeavored to make himself a friend of those who were morally discontented. But within the circle of his friends there were successive grades of intimacy and a consequent scale of more advanced instruction. Jesus, like the Jewish teachers, drew about him a group of disciples. To those "who were without" his instruction was given in parable, both for the protection of himself and his cause and for the advantage of the disciples themselves. To these latter were given explanations of his parables in order that they might know the "mystery of the Kingdom of God." How far this esoteric teaching of Jesus, which is the heart of the gospel, was shared by others than his immediate disciples is of course difficult to say. Yet just as the influence of Judaism extended far beyond the synagogue, and many

Greeks who had not accepted it as a cult were affected by its religious teachings, it is not improbable that his influence was much more widespread than even his popularity among the masses might argue. Origen (*Ag. Celsus* 1 22, 31, 12 21, cf 1 7, 12, 24, 25, 29) speaks of the two sorts of teaching given by Jesus but leaves us in doubt as to whether he is speaking as an historian or as a commentator.

*The Teaching of Jesus was Pragmatic* — Starting with the experiences of those to whom he spoke, whether those of the farmer, the fisherman, the shepherd, or the housewife, he helped them recognize the essential unity of life in the natural and spiritual realms. Jesus thus grounded authority ultimately in the reality of experience. By virtue of his own experience he assumed a highly authoritative attitude and seldom argued as to the truth of his teachings. They were rather to be subjected to the test of practical value. The evidence of their truth lay in the peace and joy which their acceptance brought, just as evidence of genuine discipleship lay in a willingness "to do the things he commanded." In this connection also should be noted Jesus' habit of adducing principles from concrete events—an element of method to be expected in one whose teaching was so vivid and vital as his. He does not, however, generalize so much as interpret the episodes he thus uses.

*Jesus' Polemical Teaching* — Such teaching is by no means infrequent in the gospel records and may be fairly said to constitute an essential phase of method. The attitude of Jesus was one of criticism of the highly technical and legalistic religion which had grown up about the Law and the Temple. It is not difficult, however, to find in his polemic the constant endeavor to recall those whom he addressed to the finality of the spiritual values of their faith. That in the case of the ecclesiastics he failed is not surprising, but his failure was a means by which thousands of men and women have been brought into the larger freedom of the spirit which legalism of any sort tends to crush. If, indeed, Jesus were a critic of existing institutions and beliefs, he was also able to substitute for that which he destroyed a new group of truths which should lead their possessors into an enriched spiritual life.

*The Method of the Apostles* — The problems which confronted the apostles were in many ways different from those which confronted Jesus. Jesus never organized his followers into a precisely defined group. After his death, however, his disciples immediately undertook the work of propaganda, and like their master were forced to face abuse and suffering. Yet they were able to carry the power of the gospel into the most ordinary affairs of their individual life. In so doing they organized those who accepted their

preaching into little groups of men and women,—the primitive churches. With the rise of such institutions, many of them on heathen soil, there was need of a more definite instruction, first as regards the gospel, second as regards Jesus, and third as regards the Christian life. The teacher thus was differentiated from the evangelist.

*Instruction given converts to the new faith* was in two fields. (1) The facts of Jesus' life and teaching. The Christians who had never seen Jesus especially needed such instruction. The evangelist or apostle who brought to them the message of salvation through him doubtless gave a certain amount of information concerning his life in Galilee and particularly concerning his death and resurrection. This seems to have been the message Paul himself uttered when he first came to Corinth. The gospel which he delivered was the one which he had himself received and it dealt with the historic facts of Jesus' life as well as the implication of these facts (1 Cor 15 1-7). At this point it is true one enters a much debated field, but it would seem possible, if not probable, that the "minister" Mark whom Paul and Barnabas took with them on their first missionary journey had for his duty the instruction of these early converts in the facts of Jesus' life. The fact that his name was attached to a gospel containing just the sort of information which the new convert needed argues strongly that it is a fair sample of the sort of material used for the purposes of instruction by those who, unlike the apostles and the evangelists, devoted themselves to the painstaking and minute instruction of the new converts in the facts which justified their faith (cf Lk 1 1-4).

(2) The bearing of the Christian hope of a new age and the Kingdom of God upon conduct. The early Christians believed that they were waiting for the appearance of a great spiritual kingdom which would emerge out of the sky and would receive them into itself. They were, therefore, not interested in the reforming of society. They had, however, to live in the midst of heathen surroundings, and this was a task of no small magnitude. Paulinism from certain angles might be described as the application of the Gospel to human affairs. Paul's letters face the perennial difficulty of bringing home to men and women hardly free from the control of heathenism the Christian ideals of family and other forms of social life. His instruction is not formal, but consists largely of treatment of specific problems such as marriage, business, slavery, the personal appearance and habits of men and women, etc., from the new point of view. In the course of time there developed what was known as the Apostles' Teaching and this became more or less systematized in the *Didache*, but it would certainly be a very serious error to think of the work of the apostles

as in any sense that of University Extension lecturers on the science of ethics. They were rather ecclesiastical statesmen engaged in organizing communities and instructing them as to the practical duties of everyday life now revolutionized by the supremacy of eschatological and "spiritual" values.

The apostolic teaching was both deductive and affected by the habits of thought of the time. Paul, in particular, proceeded with considerable logical severity from the general position which faith in Jesus as Christ involved. The Messianic program which Jesus was expected to fulfil upon his return from Heaven, carried with it certain implications relative to social life. This belief in the speedy return of their Messiah became less a source of moral renovation than of conservatism. The institutions and interests of the present historical order were soon to come to an end, and in consequence were to be endured rather than transformed. Consequently the teaching of Pauline and later New Testament literature is essentially unsocial so far as the nonreligious relations in life are concerned.

To justify, *e.g.* the subjection of women, the maintenance of slavery, and the submission to government, the apostle makes use of the methods of exposition of his day as they existed among the rabbinical teachers. Certain parallels, it is true, may be found between his thought and that of Stoicism, but they are hardly more than the expression of general principles which all ethical thought has recognized. It is impossible to find in his letters any controlling influence of such university training as he may have obtained in Tarsus. On the contrary, Paul manifests a decided hostility towards philosophy, insisting that the "wisdom of this world" is foolishness in the eyes of God and that he has a spiritual wisdom, "not of this world," which he can share with the perfect. Just what this wisdom really was his letters do not enable us to say, but it may be surmised that it was allegorical interpretation similar to that which he occasionally used.

Under the influence of his rabbinical training Paul does not hesitate to argue in a way all but unintelligible to persons trained in Greek methods of thought. Such methods are to be seen in controversies with Jewish opponents as in Gal. 3 15-22, 4 21-31. In similar accord with his teachers is his constant use of the Old Testament. As the authoritative oracles of God, the Old Testament literature was to Paul, and indeed to all the early church writers, a court of appeal as truly as to the rabbis. Quotations from the Scriptures are often arbitrary, the sentences being detached from the context, but the early Christians who thus were under the influence of contemporary theological methods seem never to have doubted the value of the method and in some cases approved what we must believe

were the even more pronouncedly Alexandrian methods of Apollos, who is said to have been "mighty in the Scriptures."

*Occasional lack of proportion both in the treatment and method* of Paul is accounted for by the fact that most of the teaching was the outgrowth of definite problems and sometimes definite questions. Occasionally he recurs to the teaching which he himself had received, but this itself was probably not very systematic. As an Apostle he claimed original authority in that he had not been instructed by the original Twelve and in that his gospel came to him directly by the revelation of the Christ. The letter to the Romans is the most systematized and academic of his writings which have survived, but it is an oratorical treatise rather than a pedagogical exposition. In it the characteristics already mentioned appear, though less pronouncedly than in Galatians. Most of his extant writings, however, are composed of independent treatments of specific problems, such as marriage, the resurrection, the position of women, justification by faith, current philosophies, and gifts of the Spirit. In them it is possible to discover that germinal system of thought which the theologians have made the vertebral column of the Christian system, but there is little of strictly pedagogical method. The nearest approach to the recognition of pedagogical principles is apparently to be seen in his refusal to give his advanced views to those who, like the Corinthians, were prepared only for the "milk" of his teaching.

This recognition of the need of progress in Christian thought becomes more apparent in the later New Testament books, such as the *Epistle to the Ephesians* and the *Letter to the Hebrews*. In the latter book the unknown author distinctly states that he intends to proceed from the "elements" of the Christian system to "perfection," *i.e.* to a sort of Christian gnosis. But the other New Testament books are religious tracts rather than educational treatises, and show no marked variation from the method of the preacher as distinguished from that of the teacher. In them all there is an exclusion of philosophical and revolutionary doctrines, an inculcation of patience pending the "day of the Lord," encouragement to maintain the hope of the approaching glorious deliverance, and exhortation to be among those who were to share in the triumphs of the returning Christ.

**The Beginning of the Organization of Education** — In the New Testament, however, there are hints of more systematic instructional methods than the practical doctrinal exposition of the apostle would seem to indicate. Christianity is as much a creature of an institution as of a group of doctrines. In fact, it may fairly be said that its practices have generally preceded its doctrinal formulations. (a) *Teaching and Prophesying*.—While we find in Paul no organized system of Christian

instruction we do find references to the "gifts" of teaching and prophesying. At this distance it is impossible to discover with absolute precision just what these "gifts" were, but the term at least indicates a differentiation of function due to abilities which were attributed to the inworking of the spirit of God. The teachers undoubtedly were those who had the ability to set forth the supportable implications of Christian hope in some more or less systematic fashion. The prophets seem to have had the capacity to set forth something similar, but doubtless with less reliance upon logic and more trust in the inspiration of the moment. Paul distinguishes both functions sharply from that of the "gift" of "tongues," which he regards as not intended for "edification." In the words of the new prophets there lay the possibilities of convincing the minds of the non-believers. In the work of the teachers, there lay means of supplementing the practical instruction which Paul himself gave in his letters.

(b) *A professional Teaching Body* — The development of the church further tended to differentiate a group of people whose business it was to teach in spiritual matters. These Paul announced were worthy of being paid. Such persons were evidently not priests but doubtless resembled the synagogue preacher and the modern pastor. How far their instruction went and how early they became a distinct class it is now impossible to say, but that there was some instruction in Christian facts and doctrine of a formal sort seems to be evident from Galatians 6:6, and particularly from Luke 1:4, in which Theophilus is said by Luke to have been instructed (catechized). Reference has already been made to the possibility that Mark may have belonged to a class of church workers called the "ministers of the word," but there remains a great obscurity as to the exact meaning of the title. By the beginning of the second century it is clear that instruction was already pretty general in the churches. To the need of such instruction is doubtless to be attributed the reduction to writing of the traditions carried *memoriter*. Variations in the synoptic gospels may fairly well be accounted for by the assumption that they represent the types of such instruction given in different parts of the Roman Empire. With the reduction of the oral traditions of Jesus to writing (a process which was doubtless in the main complete before the destruction of Jerusalem in 70 A.D.), the possibility of genuinely catechetical instruction was established and such instruction may be assumed to have begun. We have, however, no conclusive evidence of any particular instruction of the young in Christian doctrine.

**Summary** — The pedagogical methods of the New Testament, in so far as they are anything other than those of practical counsels,

may be said to have been empirically well adapted to conditions. Their subject matter was not general biblical or scientific information, but rather practical directions for living; as such they utilized the experiences of both teacher and those taught and set forth the principles of the New Christian idealism in accordance with current methods of thinking but without formal institutions or methods for instruction. The extraordinary success of the new faith must be accounted for not so much by any novelty in its pedagogical methods as by the applicability of its tenets to the Græco-Roman world. S M

See CATECHETICAL SCHOOLS, CATECHUMENAL SCHOOLS; CHRISTIAN EDUCATION AND THE EARLY CHURCH, JEWISH EDUCATION

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**NEW YORK, CITY OF** — The present city of Greater New York, as formed by consolidation in 1897, includes the borough of Manhattan, or New York proper, the borough of the Bronx, to the north and east of Manhattan, the borough of Brooklyn, formerly the independent city of Brooklyn, and itself a consolidation of a number of towns, the borough of Queen's, being a part of Queen's County, on Long Island, and including Flushing, Hempstead, Jamaica, Long Island City, and Newtown, and the borough of Richmond, coterminous with Staten Island, in the lower bay. The combined city has an area of 320 square miles. The population of Greater New York City in 1910 was 4,766,883, or practically the same as for the state of Ohio.

**Educational History** — The history of education in the state of New York during the colonial period, both under the Dutch and English rule, has been traced under the history of education in the state of New York (See NEW YORK, STATE OF). The first free school in the city after the Revolutionary Period, was opened in 1787 by the Society for Promoting the Manumission of Slaves, with twelve colored pupils in attendance. In 1794 the school was incorporated as the African Free School and a few years later a school-house was built in Cliff Street. By 1797 small grants were made to the school by the city corporation. The first free school for white children, enforcing no religious restrictions, was opened in 1801 by the Association of Women Friends for the Relief of the Poor, organized in 1798 by a group of women connected with the Society of Friends.

*The Public School Society* — In 1805 a similar society was organized by a number

of philanthropic citizens and chartered by the legislature as the Free School Society of New York, and its powers were extended to include in its educational work "all children who are the proper objects of a gratuitous education." For the next few years the Society received aid and grants from the city and from the state legislature and in 1815 participated in the new State Common School Fund. (See NEW YORK, STATE OF.) By 1826 eight schools, with separate departments for girls in nearly all of them, enrolling 345 pupils, were in operation and gave instruction in reading, writing, figures, and religion (the children attending some place of worship regularly as a condition of admission). The Lancasterian system was employed from 1817 on. In 1818 Lancaster (*qv*) lectured under the auspices of the Society, which in 1820 published *A Manual of the Lancasterian System*. But in spite of the progress of the Society, many children were still unprovided for. In 1829 an inquiry, made by the Common Council, showed the following as the status of education in the city —

SCHOOLS	TEACHERS	PUPILS STUDYING			TOTAL PUPILS
		First Elements	Geog. Gram. Arith.	Higher Branches	
430 Private and Church schools	132	6907	7214	1869	15320
3 Incorporated schools	6	220	841	270	1081
19 Charity schools	25	2430	960	15	2545
11 Public schools	21	6007	475	—	6007

As early as 1822 the Society had considered the advisability of organizing instruction in the higher branches for the more promising pupils, but no action was taken toward extending the Society's work until after the reorganization in 1826. The years 1822 to 1824 were marked by the first of the Society's struggles with the religious organizations which for so long had controlled the educational situation in the city. The Society's work was largely cut into by some church-supported Lancasterian schools. The matter was carried to the legislature, and, after a long struggle, the basis of apportionment was changed by giving all of the New York City school money to the Common Council for distribution as they saw fit. The Council, after deliberation, unanimously decided to cut off all church schools from the grants, and the year 1824 thus marks an important step in the establishment of a non-denominational public school system for the city.

In 1826 the Society changed its name by charter from the Free School Society, to the Public School Society of New York, and was authorized to charge tuition fees for instruc-

tion, and to grant remittances of fees to those too poor to pay. Large numbers of parents who had previously sent their children to the Society's schools found themselves now "too poor to pay and too proud to confess their poverty." The result was that the schools, which at the beginning of the experiment had enrolled 3457 children, in six months fell off to 2999, two thirds of them being pay pupils. In 1818 the legislature had granted the Society aid from the license money paid by dealers in lottery tickets, and in 1829 a property tax of one eighth of a mill was granted in addition for maintenance. With increasing revenue, it was soon decided to make the schools free to all.

In 1827 the Public School Society organized a "junior department" in School No. 8, with a woman as teacher, for children of three years and upward, and taught on the Lancasterian system. In 1828 the Infant School Society, which had opened its first school in 1827, was permitted to establish its second school in Public School No. 10. In 1829 a report was made to the Board favoring the infant school system of training, and in 1830 the junior department of No. 8 was converted into an infant school. The new designation of primary department was now applied to such schools, and women teachers were decided upon for them. From this time on, the primary departments became an important part of the Society's work. The Society in 1830 had eleven buildings, containing twenty-one schools, and having an attendance of 6178. Two of the schools were infant schools, and three were coeducational. In 1832 the monitorial system was in large part abandoned. A committee on primary schools was appointed by the Society, and it was decided to organize ten such schools, under women teachers, for children four to ten years of age, and after the Boston plan, where the committee had visited and inspected the schools. In 1833 the first free evening schools were established, but they were abandoned a few years later. In 1834 the Manumission Society turned over its buildings and equipment to the Public School Society, and these schools became the African (in 1838 changed to colored) schools of the city. In 1834 also a special Saturday school, for the instruction of the female monitors employed in the primary schools and departments, was established, and in 1835 similar schools for the monitors in the boys' schools were provided. In 1828 the Society had appointed a "visitor" to look after attendance, and, in 1833, the title was changed to "agent" and he was also made a business supervisor for the city. In 1837 the office of superintendent of repairs was created, an office which gradually developed into that of school architect.

*Creation of the Board of Education.* — In 1842 the first board of education was created as a result of the claim of denominations which

desired to share in the school funds of the Society, city, and state. Each of the seventeen wards of the city was created a separate school town, and a board of education, composed of two commissioners for each ward, was to be elected by the people. Each ward was also to elect two inspectors and five trustees to act as a local school board. Existing schools were not disturbed, but public funds could not now be granted to any school or society "in which any religious sectarian doctrine or tenet shall be taught, inculcated, or practiced."

The new Board of Education began operations in 1842, opened its first school in 1843, and by 1848 had twenty ward schools, two primary schools, and two colored schools in operation. The new system was cumbersome, imperfect, and lacked the intelligent direction of the old Public School Society, but made very substantial progress. For some years the two school systems existed side by side, with more or less friction. Under the new system the old monitorial plan of instruction was either greatly restricted or entirely abandoned. The buildings erected by the Board had more and smaller classrooms and more teachers, and this and other popular features of the ward schools, as they were called, gave them a great advantage over those of the Public School Society. In 1848 the right of the Society to build any additional schools was questioned by the Board, and later prohibited by the legislature. This placed the old Society at the mercy of the new Board of Education, and in 1853 the two were consolidated. The Public School Society passed out of existence after forty-eight years of service, turning over to the city school property valued at \$604,820.46. During the period of its existence the Society had educated over 600,000 children and more than 1200 teachers. By the terms of the consolidation act, fifteen members of the Society were elected to seats in the Board of Education. The new Board assumed control of a school system consisting of 214 rooms or departments, twenty-one of which were for colored children.

*Work of the Board of Education* — The Board of Education from the first began an active campaign to establish schools. During the first ten years of its existence the city increased 60 per cent in population, while the schools increased 120 per cent. In 1847 evening elementary schools were reestablished, and in 1849 a free academy which in 1866 became the College of the City of New York (*q.v.*). In 1841 a county superintendent of schools, elected by the county board of supervisors, had been created, and in 1851 the legislature granted the Board permission to appoint a city superintendent of schools, one or more assistant superintendents, and a superintendent of school buildings. By 1860 the Board had under its control forty-seven gram-

mar schools for boys, forty-seven grammar schools for girls, eighty-seven primary schools and departments, and eleven colored schools, a total of 192 schools, employing 1548 teachers, and having an average attendance of 55,050 pupils. By 1870 there were 190 schools, 2407 teachers, and an average attendance of 85,307 pupils. The population of the city at this time was 942,292, and the school population about 200,000. In 1866 the evening school system was remodeled, and the first evening high school was established. In 1869 a Female Normal and High School was authorized and established, which, in 1888, was transformed into the City Normal College. In 1869 corporal punishment was prohibited, in 1871 the first law permitting the issue of school bonds was enacted, in 1873 the Nautical School was established, in 1874 the first compulsory education law was passed, and a supervisor of truancy was appointed the following year, in 1884 the separate colored schools were abolished, in 1888 the free public lecture system was established, and in 1887, 1888, and 1890 additional evening high schools were created. The period from 1860 to 1890 has been termed the period of peaceful expansion. Only minor improvements were made during this period, the chief legislation during these three decades relating to the composition of the governing bodies, with the district trustee system as the chief point of issue. In 1871 a Department of Public Instruction, as a branch of the city government, was provided for, with a Board of Education of twelve, all appointed by the mayor. These two laws appear to have been in advance of the public sentiment of the time, and in 1873 they were repealed, and the law of 1864 virtually reenacted. This reestablished the district boards, and, in part, the district system of school control. The Board of Education of twenty-one members was to be appointed by the mayor, and the Board was in turn to appoint the ward boards of five district trustees each. The Board of Education became a legislative and supervisory body, and the district trustees appointed teachers, looked after the school property, and recommended principals and vice-principals to the central Board for appointment. In this condition the organization of the New York City schools remained until 1896.

The ward system at its best was unsatisfactory as a system, and gave rise to much complaint. In the selection of the boards it was generally believed that religious and racial questions, rather than educational efficiency, were dominant. The schools were criticized as narrow and partial, and were often suspected of proselyting the children who attended them. The criticism rose to such an extent that the legislature directed the mayor to appoint a commission to revise the school organization for the city

and to report to the next legislature. The bill proposed failed of enactment at the sessions of 1894, 1895, and 1896, the district trustee system being the center around which the battle was waged. Finally, a substitute bill was adopted which abolished the trustees and created a board of superintendents, the latter to have the power to nominate all principals, vice-principals, and teachers, to recommend the course of study, to manage and supervise the schools, and to examine and license teachers. No change was made in the Board of Education itself or in the manner of its appointment, except to make it more in the nature of a board of trustees, with power to legislate and approve, but with little power to initiate. This law was the most important reform accomplished in the New York City school department in half a century, and, with the district trustees abolished, the way for future progress was at last clear. Nearly all of the important progress in the city school system has been made since this elimination of the district system in 1896.

**Brooklyn** — In Brooklyn, as in New Amsterdam, the minister preceded the schoolmaster. Probably the first school on Long Island was provided at Flatbush, in about 1653, though the first regular and full appointment as schoolmaster appears to have been in 1660. The first school tax was levied in 1661 for a school opened in Breucklyn. A third school was opened in 1663 in Bushwick (later reorganized as the first school in Williamsburg), and a fourth school was opened the same year in Bedford. Other schools were first organized in Flatbush in 1675, Gravesend in 1728, and New Lots in 1740. Two other schools were organized at Wallabout Creek and at Gowanus before the Revolution. All of these schools later became a part of the public school system of the city of Brooklyn. The Dutch language was employed at first, but from 1758 up to 1800 both the Dutch and the English language were used. In the Bushwick school Dutch was taught up to about 1835. As late as 1770 the town of Brooklyn contained only one school, with nineteen pupils. In that year a schoolhouse was built by subscription, and the subscribers elected trustees to manage the school and to admit free those unable to pay tuition. It is claimed that the Gowanus school (later Brooklyn No. 2) was organized as a school district under the new State School Law of 1810. In 1815 the first distribution from the State Common School Fund was received, and in 1816 Brooklyn levied a village tax of \$2000 to open another school. At that time there were 552 children in the village not attending private or church schools. Six other schools are reported as having been organized in the village before the incorporation of the city of Brooklyn in 1834.

On the organization of the city, the Common Council was given power to organize the

schools. This was then done on the district system plan, the Council appointing three trustees for each school in the city, who were in turn to select the teachers and to manage the school. For the city as a whole the Council also appointed three inspectors and three commissioners, by way of integrating and harmonizing the district control. This form of organization continued up to 1843, when the first governing body for the schools of the whole city was created. The Council was created a Board of School Commissioners, with power to appoint two or more persons from each school district, for three-year terms, to constitute, with the mayor and the county superintendent of schools, a city Board of Education. In 1847 the Board of Education was authorized to appoint a Superintendent of schools for the city. In 1854 the city of Williamsburg and the town of Flatbush were consolidated with the city of Brooklyn, and the membership of the Board of Education was increased to forty-five, at which it remained during the rest of its history. In 1862 the mayor was given the power of nomination of members, and in 1882 he was given full power of appointment. In 1873 the schools were organized under the Department of Public Instruction of the city government, and the title of the superintendent was changed accordingly.

Beginning with the organization of the Board of Education in 1843, the important steps in the evolution of the Brooklyn school system may be briefly traced. After several attempts to conduct Saturday normal classes, a teachers' training school was established in 1885, with a one year's course of instruction. The first uniform course of study was prepared in 1866, and remained almost unchanged for twenty-one years. In 1874 the first unification of the grammar school work was made by a provision for uniform examinations for the completion of the grammar schools. In 1876, following the enactment of the first compulsory education law in 1874, a superintendent of truancy and five agents were appointed, in 1878 two attendance schools were provided, and in 1895 a truant school was created by the Board. In 1851 the first evening high school had been established, and in 1880 a second evening high school was provided for. In 1883 a head drawing teacher was appointed, in 1890 a supervisor of drawing and in 1896 a director of sewing and four sewing teachers. In 1897 the first public kindergartens were opened. In 1878 the Central Grammar School, with a two years' course, was opened, in 1887 the course was extended to three years; and in 1890 a four years' classical course was first outlined. In 1891 a Boys' High School and a Girls' High School were evolved out of the Central Grammar School. In 1894 the Manual Training High School was created, and in 1895 the



Erasmus Hall Academy in Flatbush was accepted and transformed into the Erasmus Hall High School. In 1883 the Brooklyn Bridge was opened, and led to the rapid growth of Brooklyn.

From the organization of the city in 1834 the Council had been permitted to appoint boards of school trustees of three to look after and manage each school. In 1851 this was definitely transformed into the "Local Committee System," of three trustees for each school. When high schools and training schools were established, local committees for these were also established, and in time the system grew so formidable that substantial progress under it was very slow, if not almost impossible. The local committee system and the unwieldiness of the large Board of Education were subjects of discussion and criticism for years, and in 1894-1895 efforts were made to secure a more centralized administration and a Board of Education of fifteen members. Before anything was accomplished, however, Brooklyn in 1897 became a part of the city of Greater New York.

**Present System** — The Greater New York charter of 1897 provided for the consolidation of the old city of New York, including the Bronx, the city of Brooklyn, a part of the then Queen's County, and all of Richmond County into one greater city organization. The New York and Brooklyn Boards were continued without change, the different town and county school organizations in Richmond County were consolidated under one Board of Education, and the same was done for that part of Queen's County which was annexed. The city superintendents of New York and Brooklyn became borough superintendents, and borough superintendents were to be appointed for Richmond and Queen's. A Central Board of Education of nineteen members was to be constituted, by representation from each of the boroughs. The result was a federation, with no more disturbance of existing conditions than was necessary, and with no great powers lodged with the Central Board. In Brooklyn the local committee system was expressly continued, and this was not abolished until the new Charter of 1901. The Central Board was made the custodian, also, of all school moneys, and was required to appoint a School Treasurer and to establish a disbursing office.

The disadvantages of having four borough school boards and a loosely organized central body were so many that, after four years of trial, the plan was abandoned. In 1901 a revised charter was obtained for the greater city which unified the different parts of the school system for the first time, and with certain minor changes still continues.

The school system as at present organized is directed by a Board of Education of forty-six members, appointed by the mayor. Of

these, twenty-two are appointed from the Borough of Manhattan, fourteen from the Borough of Brooklyn, four from the Borough of the Bronx, four from the Borough of Queen's, and two from the Borough of Richmond. An executive committee of fifteen directs much of the work of the Board, and fourteen committees look after various special lines of work. The city is divided by the Board of Education into forty-six school districts, for each of which a board of five citizens is appointed by the borough president. One member of the Board of Education, designated by its president, and the district superintendent of schools having supervision of the district, are also members of each local board. These local district boards are largely advisory in function, but have some important supervisory powers over the school property of the district.

The Board of Education appoints a superintendent of schools for the city, and eight associate superintendents, who together constitute the board of superintendents, and, on their recommendation, the Board appoints the district superintendents, of whom there are twenty-six. The initiative in practically all educational matters is given to this board of superintendents, and its educational powers are large. A board of four examiners has control of the examination and certification of all teachers and principals. The Board of Education appoints a superintendent of lectures, who has charge of the free lecture system (*gr*) of the city, a superintendent of libraries, who looks after the libraries and library work in connection with the schools; and a board of retirement, to administer the Teachers' Retirement Law.

The Board of Education is allowed the proceeds of a three-mill tax for salaries, but all other expenses are wholly within the discretion of the Board of Estimate and Apportionment for the City, to whom the Board must apply for funds. The Board of Education possesses by law such general powers as are necessary to establish and control a complex city school system. The city superintendent of schools has a seat in the Board, with the right to speak but not to vote. He is charged with the enforcement of the compulsory education laws, and nominates all attendance officers for appointment. He assigns their duties to his subordinates, and oversees their work. He presides over the board of superintendents and the board of examiners. The board of superintendents nominates all district superintendents, principals, heads of departments, and teachers, selects all textbooks, apparatus, and supplies, nominates the directors of the special branches of instruction, and assigns the assistants to their work, recommends changes in grades, classes, and courses of study, and determines all promotions and transfers of teachers and supervisors, subject to the approval of the Board of Education. The

district superintendents are assigned to the supervision of different districts of the city, or to different branches or divisions of the educational work

*Scope of the School System* — In size and complexity the school system of the greater city is virtually a great state school system in a condensed form. The city of New York enrolls a larger number of children, employs four fifths as many teachers, and expends half as much again for education as the state of Ohio. The school census of the city exceeds a million and a half of children, about 800,000 children are in average daily attendance at the public schools, a city college, a large normal school, and branch training schools, twenty-two day high schools and a dozen evening high schools, about two hundred day and about fifty evening elementary schools, trade schools, a system of vacation schools and playgrounds, a nautical school, and an extensive evening lecture system are maintained, about 18,000 teachers, and a thousand supervisory officers are employed, and the current expenses total about thirty-five millions of dollars, and are increasing constantly and rapidly. The College of the City of New York (*qv*), located in Manhattan, is one of the large and important colleges of the United States. The city normal school is also a large and an important institution. Training schools are also maintained in Brooklyn and Queen's. The high schools employ about 1500 teachers, and enroll about 40,000 students. They represent different lines of instruction, there being manual training, commercial, and vocational high schools, as well as high schools of the more traditional types. A number of evening high schools of different types are maintained in the different boroughs, the evening vocational or trade schools being of an excellent type.

*Educational Conditions* — The greater city has recently made very remarkable endeavors to meet the educational needs of a very complex and difficult educational situation. Most of the important progress has been made since the elimination of the district system, and the inauguration of the present system of school control. Owing to the very rapid growth of the city from births and immigration, the struggle to provide seating accommodations for all has been a long and as yet an unsuccessful one, despite the erection of numbers of excellent new buildings. The buildings erected within the past fifteen years are among the best of their kind. The educational problem is rendered especially difficult by the fact that New York City is one of the most cosmopolitan cities in the world, and hence has large numbers of children of foreign parentage in the schools. Over one third of the total population is foreign born, and about three fourths of the population is of foreign parentage. The Germans, Irish, Italians, Russians,

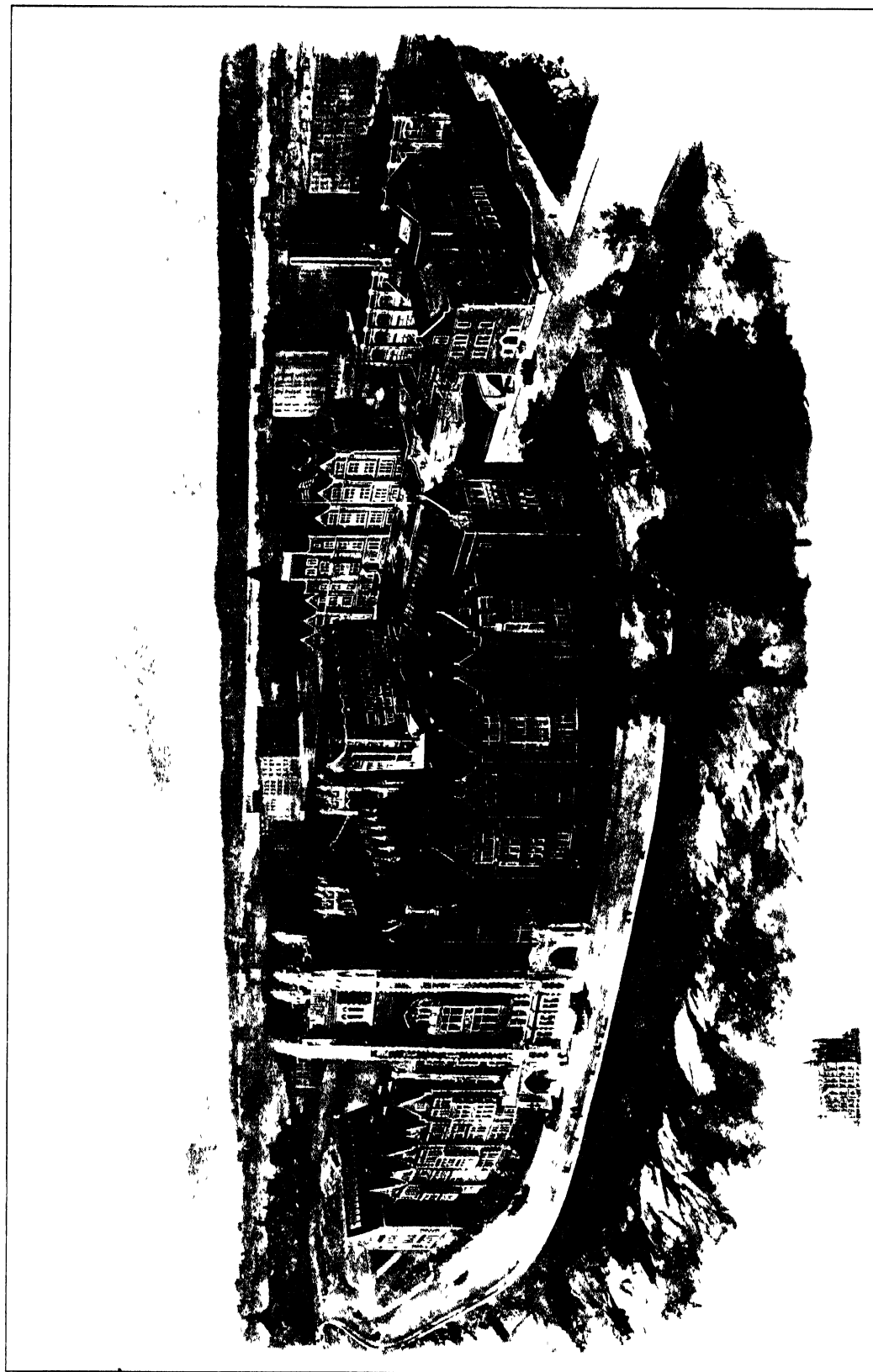
Austrians, and English, in the order given, are the leading foreign nationalities, though almost every foreign nationality and race is represented in the city's population. This, with the congestion of population, the large amount of poverty, and the absence of the wholesome home restraints to which the children of these foreign peoples are accustomed in Europe, makes the educational problem in the city especially difficult. The peculiar conditions call for a centralized educational administration and for a high quality of educational leadership. To cope better with the truancy and child labor situations new legislation of an important kind has recently been obtained, and the metropolitan school census law recently enacted, under which the police make an annual house to house investigation, gives the city of New York the best school census law to be found in the United States. As might naturally be expected in a city where the schools were for so long relatively poor and the public school system incomplete, and in a city possessing so large a foreign element, the private school and the parochial school abound, though these schools have not increased so rapidly since the public schools have come to represent a higher type of public education. E P C

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**NEW YORK, THE COLLEGE OF THE CITY OF** — The capstone of the free public educational system of New York City. In response to the repeated proposals to found a Latin School or an Academy, a committee was appointed by the legislature of 1846 to study the advisability of such a step. The plan for an institution of higher learning was submitted to the people in the election of 1847 and was carried by an overwhelming vote. The Free Academy opened its doors with 143 students and a faculty of nine, under the leadership of President Horace Webster. The Free Academy was an attempt to evolve an institution that combined both high school and college, and proved most successful. Its students and its faculty gradually increased,





its standards were steadily raised until it reached the level of the best of the eastern colleges

In 1866 the name was changed to The College of the City of New York, a title more in keeping with the rank and the scope of its work. Under the direction of its second president, General Alexander S. Webb, the sphere of work of the college increased in such proportions that annexes were built and temporary quarters were hired in adjoining buildings. By the close of the century, the pressure of a rapidly growing student body made it evident that new quarters were imperative. The city provided \$5,000,000 for a new home of five buildings on Washington Heights, with an equipment unsurpassed. In 1908 these new structures were given over to a student body of over 4000, including the preparatory classes, an instructing corps of about 230 under the presidency of John Finley. The college not only provides tuition for 1300 college students and over 2500 preparatory students, but also special instruction for over 3000 teachers of the city schools and for 500 evening students, and musical recitals and lectures for the promotion of higher musical interests to tens of thousands. All these activities are carried on through an annual appropriation of about \$600,000.

The aim of the college is to enable all ambitious young men, properly prepared, to obtain the cultural advantages of a higher education, to foster in them a civic and social conscience, to develop an ideal citizen body. A free education of college grade is open to all the city's sons, irrespective of race, creed, or class. Unlike the civic universities of England, often placed in the same class, the College collects no fees, makes no charges for books and apparatus, and does not depend upon the bounty or the philanthropy of any private individual. (See MUNICIPAL COLLEGES AND UNIVERSITIES.)

The present organization of the College dates back to 1900. Prior to that year the trustees of the College were also the members of the Board of Education of the city schools. Occupied with the vexing problems in the education of 750,000 children, the Board could not properly direct the policies of this single institution. In 1900 the Legislature gave the College a separate board of nine trustees, who were to be appointed by the Mayor of the City for a definite term. Beneficial results soon followed in the wake of this change, for it brought increased familiarization with the needs of the College, and concentrated effort towards the realization of the cherished plans for a new and fitting home.

The standards of admission are on the same high level as those in the leading eastern colleges. Students are admitted by a certificate of the College Entrance Board, or by a diploma of the city high schools or of Townsend

Harris Hall, the Preparatory Department of the College.

The spirit infused by the early authorities reflected their West Point training. The College is still characterized by severe discipline, rigorous mental work, a strict marking system, an emphasis on those subjects that give mental fiber. The classics are studied very intensively, and more mathematics is usually required than by other colleges in the country. The existing curriculum is an attempt to retain the rigor of the old course and rational latitude for personal choice. Six courses are offered: these are grouped under two heads, viz those leading to the B.A. degree,—classical, Latin-French, modern language, and those to the B.S. degree,—general science, biology-chemistry, mechanical. All work is prescribed through the sophomore year. In the junior and the senior year ample opportunity is given, through electives, for the pursuit of special interests and the cultivation of individual powers. The College was the first to establish a chair in English as well as the first to organize a Department of Mechanic Arts. It was one of the pioneers in the movement to introduce the sciences and place them on a par with the classics. It responded to the pressure of needs of the day by organizing in the last decade departments of public speaking, physical training and hygiene, education, economics and social science, and music.

In addition to the regular college course, the College cares for a Preparatory Department, Townsend Harris Hall, with more than 2500 pupils. In the hope of reaching those worthy young men who through force of circumstances were denied the benefits of a college education, the Evening Sessions were organized in 1910. A freshman class of over 200 enrolled, each meeting the same entrance requirements as those which govern admission to the day sessions. Over 500 evening students are at present pursuing regular studies of college grade, striving either to complete an interrupted course, or merely for personal development. In order to meet the needs of those teachers of the city school system who are endeavoring to improve their professional standing, it offers under its auspices regular courses in education, English, comparative literature, science, etc. Over 3000 teachers are in regular attendance. The successful completion of these courses entitles the teacher to partial exemption in promotion examinations given by the Board of Education of New York City.

The student body is different from that which one finds in the average eastern college. The enormous population of the city furnishes the students. There is no dormitory life. The young men scatter over the city each day when college labors and activities are over. The great majority of these students would

be denied a college education if it were not for the opportunity which the College extends to them. Social life and social spirit, however, are not absent. The students form their friendships in one of a large number of literary, debating, or science societies, and in the round of popular fraternities. Though the institution is nonsectarian, it is not irreligious, the Y M C A, Y M H A, the Newman Club, the Menorah Society, keep alive the religious spirit which many students bring to the College.

A municipal college, more than any other, must constantly be alive to its obligations to the community. The College of the city of New York, in its attempt to meet its social responsibility, has given its best graduates to the city school system. In the capacity of teachers, principals, superintendents, supervisors of evening education or of free public lecture centers, those who gained their inspiration at the College are striving in the colossal task of Americanizing the cosmopolitan and foreign population of the city. The College has its full quota of leading members of the New York Bar, of eminent surgeons, of illustrious engineers, of experts in sanitation, of leaders in architecture and in every phase of human endeavor.

J H F

## NEW YORK SCHOOL JOURNAL —

See JOURNALISM, EDUCATIONAL

**NEW YORK, STATE OF.** — First settled by the Dutch in the early part of the seventeenth century; it was surrendered to the English in 1664, and remained under their rule until the Revolution. In 1788 New York entered the Union as one of the thirteen original states. In size, the state is the largest east of Illinois and north of North Carolina. Its area is 47,654 square miles, which is about the same as that of England. The total population in 1910 was 9,113,614, which was greater than that of any other state, and in its density of population, 191.2 per square mile, the state ranks fifth. For administrative purposes the state is divided into sixty-one counties, and these in turn into superintendency districts, cities, towns, and school districts.

**Educational History — Under the Dutch.** — New Netherlands was founded by the Dutch West India Company as a commercial venture. New Amsterdam (now New York City) was the seat of the government and the principal settlement. By the time of the English occupation about a dozen villages had been settled, principally on western Long Island and along the Hudson River. So far as is known, the first school of the colony was opened at New Amsterdam in 1638 by Adam Roelantsen (the formerly accepted date of 1633 is now considered to be unauthorized). This school, as was the custom in the Netherlands, was a parochial school, the joint con-

cern of the civil authorities (the West India Company) and the Reformed Dutch Church. The former paid the salaries and exercised the principal control, the latter licensed the schoolmasters and exercised a certain supervision over the teaching. The schoolmaster was (generally) also the reader (*voorlezer*) and precentor (*voorsanger*) in the church, and often acted as sexton besides. In addition to his salary from the company he received tuition fees from all the pupils except the poor, who were taught free. In 1653 New Amsterdam received a city charter, and the school came more under the control of the city government. This school appears to have been maintained continuously from its foundation and is now probably the oldest elementary foundation existing in America. The outlying villages for the most part conducted parochial schools similar to that of New Amsterdam. In the case of these, however, the West India Company did not pay the salaries (though occasionally rendering assistance), nor did it exercise control. The support and control in each village lay in local court and church. In 1652 a trivial (Latin) school (*qr*) was opened by the Company in New Amsterdam, but lapsed in a short time. In 1659 another Latin school was opened under the joint support and control of the city and the Company. Private schoolmasters were found in New Amsterdam from an early date. These had to be authorized by the director and council. In the elementary schools the curriculum consisted of reading, writing, less of the arithmetic, the catechism, and certain prayers. Girls attended on equal terms with the boys. Besides the various Dutch settlements certain English-speaking villages were chartered. Possibly many of these had schools, but little is known of them.

**Under the English.** — After the English occupation the schools of the Dutch communities continued, in most cases, as public parochial schools until about the Revolution. Among the English inhabitants the principle of private enterprise in school affairs on the whole prevailed, as elsewhere in the colonies. Teachers were in theory licensed by the Governor or the Bishop of London. In New York the city authorities and the several churches did a little for the education of the poor by way of charity. In 1702 "An act for encouragement of a grammar free school" was passed, which provided for the appointment, by the Governor, of a schoolmaster to instruct the male children of French, Dutch, and English parents in reading, writing, English, Latin, and Greek. The school was to be supported by taxation, and the schoolmaster to be licensed by the Bishop of London or the Governor of the colony. The law was in force for a period of seven years, and at its expiration the school lapsed. It was not until 1732 that any further legislation took place.

Private instruction and private schools supplied such secondary, as well as elementary, schools as existed during the interim. Trinity School, in New York, dates from 1710. In October of 1732 "An Act to encourage a public school in the city of New York for teaching Latin, Greek, and Mathematics," was passed. The school was to be supported by the income from licenses issued to hawkers and peddlers, and was to be under the visitation of the justices of the supreme court, the rector of Trinity Church, and the aldermen of the city, who could remove the schoolmaster, for cause, and appoint his successor. Twenty free scholarships, distributed among the various counties, were provided. This law was also for a term of seven years, and after eight years this school, too, was discontinued, and the colony once more fell back entirely on private tuition and patronage.

The Society for the Propagation of the Gospel (*q r*) early organized elementary schools which in this colony formed no inconsiderable part of the elementary education of the English-speaking villages. Its first school in the colony was organized at Rye, in 1704, and between then and 1775 about sixty teachers were employed, schools being maintained at Albany, and in and about New York.

In 1746 the legislature passed "An Act for raising the sum of £2250 by a public lottery, for this colony, for the advancement of learning and toward the founding a college within the same." This was the first act looking to the foundation of a college for the colony, and the final outcome, after much discussion, was a royal charter from King George II, in 1754, creating King's College, afterwards Columbia University (*q r*). Instruction was organized at once, and continued up to the Revolution and the occupation of New York by the British. A grammar school was maintained in connection with the college.

**Early State Legislation** — The first state constitution was adopted in 1777, and amended in 1801, but neither the original nor the amendments contained any mention of education. There was little of an educational nature left in the state at the close of the Revolution. A few private and parish schools, a few academies, and a defunct college were about all. Excepting the college, the colony had never considered education as a public function.

In January, 1784, two months after the British left New York, Governor George Clinton, in his message to the legislature, gave the first official expression of the need of educational institutions for the state, and recommended "the revival and encouragement of seminaries of learning." The recommendation received prompt attention, but the final result was a bill to establish a state university. The friends of the defunct King's College now presented a petition for its reorganization, which was substituted for the

proposed bill, and the result was the creation, on May 1, 1784, of the Board of Regents of the University of the State of New York, with King's College, now revived and renamed Columbia, as the central feature of the plan. The Regents, of whom there were 31, though the number was further increased to 64 later in the same year, were empowered to found schools (seminaries or academies) and colleges in any part of the state, and to endow them, and every such school or college was to be deemed a part of the University. During the next three years the reestablishment of King's College (Columbia) occupied the entire attention of the Regents, and practically nothing was done toward establishing academies (or colleges) elsewhere in the state. The dissatisfaction arising from this condition of affairs led to the passage of a new bill, in 1787, under the title of "An Act to institute a university within this State, and for other purposes." All previous acts were repealed, Columbia College was set off, under a separate Board of Trustees, to work out its own development, though regarded as a part of the new and more comprehensive University, and a new Board of Regents of the University of the State of New York of 21 members was created, to whom was given the visitation, inspection, and oversight of "all the colleges, academies, and schools which are or may be established in this State," with power to make by-laws, confer degrees, receive and apply funds, and incorporate colleges and academies. All colleges and academies were to be under their own Boards of Trustees, and all colleges were to have the same corporate rights as Columbia. The University of the State of New York, as thus constituted, has since continued, and has exerted an important influence in the incorporation of academies and colleges within the state. On November 15, 1787, the first two academies (Erasmus Hall and Clinton Academy) were chartered. Since 1787 an annual report of the work of the colleges and academies has been regularly made to the legislature, and since 1835 the condition of the colleges and academies has been published with increasing detail. The University has devoted its energies to examining and supervising, and has not engaged in teaching. In 1863, however, the plan of an annual convocation was instituted, and in 1889 university extension was recognized as one of its proper functions. Professional and technical education, libraries, and museums have also been included.

The bill reconstituting the Regents provided only for secondary and higher education. In 1787 the Regents, in a carefully prepared report, called attention to the deficiencies in their articles of organization, and expressed the feeling "that the erection of public schools for teaching reading, writing, and arithmetic is an object of very great importance which

ought not to be left to the discretion of private men, but be promoted by public authority." Again in 1793, 1794, and 1795 the Regents called the attention of the legislature to the desirability of establishing elementary schools. It was not until 1795 that any definite action was taken by the legislature, and the schools created then were organized independently of the authority of the Regents.

Aside from the constitution and reconstruction of the Board of Regents, the first legislative act relating to education was that of May 10, 1784, directing the Commissioners of the Land Office to lay out the unappropriated lands of the state into townships, six miles square, and to reserve in each a lot of 300 acres for the support of a minister of the Gospel, and one of 690 acres for the support of a school or schools. This act must be regarded as merely one of encouragement to religion and learning, and not as a recognition of the principle of public support of schools. In 1790 the legislature made the beginnings of the Literature Fund by authorizing the Regents to take possession of and lease out certain state lands, applying the income to aiding colleges and academies. In 1791 an act was passed which authorized six men, in the town of Clermont, to receive certain excess excise fees and fines collected in the town, and "not wanted for the relief of the poor," and with such funds to build a schoolhouse and maintain an elementary school.

**The First School Law** — In 1795, perhaps largely in response to an urgent recommendation of Governor Clinton in his annual message of that year, an "Act for the Encouragement of Schools" was passed. This was the first general school law enacted by the state. It was in the nature of an experiment and was to run for five years only. The sum of £20,000 was apportioned from the state treasury, annually for five years, "for the purpose of encouraging and maintaining schools in the several cities and towns in this state, in which the children shall be instructed in the English language, or be taught English grammar, arithmetic, mathematics, and such other branches of knowledge as are most useful and necessary to complete a good English education." The quotas of the counties were indicated, and within the counties the distribution was made to the towns on the basis of taxable wealth. Each town was to select from three to seven commissioners, who were to supervise the schools and apportion the money among the districts. The inhabitants of the different sections of each town were to associate themselves together for school purposes, and to elect two or more of their number as trustees to employ teachers and to confer with the town commissioners on all school matters. The town school money was to be apportioned to each district on the basis of the number of days taught in each, but no

apportionment was to be made unless the town commissioners approved of the teachers selected for the schools. Here may be seen the beginnings of the certification of teachers in the state of New York. By 1798 sixteen of the twenty-three counties organized at that time reported 1352 schools, and 59,660 children in attendance. An effort to extend the law in 1800 failed, and the law expired by limitation. It was not until 1812 that common schools were again organized.

In the meantime certain other important legislation was enacted. In 1799 four successive lotteries to raise \$100,000 were authorized, \$12,500 was to be paid to the Regents for distribution among the academies, while the remainder was to be placed in the treasury for the use of the common schools, and in such manner as the legislature might later direct. In 1801 another lottery, to raise \$100,000, one half of which was to be similarly put into the treasury for the common schools, was authorized. In 1803 the Comptroller was directed to invest the common school money in good real estate. Each year, from 1800 on, the Governor of the state urged the legislature to reestablish the common school system, and in 1805 Governor Lewis sent a special message in which he recommended the appropriation of all state lands to a school fund, and the creation of a common school system, to be under the supervision of the Regents. Twenty-one academies had been incorporated by this time, but no common schools. The Regents also made similar recommendations to the legislature for three successive years. The result of all these recommendations was the creation of a permanent state school fund by the legislature in 1805. The act as passed provided that the net proceeds of the 500,000 acres of vacant state lands first sold should be applied as the basis for a permanent fund for the support of common schools. The income was to be safely invested, and no distribution was to be made until the annual interest should amount to \$50,000 a year. In 1805 the legislature also chartered the "Public School Society of the City of New York," the purpose of which was to establish free schools in the city "for the education of such poor children as do not belong to or are not provided for by any religious society." This Society began to receive aid from the school fund in 1812, was granted a city tax in 1831, and was dissolved in 1853, after having educated over 600,000 children and accumulated property worth \$450,000 (See NEW YORK CITY.) It rendered very valuable service to the city and to the state. Further legislation in 1805, 1807, and 1808 added the lottery money and certain bank stock to the permanent school fund. By 1810 the annual income from the fund amounted to about \$26,000, and in 1811 the Governor was authorized by law to appoint



a commission of five to report a system for the organization and establishment of common schools for the state. This commission made a careful inquiry and reported in 1812. They also submitted the draft of a bill which contained the main features of the law of 1812, and of the common school system up to 1838.

By the law of 1812 the several towns of the state were to be divided into school districts by three town school commissioners, elected as town officers; each district was to elect three district trustees, who were to care for and superintend the school of the district, the interest of the school fund was to be apportioned to the counties and to the towns on the basis of their population by the last U. S. census, and from the towns to the school districts according to the number of children in each, five to fifteen years of age, each town must raise locally as much money as it received from the state, and all state and local taxes were to be used for teachers' salaries. The system of common schools thus established was placed, not under the Regents, but under a new official to be known as a Superintendent of Common Schools, to be appointed by the Council of Appointment. Thus arose the dual system of school administration which characterized New York up to 1904. In 1814 each town was further authorized to elect six additional inhabitants to act with the town commissioners, as school inspectors, and one of their duties was to examine and license teachers. In 1818 the state library was established, and in 1836 the New York State museum. In 1844 the library was placed under the control of the Regents, and in 1889 a library school was established. In the same year the state museum was made an integral part of the university. In 1821, largely in indignation at the removal of the very efficient first Superintendent, Gideon Hawley, the office of Superintendent of Common Schools was abolished, and from then until 1854 the Secretary of State acted *ex officio* as Superintendent. In 1819 the annual state appropriation for schools was raised to \$80,000, and in 1819, 1826, and 1827 the school fund was increased by various additions from stocks, land sales, fees, etc. The new constitution of 1822 further devoted the proceeds of all lands belonging to the state to the permanent fund for common schools. By 1831 a fund of \$1,696,743.66 had been built up. In 1822 the State School Department was clothed with the important power to hear and decide appeals on questions of school law. In 1826 Governor DeWitt Clinton (*qv*) recommended the establishment of a seminary for the training of teachers, and this recommendation was renewed by Governor Flagg, in 1830. By 1828 the income of the Literature Fund had reached \$10,000, and this was distributed to the forty-four academies then existing. By 1839 there were 106 academies reporting

In 1830 the first convention of teachers assembled at Utica. In 1835 the school district library system was inaugurated by authorizing a district tax, therefore, of \$20 the first year, and \$10 yearly thereafter.

**New Interest in Education** — In 1837 New York received \$4,014,520.71 from the U. S. Treasury as the state's share of the U. S. Deposit Fund (Surplus Revenue of 1836), and thus, together with the new movements in Massachusetts and other states, seems to have stimulated a new interest in education in New York. (See articles on separate states.) It was decided at once to devote the income from the Deposit Fund to schools. Of the income, \$110,000 was appropriated for common schools. This was to be distributed in the same manner as the income from the state school fund, but, to share in it, districts were now required to extend the school term from three to four months, \$55,000 was also to be distributed in the same manner, to be used for school libraries only until 1842, and thereafter for libraries or teachers' salaries; \$28,000 a year was to be used by the Regents to aid academies, and the balance of the income was to be added to the principal of the permanent school fund. Following this a number of important laws were enacted, looking toward free schools and supervision, which finally culminated in the rate bill compromise of 1850 and the reestablishment of the office of State Superintendent of Schools in 1854.

In 1839 the appointment of unsalaried county boards of visitors marked the beginning of county supervision. They were to make suggestions for improvement, and as a result of their supervision, the law of 1841 provided for a Deputy Secretary of State for Schools, and for a deputy superintendent of common schools for each county. These latter were to be appointed by the supervisors of the county, were to examine and certificate teachers for the county, and were to have general supervision of all the schools of the county, subject to the rules and regulations of the state office. The town inspectors were reduced to two, and the certificates issued by the town authorities were limited to the town. In 1843 both the town commissioners and inspectors were abolished, a town superintendent of schools succeeded to their duties and functions, and the name of deputy superintendent was changed to that of county superintendent of schools. The Secretary of State was made *ex officio* a Regent in 1842, and in 1843 was also granted power, on proper recommendation or evidence, to grant state teachers' certificates. In 1847 the office of county superintendent was abolished, in 1854 a separate state department of public instruction was created and a State Superintendent of Public Instruction appointed, and in 1856 the office of town superintendent of schools was in turn abolished and the office of school com-

missioner (one for each legislative assembly district, to be elected by the people for three-year terms) was in turn created. At this point the system of supervision created remained fixed until very recently.

The period up to 1854 was also characterized by new undertakings with reference to teachers and their training, and the impulse given then has continued down to the present. In 1834 the first teachers' training classes had been established, one in each of the eight judicial districts of the state. The academics were appointed to give the instruction, and the first classes were opened in 1835. This was probably the first public provision for the professional training of teachers in the United States. An appropriation of \$500 for books and apparatus, and \$400 annually for an instructor, was made by the state for each Senatorial district. After ten years, all state aid to the academics for training classes was withdrawn, and the state established its first normal school at Albany (1844), but after another five years, the demand for local training classes became so strong that they were reestablished, and the aid reextended in 1849 has never since been withdrawn. In 1877 high schools and academic departments were also admitted to the privilege of maintaining training classes. A second state normal school was established at Oswego in 1863, three additional schools at Cortland, Fredonia, and Potsdam in 1866, three more at Geneseo, Brockport, and Buffalo in 1867, three more at New Paltz, Oneonta, and Plattsburg between 1886 and 1892, and a twelfth state school at Jamaica in 1893. In 1881 some standards for the admission of pupils to the normal schools were imposed, and these have since been very materially added to. In 1843 the first teachers' institute was held at Ithaca, and in 1847 teachers' institutes were placed under state control and the first state aid to them (\$60 to each county organizing) was granted. In 1859 this was doubled, and in 1860 the appropriation for the state was fixed at \$8000. In 1862 local authorities were permitted to pay teachers their salaries while attending, in 1881 a state corps of institute conductors was organized, in 1885 attendance was made compulsory, and in 1892 a state bureau of institutes and training classes was organized under the State Superintendent. The state appropriation for institutes steadily increased up to 1910, when they were abandoned.

**Battle for Free Schools** — The application of the U. S. Deposit Fund to education, and the various state and contemporary movements for educational improvement, seem to have stimulated an interest in providing free common schools for all, and the next decade witnessed a great struggle for free schools. In the convention which formed the new state constitution of 1846, a clause providing for free

schools, to be supported by general state taxation, failed by a narrow margin. In 1849 the Secretary of State made a strong plea for the abolition of the rate bill (*q. v.*) and for free schools for all, and that year "an Act establishing free schools throughout the state" was passed. The act, however, was not to be effective unless approved by a referendum vote of the people at the November elections. The result was a vigorous campaign for free schools, and the election was carried by a vote of 249,872 for and 91,951 against. Schools were to be made free to all children, five to twenty-one years of age, county supervisors were to levy a county tax twice that received from the state, and any needed balance was to be raised by district taxation. So vigorous were the opponents of free schools, however, that the legislature of 1850 called a second referendum on the repeal of the free school law. This the people failed to favor by a vote of 184,308 for repeal and 209,316 against. Strong objections still existed, and the legislature was flooded with petitions for the amendment or the repeal of the free school law. Finally, in 1851, a compromise bill was enacted, entitled "an Act to provide free schools throughout the state." Schools were declared free to all children, five to twenty-one years old, and an annual state tax of \$800,000 was to be levied on all property for their support. The proceeds of this tax, together with the income from the state school funds (then \$300,000 a year), was to be distributed to the different school districts of the state maintaining a six months' term, one third to all equally, and two thirds on their school census. Any additional money needed was to be obtained by the rate bill, though all indigents were to be exempt. In 1853 the free school law of 1849 was declared unconstitutional, though this decision, owing to the compromise of 1851, had little effect. The cities generally refused to employ the rate bill, and early made their schools free. In 1857 the state tax was changed to a three fourths of a mill tax, which increased the state aid one third. Still, in that year, \$427,956 was collected from rate bills. Finally, in 1867, the state tax was increased to 1½ mills, and the rate bill was abolished in the state.

**Other Legislation** — Some other significant school legislation was also enacted during the period of struggle to establish school supervision, the training of teachers, and free schools. In 1846 the first provision by the state for the education of Indian children was made, and in 1856 the Indian schools were placed under the charge of the State Superintendent of Public Instruction. In 1853 the first compulsory school law was passed. The law provided that vagrant children, five to fourteen years of age, could be taken before a magistrate and their parents compelled to agree, in writing, to send them to school four months each year until they were fourteen years old. Mas-

sachusetts alone was earlier in the enactment of such a law. Public sentiment was against it, however, and the law but little enforced. In 1853 the union free school law was passed. Under this, any district, or union of districts, could provide a free school, levy taxes for the same, and establish academic (secondary) departments when deemed necessary or desirable. The elementary schools were under the supervision of the state, county, and local school authorities, but any academic departments established were subject to the inspections and regulations of the Regents. These schools materially helped the movement for free schools, though their dual form of supervision later led to conflicts between the two state systems and emphasized the need for a unification. An attempt at this unification was made in 1836 and 1837, but the movement failed. In 1870 a bill providing for uniformity was passed, but was vetoed by the Governor. Here the matter rested until 1898. In 1865 the Regents' preliminary examinations were held for the first time, and in 1878 the first advanced examinations. In 1866 the power to condemn land for school purposes was given to the local school authorities, and in 1868 a state institution for the blind was established at Batavia.

The period from 1868 to 1886 has been termed the period of quiescence in the history of the New York school system. There was but little legislation, and none of any fundamental importance. No extension of the powers of the State Superintendent took place, during this period, and the increase in both state and local taxation barely kept pace with the increase in population. In 1874 a second compulsory education law was passed, this time requiring attendance of all children, eight to fourteen years of age, for fourteen weeks each year, eight of which must be consecutive. The local authorities were empowered to enforce the law, but little was accomplished under it. In 1875 it was provided that the State Superintendent should issue life diplomas only on examination, instead of upon recommendation. In 1876 the counting of private or parochial school pupils for public school purposes was prohibited. In 1883 the rule of the Court of Appeals, requiring intending law students to pass an examination, was enforced by the Regents, and in 1889 intending medical students were also required to pass the Regents' examination.

**From 1886 to 1904** — Beginning about 1886, and continuing down to the present, the renewal of interest in educational legislation and the extension of the central control have been marked. In 1885 religious instruction and exercises had been prohibited in the schools, and in 1887 the wearing of any distinctive garb was also prohibited. In 1887 a uniform system for the examination of teachers was adopted by the State Superintendent. This was at first acquiesced in by the school

commissioners of the state, but was made mandatory by law in 1894. The same year institutes were changed from county institutes to school-commissioner-district institutes. In 1889 the supervision of all teachers' training classes in the high schools and academies of the state was transferred from the Regents to the Superintendent of Public Instruction. In 1889 the laws relating to the powers and duties of the Regents enacted during the previous century were revised and consolidated. In 1890 better regulations for the government of the normal schools were provided. In 1891 the university extension department was established by the Regents. In 1892 the old district library law was revised, and districts were required to duplicate the state grants. Specifications and plans for schoolhouses, varying in cost from \$600 to \$10,000 were also secured and furnished by the state office from this year on.

In 1894 a new state constitution was adopted. This made the first definite constitutional provision for a state school system, made the Regents a constitutional body, safeguarded the different funds, and prohibited aid to denominational schools. In the same year the "Consolidated School Act," the first consolidation and revision of the school laws since 1864, became a law. A new revision of the compulsory education act, which changed this into an effective law, and the creation of a Board of Examiners and the placing of full control of all teachers' examinations in the hands of the State Superintendent, were also enacted in 1894. In 1895 a law was passed requiring that all teachers employed in elementary schools, after 1897, must have taught three years, or be graduates of a three years' course in a high school or academy and have had a course of thirty-eight weeks in a teachers' training class. Teachers in city schools must have had a two years' training course. The Biennial School Census Act and the Horton Act were also passed in 1895. Under the Horton Act, the Regents were given an automatically increasing appropriation to enable them to aid properly the academies and high schools of the state. The result of this law was a marked increase in both the number of such schools and the annual appropriations for them. In 1896 school districts were permitted to contract with other districts for the education of their children, city institutes and state summer institutes were established, and all teachers' certificates were to be made to expire at the end of the official school year. In 1900 new uniform regulations for the granting of teachers' certificates went into effect, and all certificates granted in the future were to be based on the use of the same questions as for a first-grade certificate. In 1903 the compulsory attendance law was again revised, and made more effective. In 1904 a Teachers' Information Bureau was established in the department

**Unification; Recent Advances** — The year 1904 saw the final unification of the two educational departments of the state school system, and the ending of more than a quarter century of friction. After 1870 no attempt at unification seems to have made any headway until about 1898. In this year a large number of bills for the unification of the two departments, or for a clearer demarcation between them, were introduced in the legislature, but no action was taken. In 1899 the Roosevelt Commission was appointed to study the situation. It reported a bill for the unification of the two departments in 1900, but the bill failed of passage. By 1903 the feeling had become so bitter that there was a deluge of bills on the subject, none of which passed. Instead, the legislature appointed a joint committee to study the question and to report to the legislature the next year. The result was the Unification Act of 1904, providing for a reduced Board of Regents, for membership for limited terms instead of for life, and for essentially the present form of state educational organization. The first Commissioner, however, was to be elected by the legislature instead of by the Regents. This law took effect April 1, 1904, and since then the Regents and Commissioner have construed the law liberally, and in the interests of the schools of the state. A state educational building, to house the departments, the state library, and the state museum, was provided for in 1906; trade schools were authorized, and the new school census law was passed in 1908, and the compulsory education law, as it related to cities and school systems having a superintendent, was further revised and strengthened in 1909. In 1909 the consolidated school law, as codified and consolidated by the State Board of Statutory Consolidation, was passed, and the further revision, recodification, and elimination of this, as made by the Education Department, was accepted by the legislature in 1910. In this the working arrangements of the Regents and Commissioner, as practiced since 1904, were incorporated into law. The most important legislation in 1910 was the substitution of district superintendents of schools (beginning January 1, 1912) for the old popularly elected school commissioners, in existence since 1856. About twice as many district superintendents as school commissioners were provided for, so as to reduce the size of the supervisory unit one half. The legislature of 1910 also amended the industrial education law, by including agricultural instruction; passed a retirement law for teachers in certain state institutions; and abolished the teachers' institutes, formerly conducted by the state. The most important legislation of 1911 was the teachers' retirement fund law. Two other important laws permit courts to legalize proceedings for school bond issues, and create a state

advisory board in relation to agricultural education and country life advancement.

**Present School System** — The Board of Regents for the University of the State of New York, and their executive officer, the Commissioner of Education, have a centralized control over the educational system of the state to a degree found in scarcely any other state. Educational functions, which in other states are intrusted to county superintendents and county boards of education, are here given to the Commissioner of Education. The only local unit possessing much power is the school district, which in New York still exercises rather large powers.

The Board of Regents, as reorganized in 1904, now consists of twelve members, elected by joint ballot of the legislature and in the same manner as Senators are elected. Their term of office is twelve years, one member going out of office each year. The officers of the Board are a Chancellor and a Vice-Chancellor, elected from their own number and serving without salary, and a Commissioner of Education, who is to be "the chief executive officer of the state system of education and of the Board of Regents."

The Board of Regents form a supervisory and examining body for the entire secondary, higher, and professional school system of the state, and possess rather unusual powers. The University of the State of New York is a comprehensive term, the University including all schools under the supervision or control of the Board of Regents. The University, as such, employs no professors, however, and does no teaching. The annual convocation is a meeting held for the consideration of educational problems, and at this meeting the Regents may confer honorary degrees. The Regents possess legislative power, subject to the constitution and laws of the state, over the educational system of the state. They may incorporate and charter, according to law, any institution or association for the promotion of literature, art, science, history, or similar purpose, and no such institution can be incorporated by a general law without the consent of the Regents. The state library and the state museum, including the office and staffs of the State Geologist, State Paleontologist, State Botanist, and State Entomologist, are departments within the university, and the Regents may establish other departments or divisions as they deem useful or expedient. It is unlawful to use the name college or university within the state, except as authorized by the Regents; no institution in the state may confer degrees unless it has \$500,000 in resources; and the selling or granting of degrees by unauthorized institutions is prohibited. All entrance to the professions of medicine, pharmacy, and optometry must be by Regents' examinations, law alone not being under their control. The Regents also

examine and approve for practice all nurses and public accountants. They establish standards and examinations for graduation from the secondary schools of the state, issuing Regents' certificates showing the subjects passed and the "counts" or units made. They may register foreign and domestic institutions of learning of all kinds, and may evaluate their diplomas in New York terms. They are authorized to extend increased educational facilities to the people in such forms as they deem wise, and to this end are authorized to buy and loan books, maps, lantern slides, pictures, etc. All academies, academic (secondary) departments of public schools or other institutions, and all libraries and museums must report to the Regents annually, and the Regents' rules and regulations must be complied with if such institutions are to share in the financial grants. Money grants made to libraries can be spent only for books approved for purchase by the Regents. All institutions under the supervision of the Regents must be open at all times to inspection of the Regents or their representatives.

The Commissioner of Education holds office at the pleasure of the Regents, and is paid \$7500 salary, and \$1500 additional in lieu of all traveling expenses. In his selection, residence within the state is not essential. As the chief administrator and executive officer for both the common schools and the secondary and higher schools of the state, he possesses large powers. The Regents may decide policies, but the Commissioner executes all policies once decided upon, and enforces all the educational laws of the state and the rules and regulations of the Regents. He has general supervision over all schools and institutions of an educational nature, may visit and inspect them as he deems best, and may advise the officers of any schools. He is also given supervision of the different normal schools and the normal college of the state, determines the number of teachers for each, and their salaries, approves all appointments to the different faculties, countersigns all diplomas, and appoints the local boards which have immediate control of the different schools. *Ex officio*, he is a trustee of Cornell University, and he directs the annual examinations for state scholarships in the university. He may remove from office any school officer in the state for neglect or willful violation, and may also withhold state school money from any school districts for the same cause. He has power to require information and evidence, administer oaths, and to bring proceedings to enforce the educational laws or the orders of the Regents. He is given and may execute such further powers and duties as the Regents may charge him with. He prepares all registers and blank forms for teachers and school officers, all school officers must report to him annually, and as requested; he approves all

plans for new school buildings or additions to buildings, except in cities of the first and second classes. He makes rules and regulations for the examination of teachers, with the approval of the Regents, keeps in his office a record of all diplomas and certificates in force, and may annul, for cause, any teacher's certificate or diploma. He maintains a legal division for the decision of all appeals on school questions, and his decisions have the force of law. He designates all academies, union free schools, and high schools in which teachers' training classes may be organized, prescribes the conditions of admission and the course of instruction, makes rules and regulations for their government, and approves the money grants to such schools. He apportions, according to law, the state aid to common schools, academies, high schools, libraries, and industrial schools, and in making appointments is allowed certain discretion. He may withhold one half of the state money from the district which fails to enforce the compulsory education law. The Indian schools of the state are under his sole jurisdiction. He is responsible for all books and records in his department, and also for the proper administration of the offices. He is assisted in his work by three assistant commissioners, the directors of the state library and the state museum, and nine chiefs of divisions, as follows: administration, attendance, educational extensions, examinations, inspections, law, school libraries, statistics, trade schools, and visual instruction.

There are no county superintendents in New York. In their place we find (beginning Jan. 1, 1912) district superintendents, elected by a small body of town school directors for five-year terms. Each town in each supervisory district of a county was to elect two persons, in 1910, to be known as school directors, one for three years and the other for a five-year term, and thereafter, as their terms expire, their successors are to be elected for five-year terms. These school directors, in 1911 and every fifth year thereafter, are to meet and elect the division superintendent, this being their sole duty. Women are eligible for the office, and the superintendent elected need not be a resident of the district or county.

The fifty-seven non-city counties of the state are divided, according to size, into 207 superintendency districts, as follows —

- 1 district to the county, 4 counties.
- 2 districts to the county, 8 counties.
- 3 districts to the county, 18 counties.
- 4 districts to the county, 13 counties.
- 5 districts to the county, 7 counties.
- 6 districts to the county, 4 counties.
- 7 districts to the county, 2 counties.
- 8 districts to the county, 1 county.

No city or district employing a superintendent of schools is to be included in a superintendency district. These districts are to be con-

tiguous and compact, and no town is to be divided in their formation. The salary of each district superintendent is \$1200, paid by the state, with \$300 for traveling expenses, and as much more as the supervisors of the towns in the districts see fit to add. Each superintendent must hold a state teacher's certificate, and a special certificate in the supervision of agriculture, and he must devote his entire time to the work of supervision. He succeeds to the powers and duties of the school commissioners. These powers and duties are to keep a record of the boundaries of the school districts, to conduct local institutes, to appoint district trustees, in case of a vacancy, if the district fails to elect, to inspect any teachers' training classes in his district, and report on the same to the Commissioner of Education, to meet with the school trustees of the district, and to advise with them as to details of school management, to administer oaths, and to transmit testimony in appeal cases to the Commissioner of Education, to act for another district superintendent on request, or when directed to do so by the Commissioner, to examine and license teachers, to conduct examinations for the State Department, and to revoke the certificates of teachers in his district, for cause, to make investigations and report to the Commissioner of Education, as requested, and to act subject to the rules and regulations of the Commissioner. He may order repairs to any schoolhouse up to a cost of \$200 or to furniture up to \$100, may order nuisances abated, and may condemn schoolhouses. If a school is condemned, a district meeting is called, at which the district superintendent presents an estimate of needs. This estimate cannot be scaled down by the meeting to exceed 25 per cent, and, if no district action is taken within thirty days, the trustees must proceed to build a building, which must cost not less than 75 per cent of the estimate presented by the district superintendent. He may organize new school districts, and may dissolve or consolidate districts, as educational interests seem to require, though an appeal from his decision may be taken to the Commissioner of Education.

Each county is also divided into a number of towns, and these in turn into school districts. For each town there is a representative supervisor and a town clerk, both of whom possess some educational functions. The supervisor has control of any gospel or school lands or funds possessed by the town; receives all school moneys due to his town from the county treasurer, and pays out the same on orders from the districts, if the districts elect a treasurer, he then turns the money over to him, and he acts as a general supervisor of the different school districts in all money matters, making an annual report on finances to the county treasurer. The town clerk acts for the town in all school matters as an interme-

diary between the district superintendent and the school trustees of the districts, seeing that notices are given, reports made, records preserved, etc.

A town unit of school administration has not yet been evolved, and town consolidation of schools has not as yet been begun, except in so far as districts are allowed to contract for the education of their children instead of maintaining a school themselves, and except as a town may be a city or a union free school district. Otherwise, the towns are divided into a number of school districts, each with its own officers. A district may have one trustee, elected annually, or three trustees, elected for three-year terms, one going out of office each year. A district also has a district clerk and a district collector, and it may, in addition, elect a district treasurer to take charge of its funds and pay all bills. These officers are elected in annual meeting for one-year terms. The trustees are to insure and care for the property, make up the tax lists for collection, purchase or lease sites, and erect buildings, as directed, make repairs and abate nuisances, employ teachers, prescribe the studies to be taught, make rules and regulations, issue orders on the funds for salaries and other bills, establish branch schools, when needed, and make annual and other reports to the division superintendent and to the annual district meeting. An annual meeting is held in May in each district, and special meetings may be called. The meeting hears the reports of the district trustees, elects a new trustee and the other school district officers, designates and changes all textbooks, can select a schoolhouse site, and must vote, by ballot or by aye and nay, all taxes for maintenance, library, schooling elsewhere, high school tuition, repairs, or new buildings. Women may vote on the same terms as men at such meetings.

In any district, on petition of fifteen inhabitants, or on petition of fifteen inhabitants in each of two or more contiguous districts, a school meeting may be called to vote on the question of forming a union free school district and electing a board of education. This is an old institution in the state of New York, and has rendered valuable service in providing free schools and secondary education. Similarly, a union free school district may call a meeting to dissolve into its original districts, though in this case, the district superintendent may veto the proposal. Each free school district has a board of education of from three to nine, one third going out of office each year. If there are 300 children in the district, an election by ballot takes the place of a school district meeting election. If the union free school district is coterminous with a city, the city treasurer acts as treasurer of the district, but if the bounds do not coincide, the school district elects its own treasurer.

Boards of education in all free school districts have, in addition to the powers of district trustees, the power to adopt textbooks, to establish an academic department (high school), kindergartens, or a night school; to provide medical inspection, appoint a truant officer; and, if the district has 5000 population, they may appoint a superintendent of schools. Instead of establishing a high school, the district may vote to adopt an existing academy as its academic department. The board must present to the annual district meeting, or to the proper city authorities, if a city, an annual estimate of the money needed for teachers' salaries, contingent expenses, and other items. The voters, or city authorities, cannot decrease the amounts for teachers and contingent expenses, but may decrease or increase all other items.

An important part of the school system of the state of New York is the large cities, most of which operate under special charters, and maintain extensive and important school systems. Three of these, Albany, Buffalo, and New York City, are described in special articles (*q v*). About 60 per cent of the people of the state reside in cities of over 100,000 inhabitants, and 52 per cent are in the city of New York.

**School Support** — The permanent common school fund and the literature fund for aiding academies each produces but relatively small amounts, and the total value of all permanent school funds in the state is only a little over nine millions of dollars. The income derived from these forms but a small part of the annual state appropriations, and bears no relation to the rapid increase in the cost of education. During the past twenty years the cost of maintaining schools in the cities has quadrupled, and doubled in the towns. In lieu of state taxation, annual appropriations for education are made by the legislature. These are constantly increasing and are calculated in advance so as to meet legal needs. The state appropriation for the maintenance of common schools is now about five millions annually, and this is apportioned in such a manner as to divide it about equally between the cities and the towns. As the cities spend about three times the total amount spent by the towns, the state grants pay about one twelfth of the cost of education in the cities and about one fourth of the cost of the towns. The balance is paid by local taxation in the school districts, there being no county school taxation in New York. This system of distribution is the result of a wise but somewhat complex plan for the apportionment of school money, in which the teacher is made the unit and in which poor and small districts are given an initial advantage over large and wealthier ones. Orphan asylums may share, under certain conditions. Every city or district having over 5000 inhabitants and employing a superintendent of schools,

also receives a superintendent's quota of \$800. The state appropriation for academies, high schools, and libraries is now about three quarters of a million dollars annually, and this is apportioned in a still more complex manner. In 1910, 10 per cent of this appropriation was given as a school quota, 25 per cent was for books and apparatus, 35 per cent was for the instruction of non-residents, and 30 per cent was given on the basis of average daily attendance. Academies and high schools maintaining an approved course for the training of teachers receive \$700 additional, and the city training schools are paid on the basis of average daily attendance. The salaries of district superintendents and the expenses of Indian schools are paid by the state. In addition, the annual appropriation for salaries, traveling and miscellaneous expenses, examinations, and books for the state educational department now exceeds \$600,000.

**Educational Conditions** — The state has many cities and a very cosmopolitan population. Two thirds of the total population live in cities of over 8000 inhabitants, while only one fifth live in country districts. A little over one fourth, 29.9 per cent, of the total population is foreign born, and in the cities the percentage is much higher. The city school systems are well developed and offer good instruction. The compulsory education and child labor laws are good, and the school census law for metropolitan cities, which may be adopted by any other city, is one of the best in the United States. But 1.5 per cent of the total population is of the negro race, though in the large cities this percentage runs much higher. No exclusion from any school is permitted on the basis of race or color, though the inhabitants of any district may provide separate schools for those of the colored race. Since 1895 the money spent for public schools has increased rapidly, being two and a half times as much in 1910 as in 1895. The total value of the public school buildings has trebled in the same time, while the average value has a little more than doubled (\$2618 in 1910). During the same period the total school enrollment has increased 22 per cent and the number of teachers employed, 57 per cent. The rural schools have made much less progress than the city schools during the past two decades, perhaps in part due to the strength and conservatism of the district form of control. The consolidation of schools and the transportation of pupils has as yet made no marked headway in the state, though some 800 districts now employ the contract system, in whole or in part. There are still 10,565 school districts (1910) in the state, as opposed to 11,089 fifteen years ago, and 11,262 twenty-five years ago. The school term has remained nearly stationary at an average of about thirty-five weeks per year for the past twenty years. Recently it has advanced to thirty-seven

weeks. A state syllabus (course of study) covering the eight years of the elementary course was issued in 1904, and a revision, covering only the first six years, was issued in 1910. School libraries, traveling libraries, the division of visual instruction (for the loan of pictures, charts, lantern slides, and specimens to the schools), and the extension division are marked features of the New York school system and do much to increase its efficiency (See MUSEUMS)

**Teachers and Training** — Of the 45,076 teachers employed in 1910, 60 per cent were employed in the cities. Of the total teaching body in 1910, 7 per cent were college and professional school graduates, 20 per cent graduates of normal schools, 28 per cent graduates of teachers' training classes, 6 per cent held state teachers' certificates, and 37 per cent had been certificated by the local authorities. All new teachers for elementary schools must be experienced or have had professional training, and the equivalent of a high school education. All examinations for teachers' certificates are now conducted by the division of examinations of the State Education Department, under rules and regulations prescribed by the Commissioner of Education, and with the approval of the Regents. State normal school diplomas and state certificates from other states may be accorded equal privileges in New York. For the training of future teachers, the state maintains ten state normal schools, the Albany normal college, and, in addition, extends aid to ninety-five high schools and academies and to fifteen cities for offering teachers' training courses. Teachers' institutes, which have previously been under the state department and in charge

of institute conductors, are to be discontinued after 1911, the new district superintendents being expected to conduct local teachers' meetings on Saturdays, or at other times when the schools are not in session.

**Secondary Education** — The development of secondary schools has been especially marked since the passage of the Horton aid law in 1895, the number of academies having increased from 131 to 167, and the number of high schools from 373 to 702 since then. The number of students and teachers has also undergone a rapid increase. In addition, 199 private high schools made reports in 1910. Since 1895 the Regents' academic examinations have been based on the completion of a four-year high school course. Syllabi (courses of instruction) are issued by the state department and inspections of work are made, though there has been a tendency to decrease the rigidity of the state requirements since the unification.

**Higher Education** — The state maintains no state university, in the sense that the western states do. It has been proposed to evolve the University of the State of New York into a graduate institution for the study of history, politics, economics, education, and science (Sherwood), to evolve Cornell University from the position of a semi-state university to that of a real state university, and to evolve, instead, a series of municipal universities, extending across the state (Drapet). The land grant for a college of agriculture and mechanical arts (law of 1862, 990,000 acres) was given to Cornell University, at Ithaca. In return for this, the university receives free of tuition one student each year from each legislative assembly district in the state,

NAME	LOCATION	OPENED	CONTROL	FOR
Columbia University	New York City	1754	Nonsect	Men
Union University	Schenectady	1795	Nonsect	Men
Hamilton College	Clinton	1812	Nonsect	Men
Colgate University	Hamilton	1819	Nonsect	Men
Hobart College	Geneva	1822	Nonsect	Men
Rensselaer Polytechnic Institute	Troy	1824	Nonsect	Men
New York University	New York City	1832	Nonsect	Both sexes
Alfred University	Alfred	1836	Nonsect	Both sexes
Fordham University	New York City	1841	R C	Men
St. Francis Xavier College	New York City	1847	R C	Men
College of the City of New York	New York City	1849	City	Men
University of Rochester	Rochester	1850	Bapt	Both sexes
Polytechnic Institute	Brooklyn	1851	Nonsect	Men
Elmira College	Elmira	1855	Presby	Women
Niagara University	Niagara	1856	R C	Women
St. Lawrence University	Canton	1858	Univ	Both sexes
St. Francis College	Brooklyn	1859	R C	Men
St. Bonaventure's College	St. Bonaventure	1859	R C	Men
St. Stephen's College	Annandale	1860	P E	Men
Manhattan College	New York City	1863	R C	Men
Vassar College	Poughkeepsie	1865	Nonsect	Women
Wells College	Aurora	1868	Nonsect	Women
Cornell University	Ithaca	1868	Nonsect.	Both sexes
Canisius College	Buffalo	1870	R C	Men
Syracuse University	Syracuse	1871	Meth	Both sexes
Barnard College	New York City	1889	Nonsect	Women
Keuka College	Keuka Park	1890	Free Bapt	Both sexes
Adolph College	Brooklyn	1896	Nonsect	Both sexes
Clarkson School of Technology	Potsdam	1896	Nonsect	Men
College of St. Angela	New Rochelle	1904	R C	Women



the appointments being awarded on the basis of competitive examinations. The state has also recently established three additional schools of agriculture, for elementary and practical investigation and instruction, the work to be coordinated with that of Cornell University. These are at St. Lawrence University, in northeastern New York (1906), at Alfred University, in western New York (1908), and at Morrisville, in central New York (1908).

The work of providing higher education for the state of New York is carried on by a number of institutions, on which separate articles will be found, as shown on the previous page.

**Special Education** — The state maintains sixteen special institutions for the care and education of the deaf, dumb, blind, feeble-minded, and for truant and incorrigible children, and makes arrangements with a number of other institutions of a semi-private nature, but open to state visitation and inspection, for the care of some of its deaf, dumb, and blind. Orphan asylums are also granted, on inspection and approval, teachers' quotas in the annual state apportionment of school money. A few of the cities also maintain truant and reformatory schools, though the city truant or parental school has not as yet been much developed by the cities of the state.

E P C

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**NEW YORK TEACHER** — See JOURNALISM, EDUCATIONAL.

**NEW YORK UNIVERSITY** — New York University was founded in 1831 through the influence of a group of men in New York City

who conceived the idea of a university that should serve all classes of people and all professions. The plan of the founders contemplated a college, engineering school, school of law, school of medicine, school of education, school of agriculture, and graduate school. The first Chancellor was the Rev. James M. Matthews, D.D. The site at Washington Square was acquired in 1833 and the cornerstone of the first university building was laid in the summer of that year. The institution opened with the regular college courses and with special courses in mathematics and science for engineers. The law school was established in 1835 and the medical college in 1839. Through lack of funds the institution did not progress beyond these beginnings for the first half century of its history. This early period was rendered distinctive however by the ability and achievement of members of the University's faculty. Professor Samuel F. B. Morse invented the recording telegraph and Dr. John W. Draper perfected Daguerre's system of photography and took the first picture of the human countenance within the University walls during this period, while Dr. Valentine Mott as dean of the medical college and Benjamin Butler as principal of the law faculty lent luster to the professional schools.

The expansion of the institution into its present organization of 10 faculties, 370 instructors, and 4400 students, has taken place within the past twenty-five years under the sixth Chancellor, Dr. Henry Mitchell MacCracken. Under his efficient administration the magnificent site at University Heights was acquired in 1891 and was gradually increased until it reached its present extent of forty acres. The three original schools have been reorganized and new schools founded until now the instruction is carried on at four different centers as follows —

At University Heights — The College of Arts and Pure Science (1831), the School of Applied Science (1862) and the Summer School (1895). At Washington Square — The Graduate School (1886), the School of Pedagogy (1890), the School of Commerce, Accounts, and Finance (1900), the Washington Square Collegiate Division (1903) and the Woman's Law Class (1890). At First Avenue and Twenty-sixth Street — the University and Bellevue Hospital Medical College (1841). At 141 West 54th Street, the New York American Veterinary College (1899).

This lack of concentration of all the schools at one common center is not the result of chance but is due to the policy of the University to carry its educational facilities to the people and to offer it at centers that are most advantageous and most accessible. As a logical outcome of this policy the University established the extra-mural division in 1909, the first department of its kind in America,

and this division now gives University instruction at various centers outside the University walls.

The corporation of the University is the Council, a self-perpetuating body of thirty-two members, one fourth of whom go out of office annually. The Women's Advisory Committee, consisting of women appointed by the Council, was organized in connection with the founding of the School of Pedagogy in 1890 and has done effective service in the University's work for women, aiding in the raising of endowment, furnishing of equipment, and the establishing of new courses. The University Senate, consisting of the chancellor, the deans of the schools, and one professor from each faculty, takes action regarding matters common to all the Schools and makes recommendations thereon to the University Council. The administrative officers are five in number, viz: The chancellor, the syndic, the bursar, the registrar, and the secretary to the chancellor. Each faculty has its dean and secretary. The dean is the medium of communication between the faculty of his school and the chancellor, the chancellor is the medium of communication between the several faculties and the Council. Dr Elmer Ellsworth Brown, formerly United States Commissioner of Education, is Chancellor. G C S

#### NEW ZEALAND, EDUCATION IN —

This system can best be understood when it is recollected that the country, now a federated dominion, was formerly divided into provinces under separate governments. This was the case from 1853 to 1876. In each of the principal provinces, between the years 1855 and 1857 a system of public elementary education was established. The schools were conducted by local committees and a central board at each provincial capital, and were variously supported by treasury grants, fees, charges on householders, donations and rates on property. The provincial system of public education survived the provinces themselves, which were abolished in 1876, but in 1878 a system, free, compulsory, and secular, was established, although provincial boards and inspectors were and are still retained.

The present system of administration of public instruction in New Zealand is described in an official account "The Dominion is divided, for purposes of primary education, into thirteen education districts, generally coextensive with the old provinces or with subdivisions of them. The education districts are subdivided into a large and increasing number of school districts, in each of which there is a School Committee of five to nine members elected annually by the householders. In each education district there is an Education Board of nine members, elected three every year for terms of three years by the members of the School Committees. Under an Act

of 1905 every education district is divided into three wards, each of which returns three of the nine members of the Board. Subject to general supervision and control by the Board, and to inspection by the Board's Inspectors, the Committee has the management of school business within the school district. The Board appoints and removes teachers, but only after consulting the Committee.

The Education Department, which is presided over by the Minister of Education, is charged, in the first place, with the general supervision and control of the system of primary instruction, and, further, with the development and extension of a general system of secondary and technical instruction. Also with the direct control of the system of public school cadets, of the schools for children of the Maori race, the special schools for deaf and for mentally defective children, and the schools for destitute, neglected, and criminal children. Incidentally it has the administration of the Act for the protection of infant life. It takes an active interest in the education of the blind. It distributes the grants made by Parliament to public libraries. In order to provide suitable reading matter for the children in the public schools the Department prepares and issues a free School Journal. The Minister is required by statute to report to the Governor every year on the progress and condition of public education in the Dominion.

The precise manner in which the provisions of the various statutes that relate to the public primary schools shall be carried out is fixed from time to time by regulations made by the Governor in Council. Among the matters so controlled by regulation are the following: Attendance registers and returns, the authorization of class books, the inspection and examination of schools, teachers' certificates, training colleges for teachers, pupil-teachers, examinations for scholarships tenable at secondary and technical schools, for entrance into the public service and for promotion in it, manual and technical instruction, scholarship, public-school cadet corps, staffs of schools, and salaries of teachers, the payment of grants to Education Boards and the auditing of Boards' accounts.

One of the principal functions of the Department is to distribute to the Education Boards and other educational authorities, in the manner prescribed by law, the grants voted by Parliament for the salaries of teachers and for the maintenance of primary schools and training colleges, and secondary and technical classes, and for the erection and repair of school buildings and for higher education.

The status and progress of public elementary education in New Zealand may be best illustrated by the following table compiled by the Education Department at Wellington, New Zealand.

## NEW ZEALAND, EDUCATION IN

	1870	1906
Population, exclusive of Maoris	417,622	908,718
Public primary schools	730	1,847
Children on the school rolls	55,688	139,302
Teachers, male	648	1,314
Teachers, female	449	1,887
Pupil-teachers, male	82	153
Pupil-teachers, female	221	518
Total teaching staff	1,400	3,872
Inspectors	10	32

Of these 139,302 children on the rolls, 72,917 were boys and 66,385 were girls. The total expenditure of the education department on all accounts for the year ending the 31st March, 1907, amounted to £923,574.

The official account of primary education in New Zealand will show how the situation differs from that in the Australian states, where public education is supported and controlled by the state from the consolidated revenue, without any form of local control or support.

"From 1878 to 1901 the public schools were maintained mainly by a statutory grant out of the consolidated revenue of the colony at the rate of £3 15s a year for every unit of the average daily attendance, supplemented by additional capitation allowances varying from 4s to 10s, and by grants averaging about £45,000 a year for the erection and maintenance of school buildings. During that time every Board had its own scale of staffs and salaries, and there was considerable inequality in the remuneration of teachers under different Boards. But 'The Public-School Teachers' Salaries Act, 1901,' fixed the relation of the number and the pay of the teachers in a school to the number of the pupils, and the Boards are now paid sums sufficient to cover the statutory salaries of their teachers, they also receive capitation of 11s 3d for general administration and local expenses, and 1s 3d for secondary scholarships, and variable smaller grants for other special purposes. Grants are also made for school buildings as before, but upon a much more liberal scale. About two thirds of the total income of the Boards is absorbed in the payment of teachers' salaries. The remainder forms the fund out of which the Board maintains its schools and other buildings, pays the salaries of its inspectors and of its office staff, and grants certain allowances to the committees for fuel, cleaning, and incidental expenses, and for school libraries. The fund at the disposal of a Committee may be supplemented by donations and subscriptions, and by fines recovered for truancy. The sums granted to the Boards in 1906 for all purposes connected with primary instruction amounted to a total of £668,440, which is equal to a capitation of £5 9s 7½d on the average attendance."

## NEW ZEALAND, EDUCATION IN

No fees are chargeable for primary instruction at the public schools. Neither members of education boards nor members of school committees receive any remuneration for their services.

The schools are open to all children between the ages of five and fifteen, and attendance is compulsory from seven to fourteen. The instruction is entirely secular, though religious instruction may, with the consent of the committee, be given in the school building out of school hours. The subjects of instruction are reading, writing, arithmetic, English grammar and composition, geography, history and civic instruction, moral instruction, nature-study and elementary science, drawing, vocal music, the principles of health, physical and military drill, handwork, and, for girls, needlework.

Free passes by rail are given to pupils not over fifteen years of age traveling to attend schools for primary instruction, to pupils not over nineteen years of age who are holders of free places at secondary schools, to pupils on the rolls of primary or secondary schools traveling to attend classes for manual or technical instruction at centers specially equipped for the purpose, and, without restriction of age, to holders of free places at technical schools. Commutation and season tickets at liberal rates are given to other attendants at secondary and technical schools.

There is no public institution in the Dominion for the instruction of children under five years of age, but free kindergartens have been established by private promoters in some of the largest towns. On attendance at such schools capitation is, by special arrangement, payable by the Government at the rate of £2 per annum per unit of average, subject to certain conditions which provide for a minimum limit in salary payments, and further require an equal sum to be furnished from other sources, *e.g.* from donations and subscriptions.

In the field of secondary education, there are twenty-eight high schools or colleges in the dominion, which in almost every case derive a part of their revenue from public reserves. At the end of 1906 these schools employed 154 resident and 54 visiting teachers, and had as pupils 2528 boys and 1742 girls. Schools for boys and girls are usually separate. Fees averaging eight to ten guineas a year are charged, but many free scholarships are allowed. In addition to these secondary schools of the more ambitious kind, there are also more than sixty public schools which have free high school departments.

Manual and technical instruction is advancing rapidly, the total government expenditure in this direction in 1906 being £63,255. There is a flourishing cadet system in connection with the public schools. There is a superannuation fund for teachers, to which teachers may subscribe if they please from 8 to 10 per cent of their salaries, in return for which they

are entitled to a pension or superannuation amounting to one sixtieth of their total salaries paid during the years in which they have been contributors to the fund

Higher education is conducted by a chartered University of New Zealand, which is an examining body to which four other institutions are affiliated, namely, the University of Otago, founded in 1869, at Dunedin, Canterbury College, founded in 1876, at Christchurch, Auckland University College, founded in 1882, at Auckland, and Victoria College, founded in 1897, at Wellington. By a curious system the University of New Zealand sends its final examination papers for degrees to be examined in the universities of the United Kingdom.

Native schools to the number of 100 are provided for the benefit of the Maoris in places where no public schools have been established by the boards. In 1906 these schools were attended by 2275 boys and 1899 girls. In 10 per cent of these children European blood predominates, and 10 per cent were Europeans.

Among the other public educational institutions of New Zealand are numbered an institution for the blind, another for the deaf and dumb, many public libraries subsidized to the extent of £3000 a year, and seven government industrial schools for the maintenance and education of destitute, neglected and criminal children. In 1906 there were on the books of these industrial schools 2075 children, only 681 of whom were resident, while others boarded out or were at service. Fuller information may be obtained from the official account of the *Education System of the Dominion of New Zealand*, issued by the Department of Education at Wellington. P R C

**NEW ZEALAND, UNIVERSITY OF** — See NEW ZEALAND, EDUCATION IN

**NEWBERRY COLLEGE, NEWBERRY, S C** — A coeducational institution founded in 1832 at Lexington, S C, as the Classical and Theological Institute of the South Carolina Synod. In 1856 the College obtained a charter with power to confer degrees and was removed to Newberry. From 1868 to 1877 the College was located at Walhalla, S C. Preparatory and collegiate departments are maintained. The requirements for admission are eight units. The degrees of A B and A M are conferred. In 1912 the faculty consisted of fourteen members and the students numbered 255.

**NEWCASTLE COMMISSION** — See PARLIAMENTARY EDUCATION COMMISSIONS, ENGLAND, EDUCATION IN

**NEWCASTLE - UPON - TYNE, ARMSTRONG COLLEGE, ENGLAND** — An institution founded in 1871, as the College

of Physical Science, "to promote the education of persons of both sexes and the study and advancement of science, philosophy, literature, and the fine and mechanical arts or other kindred branches of learning." The College is an incorporated Society, registered under the Companies Acts, and all subscribers of certain amounts are styled Governors. To these are also added the peers and members of Parliament of the local counties. The College has ten representatives on the Senate of the University of Durham of which since 1909 it is an integral part. The following faculties are maintained: pure science, applied science, arts, letters. The College has a Marine Laboratory at Cullercoats, and directs the Northumberland County Council Agricultural Station. A Day Training Department is also maintained in connection with the Board of Education. Work is given in day and evening classes to students over sixteen who have passed the matriculation examination of Durham University (*qv*) or some equivalent standard, if they wish to study for a degree. The College itself does not grant degrees, but the degrees of Durham University in science, letters, and in engineering are open to its students. The College grants diplomas in agriculture, engineering, naval architecture, and mining. The chemical, physical, and engineering laboratories, which are among the finest in England, give ample opportunity for practical work. The College receives grants from the Durham University, from many neighboring city and county councils, which also maintain many scholarships and prizes at the College, and from the Treasury, the Board of Education, and the Board of Agriculture and Fisheries. The enrollment of students in 1910 was 600 in the day and 475 in the evening classes with a faculty of sixty-one members.

See DURHAM UNIVERSITY

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**NEWELL, McFADDEN ALEXANDER** (1824-1893) — Normal school principal and state superintendent, was educated at Queen's College, Belfast, and Trinity College, Dublin. He was professor in Baltimore City College (1848-1850), in Lafayette College (1850-1854), principal of the state normal school of Maryland (1865-1868), and state superintendent of Maryland (1868-1893). He was the author of a series of school readers.

W S M

**NEWFOUNDLAND, EDUCATION IN** — The development of education in Newfoundland is similar to that of the eastern provinces of Canada (*qv*). The present system was organized by acts of 1874 and 1876, which

rendered it completely denominational. The public schools are in charge of three separate boards representing the three religious denominations. Methodist, Episcopalian, and Roman Catholic. The governor in council has power to appoint in each educational district a board of five or seven members of the respective denominations, on which the senior of superior clergymen resident or officiating in the district shall be one, to manage and expend all moneys, etc. Such boards in St. John's, and in districts in which are superior, or high, schools, may consist of nine members. Vacancies occurring by death, resignation, or absence from the colony for twelve months may be filled by the governor in council. Similar boards are appointed in like manner for the four colleges, but the nomination of members is with the respective denominations. Each denomination has a general superintendent of education to which the corresponding boards make their annual reports.

The education boards have control of their respective schools, appoint the teachers, determine the salary, tenure, etc. The course of instruction in public schools is arranged for six grades or standards, sectarian teaching is allowed, but the rights of dissenting minorities are protected by a conscience clause in the school law. By the act of 1874 \$40,000 was provided for schoolhouses and school property and arrangements made for subdivision of property on an equitable basis, which was in due course accomplished without difficulty. By the 1876 act \$88,252 was annually provided for all purposes, which amount has been increased, from time to time, according to increase in population. The government grant is divided among the school boards on the basis of a specified rate per capita of the attendance in their respective schools. The attendance at board schools in 1907 was 48,311 distributed as follows: Church of England, 14,983, Roman Catholic, 14,721, Methodist, 13,092, others, 1015. The total expenditure, including government grants and fees, was \$281,655. Additional grants are made in aid of poor districts, for high schools, and for the support of colleges.

The high schools prepare pupils for admission to the colleges, in which provision is made for teaching advanced classes in ordinary commercial subjects, in Latin, Greek, French, German, algebra, geometry, mensuration and land surveying, chemistry, magnetism and electricity, free-hand and geometrical drawing, trigonometry and navigation, shorthand, music, and school management. In fact the colleges perform the double function of business colleges and classical colleges. They are all under government inspection, and reports of their condition and progress and a detailed account of income and expenditure must be transmitted by their respective superintendents

to be laid before the legislature, in accordance with prescribed forms. Students who complete the prescribed courses are prepared for matriculation in the Dominion universities.

A. T. S.

#### NEWMAN, JOHN HENRY (1801-1890)

—Divine, and educational writer, born in London, 1801, the son of a banker said to have been originally of Dutch extraction and possibly of Jewish descent. His mother belonged to the Huguenot family Foudrimer. He was brought up from a child to take great delight in reading the Bible. At the age of seven, he was sent to a well-known private school kept by Dr. Nicholas at Ealing. In his childhood the *Waverley Novels*, then appearing, and Scott's poetry had a great influence upon his imagination, which dwelt much upon magical powers, talismans, and other mysterious influences. At fourteen he read Tom Paine's *Tracts* against the Old Testament and found pleasure in thinking of the objections contained in them. He also read Hume's essays and remembered copying out some French verses against the immortality of the soul and saying to himself, 'How dreadful, but how plausible.' In 1816 a great change of thought took place in him and he fell under the influence of the Christian faith, receiving into his intellect impressions of dogma never afterwards effaced or obscured. Calvinist preaching and sermons helped in this conversion.

Newman went into residence at Trinity College, Oxford, June, 1817, becoming a scholar in 1818. In 1819 his father's bank stopped payment, and in the same year he took a Second Class in the Final Schools. After graduating B.A. Newman took some private pupils in Oxford and was elected a Fellow of Oriel College, April 12, 1822. At Oxford Newman came under the influence of John Keble, Hawkins, Whately, and Richard Hurrell Froude. In 1830 he definitely broke with the evangelical party and abandoned Calvinism. As a tutor of Oriel his mind was turned much to the theory and practice of education, the intimate connection of which with religious belief he strongly maintained. Newman's first public writing on education is found in his review of the works of John Davison (1744-1834), Fellow of Oriel College. During a visit to Sicily, 1833, Newman nearly died of fever. On his homeward journey in an orange boat, between Palermo and Marseilles, he wrote *Lead, Kindly Light*. The years 1833-1845 were full of momentous controversy on spiritual questions, ending in his reception into the Roman Catholic Church at Littlemore, near Oxford, October 9, 1845. After a visit to Rome he returned to England in 1847 with a commission from Pope Pius IX. to introduce into England the use of the Oratory founded by St. Philip Neri, whose beautiful character and educational devotion especially attracted

him. He established the Oratory in Birmingham and resided there for the rest of his life. In 1854 he went, at the invitation of the Irish Roman Catholic Bishops, to Dublin as Rector of the then recently established Catholic University. The University was, however, a failure, partly through lack of State recognition and partly through Newman's own incapacity for organization. But his experience at Dublin flowered in the publication of his *Discourses on University Teaching*, issued subsequently under the title of *The Idea of a University Defined and Illustrated*. In these discourses occurs the famous passage in which Newman says that if he had to choose between two University courses, one non-residential but intellectually exacting, the other residential but intellectually disorganized, he would without hesitation give preference to that University which provided no teaching but brought together into personal companionship "a multitude of young men keen, open-hearted, sympathetic, and observant, gaining for themselves new ideas and views, fresh matter of thought, and distinct principles for judging and acting day by day. Such a youthful community embodies a specific idea, administers a code of conduct, furnishes principles of thought and action. It gives birth to a living teaching which in course of time takes the shape of a self-perpetuating tradition or a *genus loci*, which haunts the home where it has been born and which imbues more or less and one by one every individual who is successively brought under its shadow" (Discourse VI). The school for boys conducted at the Oratory in Birmingham under Newman's presidency has done educational work of high value. In 1879 Newman was created Cardinal, with the title of St. George in Velabro. He died at Edgbaston on August 11, 1890. M. E. S.

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**NEWMAN, SAMUEL PHILLIPS** (1797-1842) — Principal of one of the first American normal schools, was graduated at Harvard College in 1816. He was a private tutor for two years in Kentucky, and from 1818 to 1839 he was a professor in Bowdoin College. He was elected principal of one of the first of the Massachusetts normal schools organized by

Horace Mann in 1839. The school was located at Barre but later removed to Westfield. This post he held until his death. His publications include a rhetoric, which passed through sixty editions, a textbook on political economy, and a series of school readers.

W. S. M.

**NEWNHAM COLLEGE, CAMBRIDGE, ENGLAND** — An institution for the higher education of women. In 1871 Miss A. J. Clough (gr.) took a house at Cambridge for five women students who wished to attend lectures there. The number grew rapidly, and in 1875 Newnham Hall was opened. Through the combined efforts of the authorities of Newnham Hall and the Association for Promoting the Development of Higher Education for Women (f. at Cambridge in 1873) Newnham College was established in 1880. The College now comprises the following buildings: Old Hall (1875), Sidgwick Hall (1885), Clough Hall (1889), Pfeiffer Building (1893), Kennedy Building (1906). The second of these Halls was named in honor of Professor Henry Sidgwick who played an important part in promoting the higher education of women and in the founding of the College. Like Girton, Newnham College has had a very prominent place in the history of women's education in England. The enrollment of students in 1910-1911 was 213.

See WOMEN, EDUCATION OF

**NEWSPAPERS AND PERIODICALS, COLLEGE AND SCHOOL** — More than 400 newspapers and periodicals are regularly issued at colleges and universities in the United States. If to this number there be added the number of newspapers and periodicals issued by the high and elementary schools and the number of high school, college, and university yearbooks or annuals, which are more or less journalistic in character, the total number would exceed a thousand. The list of publications includes dailies, semi-weeklies, weeklies, monthlies, bimonthlies, and quarterlies. It includes periodicals which are devoted to literature with no admixture of news, and periodicals which are devoted entirely to news, others that publish news and literature, and yet others, treating the lighter side of college life, that are devoted to humor. Many of these publications are illustrated. Most of them are financially profitable. They are to the undergraduate world what the daily or weekly newspaper is to the world outside the colleges. They give the news of the college campus and comment upon it.

The college or school newspaper is generally issued by the students, under some form of faculty supervision or control. In a few cases it is issued directly by the faculty representing the institution. The students, through their own organization, incorporated or otherwise,

select the editors and reporters. In most institutions, the editorship of the newspaper or magazine is regarded as one of the highest honors which the undergraduate may attain. Often the selection of associate editors and reporters is by competition, and there are many more applicants than there are positions to be filled. In some institutions, academic credit is given for such activities, and in others the higher editorial positions usually are accompanied by special society or college honors.

The college publications are not new in America. The earliest appeared at Dartmouth with Daniel Webster as editorial writer. The college daily came later. The Cornell *Daily Sun* was the first issued by an incorporated organization. Now daily newspapers are published at all the larger universities.

Students who plan to enter journalism (q r) or literature usually seek positions on college journals. Where courses are given in journalism the college journals afford a laboratory for students taking such courses.

W W.

**England** — There are few secondary schools in England that cannot boast of at least one official school magazine, published as a rule once a month during the school year. From time to time other sheets raise their diminished heads, either as representatives of special interests, of a special group, or of some form of the school. But these rivals rarely come to maturity, for not uncommonly they depend for their existence on the enthusiasm, lively but evanescent, of a few boys. Even the recognized school magazine frequently varies in quality, through the changing and shifting character of its staff. As a general rule the school magazines in England are conducted almost wholly by a committee of masters and boys or of boys alone under the general and benevolent supervision of a master. The content and arrangement are in most cases the same: occasional notes, honors and distinctions, news of old boys, a poem or two (in modern or classical language, original or translated), a few articles by present or old boys, and reports of school activities (different school societies, and athletics). A charge is invariably made for the magazine. Many school efforts have been wrecked on this financial rock, but compulsory subscriptions or advertising matter have been called in to aid. Within recent years the school magazine has tended also to become the official organ of old boys' associations, and in this way the list of subscribers is substantially increased.

The history of school publications is recent, even in the oldest schools. Occasional efforts appear to have been made at the beginning of the nineteenth century to launch school papers but rarely with success. The causes are not far to seek, the cost of printing must have been high, and corporate school spirit as

it is now understood was perhaps only in the early stages of its development. But here and there boys who not infrequently made their mark later in the literary world would seek to give rein to their genius while still at school. At Eton the earliest recorded magazine was the *Microcosm*, edited in 1786 by George Canning, John Smith, Robert Smith, and John Hookham Frere. The next publication in 1804 was the *Miniature*, of which thirty-four numbers were issued in twelve months. After an interval of a few years there appeared, about 1818, a number of manuscript publications, all of which were shortlived. In 1819 appeared perhaps the most famous of Eton magazines, the *Etonian*, in the management of which W. M. Praed was the leading spirit. Many of Praed's contributions attracted considerable attention. The *Eton Magazine*, which appeared in 1827, is notable mainly for the fact that W. E. Gladstone was one of the editors. After a desultory period of nearly thirty years another crop of ephemeral magazines appeared, the *Adventurer*, which lasted from 1867 to 1872, being the longest lived. Most of the publications, however, were hardly school magazines in the sense described above. They aped or imitated the literary reviews of their day and afforded for many years an opportunity for the boys to exercise their literary ability in the vernacular before English composition became a school subject. The first grammar school magazine—a record of school activities—was the *Eton College Chronicle*, which appeared in 1863 and has continued up to the present. At Harrow the first magazine, the *Triumvirate*, appeared in 1859, in 1863 its title was changed to the *Typo*, in 1869 it was again changed to the *Harrowian*, and from 1883 to 1888 was published outside the school under the title *Harrow Notes*. In 1888 the magazine was again restored to the school, and since that time the *Harrowian* has been the recognized school organ. At Rugby the earliest publication was the *Rugby Magazine* (1835), mainly a literary work, followed ten years later by the *Rugby Miscellany*, containing essays and poems, giving occasional glimpses of school life and Arnold's work. The *New Rugbeian*, which appeared in 1858, ran through three volumes. Other ephemeral magazines at Rugby have been the *New Rugby Magazine* (1864–1865), the *T. V. W.* (1877–1878), the *Leaflet* (1883–1886), and *Sibyl* (1890–1895). The *Meteor*, the first paper which claimed to be nothing more than a chronicle, appeared in 1867 and is still flourishing. At St. Paul's School, London, a magazine, *Hermes*, appeared before 1832, but little is known about it. About the same time (1831), showing how readily a stimulus works in school, appeared the *Pauline*, which died an early death, was revived for a short time in 1836, and again in 1882, since which time its existence has been unbroken. As in

other schools the *Pauline* has had to face upstart competitors, but these have not been able to survive the departure of their editors from the school

It thus appears that the essential qualities of a newspaper are not the literary productions but the appeal to the generality; school news and full reports of school activities, liberally interspersed with the names of youthful aspirants to distinction, are the means to assured success. A few magazines of other prominent schools may be mentioned: *Charterhouse*, *Carthusian* (1872), *Shrewsbury*, *Salopian* (1834, 1860), *Winchester*, *Wykehamist* (1866), *Westminster*, the *Elizabethan*, *Merchant Taylors*, the *Taylorian*; *Bedford*, the *Ousel*, *Bradford*, the *Bradfordian*; *Cheltenham*, the *Cheltonian*, *Clifton*, the *Cliftonian*; *Marlborough*, the *Marlburian*, *Manchester*, *Ulula*, *Rossall*, the *Rossallian*, *Sedbergh*, the *Sedberghian*; *Tonbridge*, the *Tonbridgian*

See STUDENT LIFE; JOURNALISM, EDUCATION IN, also PUBLIC SCHOOL, etc

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#### NEWTON, SIR ISAAC (1642-1727) —

One of the greatest of the world's mathematicians and physicists. He was born in humble circumstances, and as a boy was rather backward in his studies. He lived on a farm, and the surroundings were not conducive to serious study. He had an uncle who agreed to send him to college, and so he prepared for entrance and was admitted to Trinity College, Cambridge, in 1660. Within six years after entering the college he had proved the binomial theorem for the general case, laid the foundations of the calculus, and begun his great work on the study of the attraction of planets. Newton seems to have found the principles of the calculus in or before the year 1665 (See CALCULUS). In 1667 he became a Fellow of Trinity College, and in 1669 he became Lucasian professor of mathematics, being then less than twenty-seven years old. His greatest works are the *Principia* (1687), *Optics* (1704), *Arithmetica Universalis* (1707), *Analysis per Equationes Numero Terminorum Infinitas* (1711), *De Mundi Systemate* (1728), and *Optical Lectures* (1728, posthumous).

He also contributed many memoirs to the Royal Society from 1703 to the time of his death. He was knighted by Queen Anne in 1705. D. E. S.

#### NEWTON THEOLOGICAL INSTITUTION, NEWTON CENTRE, MASS —

An institution for the training of students for the Christian ministry in Baptist churches, founded in 1825. A course of three years

leading to the degree of D.B. is offered to students who have already some college degree or its equivalent. Women who intend to devote themselves to missionary work are admitted to the lectures. In 1907 the Gordon Bible and Missionary Training School of Boston, founded in 1889, was consolidated with the Theological Institution as the Gordon School. A summer school is also conducted by the Institution. The faculty consists of nine members and there is an annual enrollment of about seventy-five students.

#### NIAGARA UNIVERSITY, NIAGARA FALLS, N.Y. —

An institution located on the New York bank of Niagara River, founded in 1856 and conducted by Priests of the Congregation of the Mission, a body of religious educators established in seventeenth century by St. Vincent de Paul. Chartered as the Seminary of Our Lady of Angels in 1863, the institution was erected into a college as Niagara University by the Regents of the State of New York in 1883. The physical plant includes a campus of 300 acres, a group of buildings, including a museum, scientific laboratories, auditorium, literary society parlors, and a library of 35,000 volumes. It offers full college courses, and, in addition, has a theological seminary. The President is Very Rev. Edward J. Walsh, C.M. E. J. W.

#### NICARAGUA, EDUCATION IN —

Nicaragua, the largest of the Central American Republics, extends over an area of 49,200 square miles and has a population of 600,000 (estimated, 1910). About one third of this population is comprised in 13 towns, of which the largest is Leon, the former capital, having a population of 62,500. The present capital, Managua, has a population of 34,872. It is the center of the country's activities and exercises wide influence through its daily papers, morning and evening issues. The mass of the population consists of aboriginal Indians, negroes, and mixed races. The Europeans and their descendants are estimated at less than 2000. The prevailing religion is the Roman Catholic, the entire country forming one diocese under the Bishop of Leon, a suffragan of the Archbishop of Guatemala. The country is organized in thirteen departments and two comarcas, each under its own executive who has independent management of its internal affairs. The president of the Republic is assisted by a cabinet of ministers, one of whom is charged with the interests of public instruction. His authority in this matter, however, is limited by the independence of the departmental chiefs. He may require reports from each department as a basis for the distribution of the government appropriations for schools, but beyond this he has little more than advisory functions.

In a recent report, the minister of public



instruction deplores the low condition of primary education in the Republic. Five times as many schools as have been provided, he declares, are required in order to meet the actual needs of the population. There are about 350 primary schools, enrolling 23,000 pupils or less than 4 per cent of the population.

For secondary instruction there are four subsidized schools, namely, for boys, three, situated respectively in Managua, Leon, and Granada, and a normal school for young women in Managua. These schools enroll about 900 pupils and for each the State pays at the rate of \$5 a month. Private secondary schools follow the same programs as the public, all non-classical. The course in the normal school includes methodology, pedagogy, Spanish, mathematics, zoology, botany, drawing, physical sciences, and singing.

Higher education is represented by two University faculties of law, and by a faculty of medicine and surgery. The law course is very comprehensive, including philosophy of law, civil, comparative, and constitutional law, criminal law and criminology, medical law, statistics, and academic courses in Spanish and American literature, in history and political economy. There is an agreement with the other Central American States by virtue of which degrees granted in any one of them are recognized in Nicaragua as of equal weight with its own. Possessors of degrees granted in foreign countries must pass a brief examination and prove the authenticity of their diplomas.

The chief educational influences now working in the Republic come from the increasing relations with the other Latin American States and with the United States, and the impetus thereby given to the commercial, agricultural, and mining industries of the country. An evidence of the growing desire for harmonious relations among the Central American States is afforded by the appointment of a committee to draw up a manual of civic instruction adapted to each one.

The national museum of commerce and industry at Managua illustrates the increasing interest in the conditions that make for economic prosperity.

A G S

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**NICOLAUS VON CUSS (NICHOLAS OF CUSA, NICOLAUS CUSANUS)** — A fifteenth century scholar and writer. He was born at Kues on the Mosel in 1401, and died

at Todi, in Umbria, August 11, 1464. One of his biographers has thus tersely summed up his position: "Nicolaus wished to be a medieval philosopher, but with more liberty, he was, without wishing it, a modern philosopher, but with more reserve." His name was Nicolas Chirypfs, and he was son of a humble fisherman. In the patois of the Mosel valley, Chirypfs is the same as the German Krebs (crab) and hence he is known also by the Latin name of Nicolaus Cancer. He was educated at Heidelberg, and went from that university to Padua where, in 1424, he took the degree of doctor of laws. Returning to Germany, he made his first legal effort at Mainz, lost his case, and thereupon determined to devote himself to theology and science. In 1436 he presented to the Council of Basel a plan for reforming the calendar. So successful was he in diplomacy that Eugene IV, Nicholas V, and Pius II employed him on important missions, and in 1448 Nicholas elevated him to the position of cardinal, a very rare honor for a German in those days. Because of this unusual fact, he was known in Italy as Cardinalis Teutonicus. His works relate to questions of theology and metaphysics, the reform of the calendar, to the principles and value of mathematics, and to similar topics. Although not himself a teacher, by his writings he exerted a powerful influence upon the teaching of his day. His works had much to do with leading Leonardo da Vinci to maintain the theory of the plurality of worlds.

D E S

**NICOLE, PIERRE** (1625-1695) — One of the most famous writers of Port Royal (*qv*). Among his more important works are *Logique* (1662), *Essais de morale* (1671-), 25 vols., in the second volume of which occurs his *Traité de l'éducation d'un prince*.

F. E. F.

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**NICOMACHUS** — The greatest writer on theoretical arithmetic among those whose works appear in Greek. He, however, was not a Greek, but a Jew. He was born at Gerasa, 50 A D, and died about 111 A D. His work is not that of a great mathematician, but is rather a compilation of the knowledge common to teachers of the subject in his time. The object of the book is the study of the properties of numbers, particularly as they had been studied by the Pythagoreans for some centuries, and as they were being taught by the neo-Pythagoreans in his day. For example, he classifies numbers as odd, even, prime, perfect, and so on, and studies with some care the various polygonal and solid numbers. Ratios, proportions, and progressions occupy

considerable of his attention. From his work Boethius (*qv*) derived much of the material for his textbook on the subject, a book that for a thousand years was the classic in theoretical arithmetic. His work was edited by Hoche, in 1866. D E S

**NICOMEDES** — See GEOMETRY

**NICOTINE** — See TEMPERANCE, TEACHING OF

**NIEDERER, JOHANNES** (1778-1843) — Swiss educator and one of Pestalozzi's assistants. Educated and trained for the ministry, Niederer heard of Pestalozzi's work about 1800, resigned his pastorate at Appenzell and joined Pestalozzi at Burgdorf, where he had special charge of religious instruction. In this field he showed exceptional ability. But he was interested also in language and literature and in the broader social and philosophical aspect of education. He became indispensable to Pestalozzi as adviser and collaborator in his writings, and edited much of the latter's work between 1807 and 1811. But with a scientific and philosophical mind such as he possessed Niederer was not suited to interpret Pestalozzi and later some of his additions and interpretations were repudiated. Niederer edited the *Wochenschrift für Menschenbildung* (1808-1812), *Das Pestalozzische Institut und das Publikum* (1811), *Pestalozzi's Erziehungs-unternehmung im Verhältniss zur Zeitkultur* (1812-1813). The recall of Schmid, however, led to a breach between Niederer and Pestalozzi in 1817 which continued until the latter's death. In 1828 Niederer wrote *Pestalozzische Blätter*. Niederer's wife, Rosalie Kastenhofer, conducted the girls' school established by Pestalozzi at Yverdon and removed in 1827 to Geneva, where a seminary was also opened for the training of teachers. Mme Niederer was the author of *Blicke in das Wesen der weiblichen Erziehung Für gebildete Mütter und Töchter* (*Glances at the System of Female Education For educated mothers and daughters*, 1828), and of *Dramatische Jugendspiele* (*Dramatic Games for the Young*, 1838).

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**NIEMEYER, AUGUST HERMANN** (1754-1828) — German educator, born at Halle, a direct descendant of August Hermann Francke (*qv*), whose work he continued. His parents died while he was very young, and he was brought up by Frau Lysthenius, a lady of great culture and refinement. He received his early education in the schools founded by his great-grandfather, and at the age of seventeen entered the University of Halle, where he

studied theology and philology. In 1775 he published his first work, *Charakteristik der Bibel*, which at once made his name known all over Germany. In this book he showed how to use the biblical characters for moral instruction. In 1777 he began his academic career at Halle, in 1779 he was made professor of theology, and in 1785 he was appointed one of the directors of the Francke Foundations. He infused new life into these institutions which had declined under his predecessor. In 1806, the university was closed by the order of Napoleon I, and Halle annexed to the Kingdom of Westphalia. Niemeier not only lost his position, but together with some other citizens of Halle was forcibly removed to Paris, where he had to remain for several months. On his return he succeeded in his efforts to have the University of Halle restored and was placed at the head of the institution with the title of Chancellor and Perpetual Rector. He resigned this position in 1815, but remained active in lecturing at the University and in the administration of the Francke Foundations until his death.

Niemeier's most important work is his *Grundsätze der Erziehung und des Unterrichts* (*Principles of Education and Instruction*, 1796, Ed G A Lindner, Vienna, 1877-1878). It was highly recommended by such a competent authority as Herbart, who found in it "the whole summary of contemporary pedagogy and a broad and firm empirical basis for the theory of education." Up to the time of the author's death, nine different editions of this work had become necessary. F M

See HISTORY OF EDUCATION

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**NIETHAMMER, FRIEDRICH IMMANUEL** (1766-1848) — A German schoolman born in Beilstein, near Heilbronn, Württemberg, studied philosophy and theology at the University of Tübingen, then lectured at the University of Jena, where he became acquainted with Schiller, Goethe, and Fichte. In 1804 he was appointed professor of theology at the University of Würzburg, and in 1808 he was called to Munich to assist in the reform of the Bavarian gymnasia. In 1817 he became a member of the board governing the Protestant churches of Bavaria (*Oberkonsistorialrat*) and devoted the rest of his public activity to ecclesiastical affairs.

Niethammer is best known as the author of the essay *Der Streit des Philanthropinismus und Humanismus* (*The Conflict of Philanthropinism and Humanism*, Jena, 1808) in which he defended the claims of the classical studies against the realistic studies favored by the Philanthropinists (*qv*). F M.

**NIETZSCHE, FRIEDRICH WILHELM** (1844-1900) — German philosopher born at Rocken, Germany. He received his preliminary education at Naumburg, and in 1864 entered the University of Bonn as a student of philology and theology, the latter of which he discontinued at the end of the first semester. After a year at Bonn he went to the University of Leipzig, where he spent the greater part of four years, and where he busied himself with philosophy as well as with philology. In 1869, upon the recommendation of the distinguished philologist Ritschl (*q.v.*), he was appointed to the professorship of classical philology at Basel, and the University of Leipzig at once made him a doctor of philosophy without a thesis or examination. The next ten years were devoted largely to the work of teaching. In 1879 ill-health forced him to resign his position and to go from one health resort to another. In 1889 he became hopelessly insane, and lived at his sister's home in Weimar until his death, August 25, 1900. His principal writings are *Die Geburt der Tragödie* (*The Birth of Tragedy*), 1872, *Menschliches allzu Menschliches* (*Human all too Human*), Vol. I, 1878, Vol. II, 1879 and 1880, *Also Sprach Zarathustra* (*Thus spake Zarathustra*), first complete edition, 1892, *Jenseits von Gut und Böse* (*Beyond Good and Evil*), 1886, *Zur Genealogie der Moral* (*The Genealogy of Morals*), 1887, *Gotzendämmerung* (*The Twilight of the Idols*), 1889.

Although Nietzsche's writings are classed under the general heading of philosophy, they do not belong there in any technical sense of the term. He did not write systematic treatises, but devoted himself to the construction of brilliant aphorisms, and thus could discuss in quick succession subjects widely separated from one another. During the years of his creative activity his standpoint underwent frequent changes, but everywhere there may be found one unifying principle. Nietzsche's philosophy is always a philosophy of culture, as it presents itself to the man of marked aristocratic tendencies. The central problem is that concerning the nature of the ultimate good. If life is worth living, what makes it so? What is the supremely valuable? During his first period Nietzsche found the justification of the world, if it has one, in the æsthetic concept of beauty, then his standard of valuation became positivistic and he subjected everything to the intellectual test, rejecting much of what is usually regarded as true, finally he came to question the validity of the concept of truth itself, and the only valuation left him is ethical in nature. Although the writings of the first and second period offer much that is interesting and suggestive, Nietzsche's most characteristic theories are to be found in the books published after 1882. In them he preaches a "transvaluation of values," condemning the present-day morality

as that of slaves and exalting all the qualities belonging to self-assertion. The ultimate reality in the universe and the chief good for the individual is the will for power. Nietzsche makes no attempt to show that all human actions and feelings are at bottom selfish. He admits the existence of disinterestedness and deplors it. All history and all social organization find their one justification in the production of a few great personalities, whose one aim is the attainment of power rather than of happiness. Egoism is not so much a fact as an ideal. Closely connected with the possibility of its realization is the doctrine of the Superman, which presents both mystical and evolutionary scientific elements. The Superman is related to man as man is to the ape, and man should be glad to give place to his own superior, the incarnation of the egoist's ideal. As a means to its attainment every kind of struggle and difficulty should be increased and intensified. "A good war sanctifies every cause."

Although during the entire course of his literary activity Nietzsche occasionally wrote upon the subject of education, always advocating cultivation rather than learning, his views have not met with much attention and present no great originality. His real influence, which has been almost unparalleled in his own country and in other parts of Europe, is due rather to his general position. He is the philosopher of revolt. He encourages opposition to religion, to the accepted morality, and to intellectual and social customs and traditions. Self-assertion is the first duty of man, and with this end in view, education must be so remade as to encourage rather than to stifle the few great personalities. How can we hope for a Cesare Borgia or a Napoleon, if we teach and enforce commonplace standards?

G N D

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**NIGER** — See FRENCH COLONIES, EDUCATION IN

**NIGHT SCHOOLS** — See EVENING SCHOOLS.

**NIGHTMARE** — A dream (*q.v.*) of a fearful or horrible nature supposed to be due to abnormal cerebral stimulation. These often have the nature of a phobia (*q.v.*, also FEAR). These are always contributory evidence of a

disordered nervous system, and are of great importance in the elucidation of nervous conditions in childhood. They are found principally in epilepsy (*qv*), hysteria (*qv*), and neurasthenia (*qv*). The nightmare may be replaced by *pavor nocturnus*, in which the dream ideas are lacking, and the child has only a vague fear or apprehension, but wakes shouting or screaming and is pacified with great difficulty. S I F

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**NISIBIS, SCHOOLS OF.** — See CATECHETICAL SCHOOLS

**NOBILITY, SCHOOLS OF** — See CHIVALRIC EDUCATION, FURSTENSCHULEN, GENTRY AND NOBLES, EDUCATION OF.

**NOISE** — Noises may be said to be blurred tones. They correspond to aperiodic vibrations, and are classified as simple and compound. A simple noise is due to a momentary and irregular set of vibrations, for example, a tap, a flick, a thud, a click, etc. A compound noise is made up of repeated simple noises, usually in connection with tonal elements, *eg* the hiss, the roar, the rumble, the rattle, the crash, and the murmur. Many of the laws of tone sensations apply also to sensation of noise. C E S

**NOISE-PROOFING IN SCHOOL BUILDING** — See ARCHITECTURE, SCHOOL

**NOMENCLATURE** — The technical terminology relating to any subject. See TERMINOLOGY

**NOMINALISM** — See IDEAS, IDEATION AND IDEALISM, IDEALISM AND REALISM IN EDUCATION, MIDDLE AGES, EDUCATION IN, SCHOLASTICISM

**NONCONFORMISTS IN EDUCATION.** — See DISSENTERS IN EDUCATION

**NON-DIACRITIC METHOD** — In teaching reading and spelling, more particularly the former, diacritical marks have been much used in dealing with phonetic difficulties. Phonetic methods which depend upon the analysis and synthesis of sound units by means of syllables, phonograms, and word wholes, to the complete elimination of all artificial marks and symbols, have been called non-diacritic methods. They represent a naturalistic tendency in instruction which constantly finds increased acceptance among progressive teachers. H S

See DIACRITIC METHOD.

**NON-EUCLIDEAN GEOMETRY** — The geometry of Euclid (*qv*) contained a certain postulate (sometimes known as the fifth postulate and sometimes as the twelfth axiom) to the effect that only one line could be drawn through a given point and parallel to a given line. The postulate read as follows: "That, if a straight line falling on two straight lines make the interior angles on the same side less than two right angles, the two straight lines, if produced indefinitely, meet on that side on which are the angles less than the two right angles." The postulate was apparently very unsatisfactory to Euclid himself, for he avoids using it whenever possible. Numerous efforts were made by his successors to prove it, but no really scientific attempts to investigate its validity were made until Saccheri (1773), an Italian Jesuit, endeavored to prove it by a *reductio ad absurdum*. In attempting to show the absurdities that would follow if the postulate were not sound, he really developed, without appreciating it, a body of theorems that would be valid if the postulate were not accepted. Lambert, in a posthumous work of 1786, questioned the validity of the postulate. A little later, Gauss (*qv*) became interested in the question, but not until after others had set forth the real problem involved did he seriously attempt to consider it. The credit of definitely asserting that the fifth postulate is not in the same category as the others, and of building up a geometry based upon its opposite, in other words a "Non-Euclidean Geometry," is due to Johann Bolyai (1802-1860) and Lobachevsky (1793-1856). Bolyai was a Hungarian mathematician, and his ideas on the subject appear in brief in a letter written when he was only twenty-one years of age, that is, in 1823. Lobachevsky (*qv*) was apparently working on the theory at the same time, and entirely independently of Bolyai. Bolyai committed his theory to writing in 1825 and published it in 1832. Lobachevsky did not publish his work until 1835. The subject first attracted widespread attention in the publication of Riemann's memoir in 1854, in which he distinguished two kinds of non-Euclidean geometry, namely, the Bolyai-Lobachevsky type and his own. To these Klein (1871) gave the names of Elliptic (Riemann's) and Hyperbolic (Bolyai-Lobachevsky's), Euclid's geometry being called Parabolic. In Euclid's geometry the sum of the angles of a triangle is two right angles, in the Hyperbolic geometry it is less than two right angles, and in the Elliptic geometry it is more. All three geometries are entirely self-consistent and are logically valid. Within the limited space in which we work there is no practical difference in results, but in the domain of abstract mathematics the various geometries lead to conclusions that are widely different. D. E. S.

See GEOMETRY; LOBACHEVSKY; PARALLELS

**NON-METHOD READERS** — Reading books for children which are graded merely with reference to their literary content, disregarding phonetic and spelling difficulties, are called "thought" or "non-method" readers  
H S

See BASAL READERS, METHOD READERS

**NORM** — See STATISTICAL METHOD

**NORMAL ART SCHOOLS** — See ART EDUCATION

**NORMAL CLASS IN HIGH SCHOOLS** — See HIGH SCHOOL NORMAL CLASS

**NORMAL COLLEGE OF THE CITY OF NEW YORK.** — Established February 1, 1870, and received its charter from the state in 1888. Thomas Hunter, LL D., was its first president. It is a college for women and grants the degree of A B upon the satisfactory completion of a four years' course of study. It is supported by the city of New York with annual appropriations, that for 1912 being approximately \$400,000. Tuition and textbooks are furnished without charge. Students must be residents of the city.

Admissions and graduations are made twice a year. Candidates for admission must present fifteen units. The curriculum is arranged according to the elective group system and provides strong optional courses in education for those students who desire to enter the profession of teaching in either secondary or elementary schools. The equipment of the College is being renewed, and new buildings are being erected at a cost of \$2,500,000. The students number about 1250. The teaching staff comprises thirteen professors, ten associate and assistant professors, and seventy-one instructors. A high school and an elementary school, which are distinct and separate organizations from the College, serve as model and practice schools for students intending to teach. George Samler Davis, LL D., is the president.  
G S D.

**NORMAL SCHOOL** — An institution for the preparation of candidates for the teaching profession. The English term is borrowed directly from the French *école normale*. In 1794 (Oct. 30) the Convention decided to create in Paris "an *École Normale* where citizens of the Republic already instructed in the useful sciences should be taught to teach." The course was to last five months and the students were to return to their own districts and there open other normal schools. The school was opened on Jan. 20, 1795, and closed on May 15 of that year. Lagrange, Laplace, Berthollet, and Bernard in de Saint-Pierre were on the faculty. *Écoles normales* became the established name for the institu-

tions for the training of teachers. The term was transferred to England in the thirties. In 1833 Roebuck (*qv*) urged the importance of creating "normal schools" for training masters, and in a Minute of Committee of Council of 1839 the establishment of a national normal school was advocated "to found a school in which candidates for the poorer classes may acquire the knowledge necessary to the exercise of their future profession, and may be practiced in the most approved methods of religious and moral training and instruction." The scheme fell through, however, owing to the opposition of the National Society and the British and Foreign School Society.

The importance of professional training of teachers had received sporadic attention in the United States from the latter part of the eighteenth century. The numerous academies (*qv*) which formed so conspicuous a part of the educational system of the times included in their function the preparation of teachers, so far as they were prepared. In the charter of the very first of these institutes, the "Academy and Charitable School of Philadelphia in Pennsylvania" the training of a number "of the lesser sort" as teachers was specified as one of its functions. With academies the training of teachers was incidental and could hardly be termed professional, at least not until after the adoption in 1834 of the New York system of dividing portions of the state funds among the academies for this specific purpose. When the importance of special professional training began to be recognized, the term teachers' seminaries was applied to the institution which was advocated, though academy for teachers was also used. With the publication in translation of Cousin's (*qv*) *Report on the State of Public Education in Prussia* in 1834 and Calvin E. Stowe's (*qv*) *Report on Prussian Schools* in 1837, the use of the term Normal School as distinctive becomes quite general, though it is not used in the report nor in the statutes framed by the Massachusetts legislation committee in 1838, which resulted in the first normal school in the United States. The term, however, was applied to the resulting institutions, opened at Lexington (later at West Newton), 1839, at Barre (later at Westfield) and at Bridgewater in 1840. The New York Normal was established in Albany in 1875, the Pennsylvania one at Philadelphia in 1848, the Connecticut one at New Britain in 1849, and the Michigan one at Ypsilanti in 1850. The entire subject is discussed under the caption **TEACHERS, TRAINING OF**.

**NORMAL SCHOOL OF THE CONVENTION** — See FRANCE, EDUCATION IN, NORMAL SCHOOLS

**NORMAL SCHOOLS, JUNIOR.** — See JUNIOR NORMAL SCHOOLS.

**NORTH CAROLINA COLLEGE OF AGRICULTURE AND MECHANIC ARTS, RALEIGH, N.C.** — Founded in 1889 It is one of the land grant colleges provided for in the Morrill Act of 1862, and is therefore a federal as well as a state institution The college offers degree courses in agriculture, civil engineering, mechanical engineering, electrical engineering, chemistry, and textile industry The enrollment has reached 630 students, 240 of whom are in the agricultural courses It has 587 graduates The college owns about four hundred acres of land, a mile and a half west of Raleigh The buildings number nineteen, and, with the farm, aggregate in value \$850,000 E B O

**NORTH CAROLINA STATE NORMAL AND INDUSTRIAL COLLEGE, GREENSBORO, N C** — Was established in 1891 by the State for the higher education of the white women It is supported by legislative appropriation The board of directors is appointed by the State Board of Education Tuition is free to those who agree to teach two years in the state The usual undergraduate courses are offered leading to the bachelor's degree in arts, science, pedagogy, music, and home economics Admission is by certificate of an accredited high school or by examination The Faculty, including instructors, numbers sixty-five; total number of students is 650 Extension work in elementary agriculture, education, and home economics, is conducted by lectures, correspondence, bulletins, and field work There are fourteen buildings on a campus of 100 acres, valued at \$650,000 The annual state appropriation is \$87,000 J J F

**NORTH CAROLINA, STATE OF** — One of the thirteen original states, having ratified the Federal Constitution in 1789 as the twelfth state It is located in the South Atlantic Division, and has a land area of 48,740 square miles, or about the same size as the state of New York For administrative purposes the state is divided into ninety-eight counties, and these in turn into cities, towns, and rural school districts, though the township as an intermediate government unit is also used in a number of the counties In 1910 North Carolina had a total population of 2,206,287, and a density of population of 45.3 persons per square mile

**Educational History** — Educational development in the colony was slow, owing to bad government and the slow growth of population The first professional teacher, Charles Griffin, opened a school in Pasquotank county about 1705 In 1708 this school was turned over to a representative of the English Society for the Propagation of the Gospel (*q.v.*) In 1712 a school was opened at Sarum, and the Society sent over a number of parish libraries Little was done under the proprietary form

of government, which ended in 1729, or under the earlier period of royal control. In 1736 the colonial Governor urged the establishment of schools in his message, but no action was taken At that time the colony did not possess either a printing press or a printed edition of its laws, and schools were naturally not regarded as important In 1745 the first school law was enacted This merely granted to the town of Edenton the right to build a school-house by means of donations and subscriptions, but there is no evidence that it was ever built School laws were proposed in 1749 and 1752, but were refused passage In 1754 George Vaughan, a London merchant, proposed to give to the colony £1000 to propagate the Gospel among the Indians This was met by a counter-proposal, that if changed to a public school or a seminary of learning, the colony would add £6000 to the bequest This was done that year, but soon after the fund was spent for defense in the French and Indian War, and the plan came to naught In 1766 an act incorporating a Society for Promoting and Establishing the Public School in Newbern was passed This was practically the first law passed in the province for the encouragement of public education Trustees were to be chosen, their duties specified, and a duty of one penny a gallon on all liquors imported into Neuse River was levied for the next seven years, to provide free education at the school for ten poor children The teacher was to belong to the Church of England, and to be licensed by the Governor In 1767 and 1768 similar bills to establish a school in Edenton were passed, but vetoed because the assembly refused to require the teacher to be a member of the Church of England In 1771 the people accepted this condition, and a school was established Only English Church schools, either public or private, were allowed in the colony during the period of English control All schoolmasters were required to be licensed by the Bishop of London, to conform to the Anglican liturgy, and to have received the Sacrament in some Anglican Church within a year, under penalty of three months' imprisonment, a similar penalty and perpetual disbarment from teaching was imposed for attending any other form of worship This law was enforced in the eastern part of the state, which was largely English, but in the western part, where there were many settlements of Germans, Scotch, Scotch-Irish, and Quakers, many parochial schools were established in connection with their churches Presbyterians from New York and Pennsylvania, and graduates of Princeton College not only gave an impetus to elementary religious instruction, but also began the founding of the academies which later were such a marked feature of education in the state Tate's Academy at Wilmington, established about 1760, was the first Crowfield Academy,

Caldwell Academy, Poplar Tent Academy, Clio's Nursery and Academy of the Sciences, and Queen's College (afterwards Liberty Hall Academy) were established before the Revolution.

In 1776 the state adopted its first constitution, and in this was incorporated a provision, copied from the Pennsylvania constitution, directing that a school or schools should be established by the legislature, "with such salaries to the masters, paid by the public, as may enable them to instruct at low prices," and that all useful learning should be promoted "in one or more universities." In 1789 the University of North Carolina was chartered, and organized in 1795, but no action was taken toward the establishment of public schools until 1816. Private academies were chartered, however, in numbers. By the close of the eighteenth century, legislative charters had been granted to thirty-two academies, up to 1810 to seventy, by 1815 to 102, and by the close of 1825 to 171. The earlier academy charters were almost all alike. A number of individuals were given corporate powers, and absolute control over the establishment and management of the academy. In the earlier charters it was specified that such schools were not to be considered as the institutions of learning provided for in the constitution. Freedom from taxation and the right to raise money by a lottery were sometimes given. The first school society for the education of females was chartered in 1811. After about 1815, the stock company form of charter appeared, and library societies and benevolent educational societies also began to be chartered.

In 1804, 1806, 1811, 1815, and 1816 the different governors recommended to the legislature that they make some provision for the education of the people, but it was not until 1816 that the legislature took any action. The result was the adoption of a resolution, authorizing the appointment of "three persons to digest a system of public instruction, . . . and to submit the same to the consideration of the next general assembly." This was done, and the plan submitted to the legislature of 1817. It provided for the creation of a state School Fund, a Board of Public Instruction to manage the fund and carry the plan of public instruction into execution; a system of schools, embracing primary schools, academies, and the state university; outlined the course of instruction, the method of instruction, and the form of school government; provided for the free education of all poor children in the primary schools, and for the brightest in the academies and the university; and for an asylum for the education of the deaf and dumb. The expense involved made the plan prohibitive; its friends demanded its adoption entire or not at all, and the result was no action. Nothing further

was done until 1824, when a new commission was appointed to prepare a feasible plan. A bill providing for the education of the poor was the result, but it was not adopted.

In 1825 the beginning of a state school system was finally made, with the creation of the literary fund, and the beginning of an effort to carry out the mandate of the constitution of 1776 was made. It was not until 1839 that an elementary school system was finally provided for. The act of 1825 created a permanent fund, consisting of certain bank and navigation companies' stock held by the state, all liquor licenses and land entry fees, and the swamp lands of the state, created an *ex officio* board, known as "The President and Directors of the Literary Fund," to manage the fund, and decreed that the income should be applied "to the instruction of such children as it may hereafter be deemed expedient by the legislature to instruct in the common principles of reading, writing, and arithmetic." The principal of the fund was about \$50,000 in the beginning. The income was added annually to the principal, and by 1836 it had reached \$242,045. All but \$300,000 of the Surplus Revenue (*qv*) received in 1837 was added to the fund, in 1838 the fund was reported as \$1,732,485, and in 1840 as \$2,241,480. In 1831 an act to raise a fund to establish free schools in Johnston county, and an act prohibiting the teaching of reading or writing to slaves were passed. In 1832 there was some agitation for the establishment of a monitorial system of education for the state. In 1835 the constitution of 1776 was revised, but with no change or addition to the clause relating to education. In 1837 the Literary board was changed to one consisting of the Governor and three appointed by him, and \$208,000 were appropriated from the fund to drain the swamp lands of the state. It was not until 1839 that the first law providing for the organization of schools was passed.

In 1838 the directors of the Literary Fund made a detailed report to the legislature, and submitted a plan for the organization of public schools. In 1839 a law was finally passed, providing for the election of from five to ten persons in each county, by the county courts, to act as superintendents of common schools. They were to divide the counties into school districts, not over six miles square, and to appoint three to six school committeemen for each district. County courts were to levy a school tax of \$20 per district, and the state was to grant \$40 per district from the Literary Fund. A school census was also provided for, and it was not to go into effect in any county until adopted by the voters. In 1839-1840 sixty districts in four counties received grants, and these were the first payments from state funds made by the state.

These marked the beginnings of public common schools in North Carolina.

From 1840 to 1852 has been called the experimental period. In 1840 the law of the preceding year was revised and improved. The board of county superintendents was to elect one of their number as chairman, and this step marks the beginning of the county superintendency. The income of the Literary Fund was now to be apportioned to counties accepting the law, in proportion to the federal census, and then to the districts by the board of superintendents. The census of 1840 shows that there were then in the state two universities, 141 academies and grammar schools, 632 primary and common schools, and 19,483 pupils in attendance at the 775 schools of different kinds. By 1850 there were 2657 schools and institutions, and 104,095 pupils. In 1844 the system as established was somewhat crippled by an increase in the number of school districts, accompanied by a decrease in the taxes. By 1846 the laws of 1839 and 1840 had been finally adopted by all of the counties, though a number still did not levy a local tax. In 1849 the first edition of the school laws was printed and distributed. In the same year the legislature authorized the appointment of county superintendents. In 1852, after some years of effort, a law was secured providing for the appointment of a State Superintendent of Common Schools, to be chosen by the legislature, for two-year terms, at a salary of \$1500. Up to this time the directors of the Literary Fund had exercised all the state supervision there had been. The first appointee, Dr. Calvin H. Wiley, occupied the position until legislated out of office in 1866, and to his efforts the reorganization and development of the system are largely due. The eleven annual reports made by him during his term reveal a constant increase in schools, attendance, and interest in public education. In 1855 the school law was revised and reenacted. By 1858 a four months' average term of school was maintained in the state, and by 1860 there were six colleges for males, thirteen for females, 350 academies and select schools, and 4000 primary schools in the state, with a total enrollment of 177,400. The school system of North Carolina was at this time, perhaps, the best of any of the slaveholding states, and compared favorably with some of the northern and western states.

The Civil War stopped this development. In 1861 the counties were given permission to omit taxes for schools during the War, although most of them did not do so. As late as 1863 fifty counties report 1076 schools as still in existence, and in 1864 an act to grade the common schools was passed. At the outbreak of the War, the Literary Fund amounted to over \$2,000,000, and it is much to the credit of the state that the integrity of this fund was respected throughout. At the close of the

War the bank stocks, in which more than one half of the fund was invested, were worthless, and the other assets were finally sold for a fraction of their former value. The proceeds were invested in North Carolina special tax bonds, but these were later repudiated by the state, and the remainder of the fund was lost. The only asset of value remaining was the swamp lands, and out of these the present fund has been almost entirely built up. In 1873 the fund was only \$23,307, in 1910 it was \$456,471, with some swamp lands still unsold. The loss of the school fund caused the schools to close in 1865, and they were not reopened again until 1870. The University of North Carolina continued open until 1868, was closed during 1868-1869, was opened again during 1869-1870, and then was closed until 1875.

A new state constitution was prepared in 1866, but rejected by the voters. Another was prepared in 1868 and adopted. This provided for a fully organized state school system for all children in the state. A State Superintendent of Public Instruction, elected by the people for four-year terms, superseded the Superintendent of Common Schools, and an *ex officio* State Board of Education superseded the old President and Directors of the Literary Fund. A state school fund was provided for, succeeding to the assets and income of the old Literary Fund. The district school system and a four months' school were ordered, and a compulsory education law sanctioned. Detailed constitutional provision was made for the University of North Carolina, and for the establishment, later, of an agricultural department. Some schools were opened, but they did not prosper. The state was impoverished, the insistence upon equality for the colored children was offensive, and the appointment of a negro as Deputy State Superintendent did not improve matters. In 1876 the people, having passed through the Reconstruction period, adopted another new constitution. The educational provisions of the constitution of 1868 were continued in the new constitution with but few changes. Equality of privilege, but separate schools for the two races, were made mandatory. The Superintendent of Public Works was dropped from the State Board of Education, the detailed provisions for the University of North Carolina were omitted; and the legislature was directed to establish a normal, as well as an agricultural department, at the university.

For some time schools and school expenses increased very slowly. After about 1880, the state began to recover somewhat from the devastation of the War, and educational conditions began to improve, though it was not until about 1900 that the expenditures for school purposes, schoolhouse valuations, attendance at school, and length of term began



to increase at all rapidly. Since 1900 progress has been marked. The most serious drawback to educational development, aside from the comparative poverty of the state, has been the constitutional limit placed on local taxation. This was not removed until 1907. During these early years much valuable assistance was received from the Peabody Fund (*q v*), and some assistance is still received from this foundation and from the General Education Board (*q v*). In 1876 the first city school system was organized under a special act of the legislature, so as to permit of the levy of a local tax. By 1886 eight such acts had been passed, by 1896, sixteen, and by 1906 seventy-eight. Special taxing districts have also been formed by law in almost all of the counties. In 1876 the first two normal schools, one for each race, were established, and in 1881 two more for each race were created. The number for colored teachers finally rose to seven, but in 1903 these were consolidated into four. In 1881 a new consolidated school law was enacted, the state tax for education was increased to twelve and a half cents, and county superintendents of schools and county teachers' institutes were created. In 1885 County Boards of Education were also created, and in 1909 these were improved by having the terms of members lengthened from two to six years, one, instead of all, going out of office each biennium. In 1889 an Agricultural and Mechanical College for whites and in 1891 a similar institution for colored students were established. A state institution for the deaf and dumb was also created.

In 1899 the first state appropriation of \$100,000, to aid in securing the four months' school required by the constitution, was made by the legislature, in 1901 this was doubled, and in 1909 further increased to \$225,000, and its method of apportionment much improved. In 1901 the rural school library law was enacted, and in 1903 the law extending aid to established libraries was added. In 1903 the policy of using the State School Fund (Literary Fund) as a loan to the districts to build schoolhouses, at 4 per cent interest, one tenth repayable annually, was begun. The Appalachian Training School for white teachers was also established in this year. In 1907 the high school law with state aid of \$45,000 annually (since increased) was enacted, high school courses were to be prescribed by the State Superintendents, high school teachers' certificates were first provided for, the first compulsory education (an optional law) and child labor laws were passed, the education of the deaf and dumb was made mandatory, the East Carolina Teachers' Training School was established, and subcommissions of teachers, to assist the State Textbook Commission in adopting textbooks, were provided for. In the same year the Supreme Court of the state reversed a former decision, and made possible

a county tax for schools, even though the ordinary tax limit had been reached. In 1909 the legislature enacted a county school tax law, permitting a county tax for schools up to five cents, and fifteen cents on the poll, and the legislature of 1911 increased the limits six times. In 1909 teachers' institutes were made mandatory for each county, at least biennially, and in 1911 all teachers were required to attend a summer institute or a summer school at least once in two years. In 1909 county boards of education were authorized to order the enforcement of the compulsory education law at their discretion without waiting for local adoption. In 1911 the "County Farm-Life Schools" law was passed.

**Present School System.**—At the head of the present school system is an *ex officio* State Board of Education and a State Superintendent of Public Instruction. The State Board consists of the Governor, Lieutenant-Governor, Secretary of State, Treasurer, Auditor, Attorney-General, and the State Superintendent. They have corporate powers, the general government of the schools and the State School Fund, and succeed to all the powers and duties of the President and Directors of the Literary Fund. The Board is also *ex officio* a State Textbook Commission, has control of the colored normal schools, and selects trustees for white normal schools. It makes all loans from the permanent school fund to the county boards for building schoolhouses, as provided for by the law of 1903, may increase the statutory studies for elementary schools, and approves the establishment of high schools in counties. The State Superintendent of Public Instruction is elected by the people for four-year terms. He is *ex officio* a member of the State Board, and also acts as its executive officer. He publishes the school law, signs the orders for all state money paid out, has the general direction of the school system of the state and the enforcement of the school law, and all school officers are to obey his instructions and interpretations, he appoints institute conductors, and determines the time and place of holding the county institutes, prescribes the course of study for the high schools of the state, and inspects state-aided schools, makes rules and regulations, prepares lists of books for the rural school libraries, and approves all schoolhouse plans. He is required to know educational conditions in all parts of the state, to keep in touch with educational progress in other states, and to make a biennial report to the Governor. He acts as Secretary of the State Board of Education and of the State Textbook Commission; as a trustee of the State Library and of the Appalachian Training School, is President of the Board of Trustees (or Directors) of the State Normal and Industrial College, and of the Eastern Carolina Training School, is chairman of the State Board of Examiners,

has supervision and control of the normal department of the Cullowhee High School, and is a member of the Advisory Board on farm life education, which outlines the course of study for the County Farm Life Schools.

For each county there is a county board of education, and a county superintendent of schools. The county boards of three members are elected by the legislature, for six-year terms, one each biennium. Vacancies are filled by the State Board of Education. Members are paid \$2 per day and mileage, and no teacher is eligible for appointment. The county boards have corporate powers as to acquiring, holding, and disposing of school property, have power to make rules and regulations for schools, teachers, pupils, and attendance, determine the time for opening and closing the schools; contract for and direct the building of all new schoolhouses, and may condemn land for the same, may pay one half the cost of the same from the building fund; control all loans from the state fund to the districts for building, estimate the annual county tax needed to maintain a four months' school, may create, abolish, and consolidate school districts, and provide transportation for pupils of either race, have power to enforce the school law in their county, may remove any teacher or school committeeman, for cause, on complaint of the State Superintendent, may remove the county superintendent, or one of its own members, approve the annual report of the county superintendent, publish an itemized account of receipts and expenditures, appoint all school committeemen, except in cities under special charter, appoint a custodian for the district libraries, and control their establishment and aid, may establish and maintain county high schools, with the consent of the State Board of Education, may arrange for free tuition of pupils in existing high schools, have control of the enforcement of the compulsory education law, apportion the county school funds, and may call elections for the establishment of County Farm Life Schools, or for the voting of a county school tax. They elect the County superintendent of schools, who acts as their secretary and executive officer. He is elected for two-year terms, and need not be a resident of the county when elected. He must be "a practical teacher, and have had two years' experience." He must devote his entire time to the work, and his salary is determined by the county board. He must attend the annual state meeting of county superintendents and the district superintendents' association. He advises with the school committees, exercises a general supervision over the schools, examines teachers for county teachers' certificates, is *ex officio* a member of the Board of Trustees for the County Farm Life School, and supervises the work of the school, and makes an annual report to the State Superintendent.

In some counties the township system of control prevails, and in others the district system. For each township or school district in the county the county board of education appoints three persons, for two-year terms, to act as a school committee. They are to care for the property of the township or district, and have immediate control over the same, they take a biennial school census, purchase school supplies, up to \$25 a year, on the order of the county board, they employ all teachers for the schools for a maximum term of two years, and they may contract with a private school in their township or district (if not sectarian or denominational) for the education of the public school pupils. Such a school then becomes a public school. The county treasurer is treasurer of each township or district, and pays out funds on orders from the school committee.

Cities and towns operate under special charters, have their own superintendents, and are not under the control of the county boards of education, except in a general way, although most general school laws apply to such special districts as well. Town and city school committees consist of five to seven members, and are appointed by the boards of aldermen. The town or city constitutes one school district, and the school committee provides such schools for each race as seem equitable and just. Any union of two or more districts, a town, or a city may employ a superintendent of schools, if the county board of education consents. Textbooks, uniform for the state, are adopted by the State Textbook Commission.

**School Support** — Until recently the schools have been greatly retarded by lack of sufficient funds. State aid was not granted until 1899, and as yet is small. In 1907 a favorable Supreme Court decision opened the way for the first time for adequate county school taxation. An annual state appropriation of \$125,000 is distributed to the counties on the basis of school census. A further state appropriation of \$100,000, less \$7,500 for aiding rural school libraries, is apportioned to the counties levying a county school tax, and in such a manner as to duplicate sums raised locally, secure a four months' school, and equalize terms. Under the new law of 1909 it is the duty of the county board of education to estimate the amount of money needed each year to maintain a four months' school uniformly throughout the county, and it is the duty of the county authorities to levy the amount estimated, up to a tax of five cents on the \$100 and a poll tax of fifteen cents. Under the 1911 law they may also request a general county election to vote an annual county tax in any amount up to thirty cents and ninety cents poll. All proceeds of estrays, fines, forfeitures, liquor and auctioneer licenses, and three fourths of the general poll tax of \$2 also

go to the county school fund. In apportioning this fund to the districts, the county board may set aside from  $7\frac{1}{2}$  per cent to 20 per cent as a Building Fund, and the remainder must be so apportioned to the different townships and districts as to enable all to provide an equal length of term. While the census basis is to be used as a first approximation, it may be ignored entirely if necessary to equalize educational advantages throughout the county. Cities and towns may vote a local school tax up to thirty cents, and ninety cents poll. Special tax districts may also be formed by the county boards of education, without reference to township lines, for the levying of a similar tax. In 1900 there were but 30 such special tax districts, in 1904, 228, and in 1910, 995. In addition any township may vote a special township tax of from ten to thirty cents and from thirty to ninety cents poll for a township high school. In all cases a petition is presented and an election called. If the proposition is carried, then the tax becomes an annual tax, the school committee of the district determining the amount each year, up to the maximum limit voted.

**Educational Conditions** — Ten years ago North Carolina was one of the most backward states educationally in the Union, but the last decade has witnessed a wonderful change and improvement. The great increase in local taxation, as well as the beginning of state grants for elementary schools, high schools, and libraries, are marked features of the recent development. Expenditures for education have trebled in ten years, while the school population has increased but 5 per cent. The average term has been increased from 77 to 102 days in the same period, school property greatly improved, about 2500 rural school libraries have been created, high schools developed in nearly every county, some marked progress has been made in the consolidation of rural schools, and a strong sentiment awakened in favor of better education in the state. A State Inspector of Rural Schools has been provided by the Peabody Fund (*qv*), the state has provided a supervisor of institutes, reading circles, and normal training, and a state supervisor of agricultural instruction and extension work has been provided by the General Education Board (*qv*). Instruction in domestic science is provided for in the colored normal schools from the Slater Fund (*qv*). The State Board of Health has cooperated in giving instruction in hygiene and public health. The Committee for the Promotion of Public Education in North Carolina, aided by the Southern Education Board, has carried on a vigorous educational campaign in the state. Aided by the Peabody Fund, the Woman's Association for the Betterment of Public School Houses and Grounds has kept a traveling representative in the field.

One third of the total population is of the negro race, and in a few counties these outnumber the whites. The negroes own very little property, yet the state attempts to provide equality of term and opportunity for the children of the two races. The state maintains schools for Indian children in three counties, although there are but about 1000 of these, and also an Indian Normal School. The state has no foreign population to contend with, less than  $\frac{1}{2}$  of 1 per cent being foreign born. In illiteracy the state has in the past ranked rather high, but a determined effort has been made to stamp this out by providing equal educational advantages for all, and by compulsory education. The state is essentially rural and agricultural. About 85 per cent of the total population live in country districts, there are no large cities in the state, and manufacturing has not as yet developed to any large extent.

**Secondary Education** — A strong effort to develop high schools has been made within recent years. The high school law of 1907, the requirement of high school teachers' certification, and the inspection and approval of the course of instruction by the State Superintendent have done much good. The first year after the passage of this law 156 high schools were established, and by 1910 the number had reached 170. In addition, one white school in five and one colored school in twenty-five are reported as offering some high school instruction. Any county board of education may establish one or more high schools in a county, and appoint a high school committee of three to manage each school, or may arrange for free tuition of pupils in existing town schools. All such schools must have at least three teachers, one of whom must be engaged wholly in high school work. Many of these schools are in part grammar schools, offering only the first two years of high school instruction. Schools, outside of towns of 1200 or more inhabitants, may receive state aid under rules and regulations adopted by the State Board of Education, and any school may be aided for tuition pupils received, the state paying one half of the expense up to \$500 per school. All high schools must provide a five-months' term. Secondary education for the colored race is provided in the state normal schools, the State Normal and Industrial School at Burgah, the State Agricultural and Mechanical College at Greensboro, and in some twenty other institutions of secondary rank, mostly denominational in control, a number of which are industrial in type.

The new County Farm Life Schools (1911) are also an interesting secondary school development. One is to be established eventually in each county, at the rate of ten a year, and each is to receive \$2500 aid annually. Each school must have twenty-five acres,

dormitory, barn, dairy, and school building, offer instruction in practical farm life and home-making to both sexes, and short courses and extension courses to farmers and their wives. An ordinary high school department is also to be maintained, and all teachers must hold high school certificates. Counties are to vote to establish such schools, and issue bonds to equip them. To govern these schools, the county board of education is to appoint one person from each township in the county to act as a board of trustees, with the county superintendent as an *ex officio* member.

**Teachers and Training** — Of the 11,216 teachers employed in 1910, one fourth were in schools for the colored race. Of the white teachers 31 per cent had had normal training, and 20 per cent held college diplomas, while of the colored teachers 46 per cent had had normal training, and 15 per cent held college diplomas. For the training of future teachers the state maintains three normal schools for white students, one for Indian students, and three for colored students. All teachers' certificates must be obtained on examination, as the law distinctly provides that no diploma of any college or normal school shall give the holder the right to teach in the state without submitting to an examination.

**Higher and Special Institutions** — The University of North Carolina at Chapel Hill, founded in 1789, the North Carolina College of Agriculture and Mechanical Arts for white students at West Raleigh, founded in 1889, and the Agricultural and Mechanical College for the Colored Race at Greensboro, founded in 1894, stand as the culmination of the public school system of the state. In addition to the above, eight collegiate institutions for women, four for men, and seven for both sexes, nine of which were founded before the Civil War, also assist in the work of higher education in the state. Some half dozen additional institutions, mostly denominational, offer collegiate instruction for the colored race, the most important of which is Shaw University (q.v.) at Raleigh. E. P. C.

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**NORTH CAROLINA, UNIVERSITY OF, CHAPEL HILL, N. C.** — The oldest of the state universities, in the actual teaching sense, chartered in 1789. The first session began in 1795. Around the University sprang up the town of Chapel Hill. The first president of the University was Joseph Caldwell, a graduate of Princeton, and in the beginning it was patterned after that institution. While established and controlled by the state, no direct appropriation was made either for buildings, equipment, or support during the first ninety years of its existence. It was dependent upon donations, certain escheated property and the fees of the students. Still it flourished and was progressive and vigorous under President Caldwell. The first state geological survey was organized in 1823 by members of its faculty, and the first college observatory was built there in 1827.

On the death of Caldwell in 1835 David L. Swain became president. Under him various buildings were added and an endowment of several hundred thousand dollars accumulated. The University expanded until by the opening of the Civil War it was attended by 430 students, about half of whom came from outside the state, representing every Southern state. During this first half century of service it had furnished one president of the United States and one vice president, many senators, representatives, members of the cabinet, and other national officials, besides some 60 per cent of all the leading officials, civil and judicial, in its own state.

The sacrifice and the loss of this institution in the Civil War is perhaps unparalleled. Fourteen members of the faculty volunteered, seven gave up their lives. About 45 per cent of the living alumni entered the service, and nearly 30 per cent of these were killed or died in the service. More than twenty generals were furnished to the Confederate armies and one to the Union. About half of the regiments furnished by North Carolina were commanded by the University's alumni. The close of the war saw the University practically beggared. Under order of the court all of its property except the immediate buildings and such woodland as was necessary for furnishing fuel was sold to meet its bonded and other indebtedness. In 1869 President Swain died. The University dragged through two or three years of the Reconstruction Period as a sort of high school and was then abandoned, losing most of such apparatus as was left, its buildings lying open and uncared for. Only its books and collection of portraits were preserved.

Reopened in 1875, friends and alumni contributed for its repair. The state paid for its support the interest on the Land Scrip Fund amounting to \$7500, the state treasury having been looted of the original fund. This payment was discontinued in 1887 when the Agricultural and Mechanical College was established at Raleigh. In 1876 Kemp P. Battle was elected president and continued in office until 1891, the University thus almost rounding out its first century under three presidents.

The struggle with poverty and against strong denominational antagonism was severe, the rebuilding was slow and arduous. All hope of regaining the large patronage from other Southern states was gone. In 1881 the state began to make appropriations for maintenance and a little later for repairs and ordinary equipment, but the first appropriation for a building was made in 1905 — just 110 years after the opening of the University. It has a campus of fifty acres, some twenty odd buildings, a library of 65,000 volumes, and all together property approaching \$1,500,000 in value. Its total income amounts to \$175,000.

The University has grown into an institution with a faculty numbering nearly 100 and more than 800 students. It comprises a college of liberal arts and a college of applied science and well-developed schools of graduate studies, law, medicine, and pharmacy. The entrance requirements are fourteen units. F P V

#### NORTH CENTRAL ASSOCIATION OF COLLEGES AND SECONDARY SCHOOLS — See EXAMINATION AND CERTIFICATION BOARDS

**NORTH DAKOTA, STATE OF** — Organized as a Territory by Congress in 1861, and at that time embracing 350,000 square miles. In 1864 Montana Territory, and in 1868 Wyoming territory were set off, and in 1889 the Territory was further divided, and admitted as two states of almost equal size, — North Dakota as the thirty-ninth state, and South Dakota as the fortieth. North Dakota is located in the western part of the North Central Division of states, and has a land area of 70,183 square miles. It is about the same size as the six New England states and New Jersey combined. For administrative purposes the state is divided into forty-six counties, and these in turn into townships, though five of the older counties still retain in part the district form of school organization. In 1910 North Dakota had a total population of 577,056, and a density of population of 8.2 persons per square mile.

**Educational History** — At the first Legislative Assembly in 1862 "An Act for the Regulation and Support of Common Schools" was passed. This provided for the appointment of county superintendents, the division of counties into school districts, the election

of boards of three trustees for each district, an annual district tax, a three months' term of school in each district, the examination and certification of teachers, and for graded and union schools. It is doubtful whether many school officers were appointed or any schools were opened under this law. The Territory had but few people, and the Indian massacres and war of 1862 left Yankton (S. Dak.) the only settlement. In 1864 an *ex officio* Territorial Board of Education was created, which was to appoint a Territorial Superintendent of Public Instruction. In the first report of this Board in 1864, no public schools (though a few private schools) are mentioned in the Territory, and but few counties had appointed county superintendents. In 1865 there were but four legally organized school districts in the Territory, and a few private schools, with a total combined school enrollment of 382 pupils, and a school census of 621. In 1866 the *ex officio* Territorial Board was replaced by one of three specified persons, who, however, failed to qualify. In 1868, and again in 1869 and 1871, the school law was revised and re-enacted, though without substantial changes. In 1867 the office of Territorial Superintendent was made elective, and for two-year terms, and a county school tax of two mills and \$1 poll were added to the previously authorized district taxation. In 1867 teachers' institutes of from four to ten day's duration were authorized, in 1873 optional county teachers' institutes were permitted, and in 1875 the territorial teachers' institutes were restored. In 1871 a Deputy Territorial Superintendent for the northern part of the territory was provided for by the new law. In 1873 the 100 schools reporting had an attendance of 2006 children, out of a total school population of 5312 in the Territory. In 1875 the school law was again revised, the old provisions for union graded schools dropped out, and a list of textbooks adopted for the schools by name and by general law. In 1877 the Territorial Superintendent was changed from elective to appointment by the Governor and Council, as had originally been the case.

Up to about 1879 the growth in population in the territory had been slow, but during the next five years the school population almost trebled, and educational development was correspondingly rapid. After 1880 the idea of separate statehood for the two parts of the Territory seems to have taken root, and school statistics are reported separately after 1883, for North and for South Dakota. In 1879 women were permitted to vote at school elections, and in 1881 they were made eligible for the office of county superintendent. Bonds for schoolhouses up to \$1500 were first authorized in 1881. In 1881, also, two Territorial Normal Schools were created; in 1882 the University of Dakota at Vermilion (now the University of South Dakota), whose charter

dated back to 1862, was opened for instruction; in 1883 the University of North Dakota at Grand Forks, and the Territorial Agricultural College at Brookings (now the S. Dakota College of Agric and Mech Arts), were chartered. In 1885 a State School of Mines was established at Rapid City, and this is now the South Dakota School of Mines.

The school law was completely revised again in 1883, and made into almost a new law. School districts were abolished, and the township form of school organization substituted in all except eighteen of the older counties, and in these exceptions the Boards of County Commissioners were authorized to put the law in force, if they saw fit. Three of the eighteen counties adopted the township form, so that in 1884 there were sixty-five counties under the township form of organization, and fifteen under the district. The act also increased the salaries of county superintendents from \$600 to \$1500; made the beginning of the appropriations for holding institutes by making an annual grant of \$600, provided for county institute funds, to be derived from fees for examinations for teachers' certificates; and provided for the compulsory education of all children, ten to fourteen years of age, for at least twelve weeks each year. Another new school law was enacted in 1887. A Territorial Board of Education of three members was created and given important supervisory authority; normal teachers' institutes were provided for, with state-appointed institute conductors; a state course of study was to be outlined by the Territorial Board of Education, and the Territorial Superintendent was authorized to designate private institutions and to grant aid to them for the training of teachers for the territory.

In 1889 Congress passed an Enabling Act for the formation of a constitution and for the admission of Dakota Territory as two states. (For the subsequent educational history of South Dakota, see special article on that state.) North Dakota framed and adopted a state constitution, and was admitted as a state in the same year. At the time of the admission as a state, the North Dakota public school system consisted of 35 graded and 1366 ungraded schools, with high schools in the cities and in some of the villages. There were also a state university and one state normal school in operation.

The Enabling Act made large grants of land to the new state for various educational purposes, and demanded that the state should guarantee the safety of the grants, and provide for the establishment and maintenance of a system of public schools, open to all children, and free from denominational or sectarian control. The new state constitution guaranteed the safety and proper application of all grants made, and made mandatory the establishment of a system of free public schools,

"extending through all grades up to and including the normal and collegiate courses." The state university at Grand Forks and the normal school at Valley City were perpetuated as state institutions, and the following new state educational institutions were created and located by constitutional provision: a state school of mines, to be located in connection with the state university at Grand Forks; an agricultural college at Fargo, a second state normal school at Mayville, a school of forestry, in one of four specified counties, a state scientific school at Wahpeton, an industrial school and school for manual training at Ellendale, a reform school at Mandan, a school for the deaf and dumb at Devil's Lake, an asylum for the blind in Pembina county, and a department for the training of the feeble-minded, in connection with the state insane asylum. The constitution further provided that "no other state institutions of a character similar to any one of those created by this article shall be established or maintained without a revision of this constitution." All lands granted (See NATIONAL GOVERNMENT AND EDUCATION) were carefully safeguarded as to sale and sale price, the different funds were declared inviolate, detailed provisions were made for the safeguarding of the lands and funds, and the legislature was forbidden to divert any fund, even temporarily, the interest on the permanent school fund was made distributable on school census alone, a State Board of University and School Lands Commissioners, consisting of the State Superintendent of Public Instruction, the Attorney-General, the Secretary of State, and the State Auditor, was created to control the appraisal, sale, and rental of the school lands, and the investment of the proceeds, a State Superintendent of Public Instruction, and County Superintendents of Schools, to be elected by the people, for two-year terms, were made constitutional officers, women were made eligible to vote for any school officer and to hold any school office, sectarian aid was prohibited, and legislation relating to the prevention of illiteracy and the "securing of a reasonable degree of uniformity in course of study, and to promote industrial, scientific, and agricultural improvement," was permitted. The constitution, in its educational provisions, is one of the most elaborate, specific, and mandatory of any framed by the states.

The state legislature of 1890 put the constitutional provisions into operation by the enactment of a new school law, which outlined a good state system of education. A State Board of Education not having been provided for in the constitution, the State Superintendent succeeded to the powers and duties possessed by the old board. He was also charged with the preparation of all examination questions for teachers' certificates in the state, state professional certificates were provided for,

and the organization and management of the State Teachers' Reading Circle was placed under his direction. The new law, dealing with the question of the school unit and compelled to provide for a uniform system, created the district as the unit, but provided that district lines should conform to township lines wherever possible. This permitted conditions to remain as they were, thirty-three counties in the new state using the township as the district, and five counties having the school district form of organization. In 1911 new legislation permitted the rearrangement of district lines in these five counties, with a view to a partial abolition of the district unit.

The first few years of statehood were a trying period, and little new legislation was enacted, although steady educational progress was made. In 1895 a health and decency law, a law permitting any city, town, or school district to provide free textbooks, and a law creating a State High School Board, consisting of the Governor, Superintendent of Public Instruction, and the President of the University, to inspect and classify the high schools, were enacted. Within two years one third of the schools of the state had voted to provide free textbooks and supplies. A state high school course of study was issued in 1895, and a state elementary course in 1897. In 1898 the State Superintendent began to send out traveling school libraries, and in 1899 the plan was established and provided for by law. In 1907 a State Public Library Commission was provided for. In 1905 the teachers' examination law was revised, third-grade county certificates were abolished, and a minimum teachers' wage law was enacted. In 1907 counties were permitted to organize a three to four weeks' summer teachers' training school, in place of the required county teachers' institute, and by 1900 twenty-four counties had adopted this plan. State aid to accredited high schools was first voted in 1899, the state two-mill tax was changed to a two-mill county tax, the consolidation of schools was authorized, the provision of free textbooks and supplies, on a two thirds petition, was made mandatory on school corporations, and increased aid was extended to the county teachers' training schools. A State School Law Commission was created in 1909 to revise and recodify the school laws of the state, and a revised school code, detailed below, was enacted by the legislature of 1911. The legislature of 1911 also enacted a number of important new school laws. The State High School Board was reconstructed, and a State Agricultural and Training School Board was created. Appropriations were made for a State Inspector of Rural and Graded Schools, and a State High School Inspector. State graded and state rural schools, of two classes each, and state consolidated schools, were defined, the requirements and course of instruction for

state approval named; and definite state grants to each provided for on inspection and approval. The grants to the regular high schools were increased, and their inspection and approval also provided for. The introduction of agriculture, manual training, and domestic science into the regular high school courses, and the affiliation of rural schools with such a central high school, were also provided for, and state aid for them voted. A State Educational Commission was also created, to report in 1912.

**Present School System** — At the head of the present school system of the state is a State Superintendent of Public Instruction, elected by the people. The election is for two-year terms; women are eligible for the office, and the person elected must hold the highest grade of state professional certificate. He appoints his deputies, who must possess similar qualifications, and his clerks and office force. The work which in a number of states is performed either by a State Superintendent or a State Board of Education, or by the two working together, is here split up among the State Boards of Land Commissioners, Library Board, Board of Examiners, High School Board, Normal School Board, Agricultural and Training School Board, and the State Superintendent. Each of these boards has special parts of the school system to supervise. The State Superintendent is *ex officio* a member of each of these Boards. To the State Superintendent is given the general supervision of the school system of the state. He advises with the county superintendents, decides disputed questions under the school law, holds conferences with school officers, prepares and furnishes all blanks and forms, apportions the State Tuition Fund to the counties, edits the school laws, and makes a detailed biennial report to the Governor. He also issues plans for one- and two-room schoolhouses, approves all school-house plans, prepares and prescribes the course of study for the common schools of the state, and prescribes rules and regulations for teachers' institutes, outlines the course of instruction for them, and appoints all institute conductors. He appoints a State Inspector of Rural and Graded Schools to act for him in their examination and approval, and the State High School Board appoints another deputy to act as a State Inspector of High Schools.

For each county a county superintendent of schools is elected by the people for two-year terms. He, or she, must be a college or normal school graduate, or hold a state professional certificate, and must have had at least two years' experience as a teacher. There are no county boards of education in the state. The county superintendent has general supervision of the schools of his county, and must visit each school at least once each year, and advise with teachers and school officers. Once each year he holds a conven-

tion of school officers, may hold monthly meetings with his teachers; and holds an annual teachers' institute, or a teachers' training institute of three to four weeks' duration. He keeps a corrected map of the school districts of his county, apportions state and county funds to the districts, appoints school directors to fill vacancies, decides school controversies, though appeal to the State Superintendent is allowed, and makes an annual report to the State Superintendent. With the County Superintendent of Health he inspects schoolhouses, may order needed sanitary changes, and approves minor alterations. He also acts as an agent of the State Board of Examiners in the conduct of examinations for teachers' certificates, approves petitions for organizing state graded schools, rural schools, and township high schools, and acts, *ex officio*, as a member of the board of trustees, if a county agricultural and training school is established in his county.

The school unit below the county is the township, although in five counties the district system is still used extensively. The 1911 legislation was intended to make these counties in part conform to the plan followed elsewhere in the state. There are in the state, then, school districts, in the ordinary sense of the term, township districts, and certain segregated districts (towns or cities) known as city districts, special districts, or independent districts. These latter segregated city and town districts are under boards of education. For all other school districts a board of three school directors is elected, one each year, for three-year terms. The people of each district also elect a treasurer, for two-year terms, and the board appoints a clerk, not one of their number, who holds office at the pleasure of the board. There must be four regular meetings of each board each year, and in the cities twelve meetings. Each board of school directors has general charge and management of the schools under their charge, the care of the school property, the making of repairs, and the supplying of necessary equipment. They employ all teachers for the schools, may admit non-resident pupils, may add branches of instruction, with the approval of the county superintendent, may call an election to vote money for buildings or to buy sites, up to five acres in extent; and may levy district school taxes up to thirty mills. They must make such repairs and alterations in buildings as are ordered by the county board for sanitary inspection (Co Supt of Schools, and Co Health Supt), and can only purchase such books for the school library as have been approved by the State Superintendent. They must organize schools within the district (township) wherever there are nine children without school facilities. They determine the time and length of the school term, which must be equal for all schools

in the district, and not less than seven months in any school. They may, and on petition of one third of the residents must, call an election to vote on the question of consolidating the schools, and they may provide stables at the consolidating center. If the district contains sixty children of school age, the board may, and on petition of ten residents must, call an election to decide the question of providing high school facilities for the district. An annual school census must be taken by the clerk, and he must also make a detailed annual report to the county superintendent. Each board must see that all records, reports, and instruction are in the English language.

Cities and incorporated towns may organize as independent districts, and segregate themselves from the township district. A board of education of five is then elected, in place of the three school directors. City districts, formerly organized under special laws, may reorganize as independent school districts, under boards of education with a membership based largely on ward representation. For all such districts the general school laws apply, and the boards of education have the same powers and duties as boards of school directors. In addition, they may establish graded schools, high schools, and such other schools as may be desired, must maintain a term of from seven to ten months; may purchase, sell, and repair schoolhouses, may employ a district school superintendent, and may levy local school taxes, up to thirty mills.

**School Support** — On the admission of the state in 1889, the state received the sixteenth and the thirty-sixth sections in each township for schools, a few Indian reservations excepted, and has since been granted the sections in some of these. The total grant to the permanent school fund of the state was approximately two and a half millions of acres, on which a minimum sale price of \$10 an acre was placed. About two fifths of this has since been sold, and at an average price of about \$15 an acre, while recent sales have been for much larger figures. The 5 per cent of land sales grant was also given to the permanent school fund, and this, up to 1910, had produced \$433,905. In all a total permanent school fund of about \$16,000,000 has so far been produced. The land remaining is conservatively estimated as worth \$18,000,000 more, and will probably bring \$25,000,000. In all a fund of \$40,000,000 for common schools seems probable from the proceeds of the enabling act grants for common schools alone. In addition, 500,000 acres, to be selected by the state, were granted for the higher, reformatory, charitable, and public institutions in the state, as follows: state university, 40,000 acres, school of mines, 40,000 acres; agricultural college, 40,000 acres; state normal schools, 80,000 acres, reform school, 40,000 acres, deaf and dumb asylum,



10,000 acres, public buildings, 50,000 acres, and for other educational or charitable purposes, 170,000 acres. The minimum sale price on all of these lands was placed at \$10 an acre, and they should bring two or three times this amount. The income from each grant is to be used for the support of the institution for which it was granted.

The income from the permanent state school fund, together with all state fines, is apportioned quarterly to the counties, and by the counties to the districts, on the sole basis of the school census, six to twenty-one years of age. In addition, each county must levy a two-mill county school and a county poll tax, the proceeds of which are distributed to the districts on the same basis. Counties establishing a county agricultural and training school may levy, as needed, for its maintenance. In addition, any school district or school corporation may levy a district tax in any amount up to thirty mills, for further maintenance and equipment. Moreover, the state makes special appropriations for aid to high schools, to state graded and state rural schools, and for instruction in agriculture, domestic economy, and manual training in regular high schools, levies a state tax of one fifth of a mill for county agricultural and training schools, and a state tax of one mill, to be divided among the different state higher institutions.

**Educational Conditions** — The state is essentially a rural and an agricultural state, 89 per cent of the people living in rural districts. There are no cities as large as 15,000 population in the state. The population is almost entirely white. There are a few Chinese and Indians, but practically no negroes in the state. About one third of the total population is foreign born, Norwegians, English-Canadians, Russians, Germans, and Swedes, in the order named, being the predominant foreign peoples and constituting about 75 per cent of the foreign born. These have settled in the rural districts and taken up farming. The large educational funds, the liberal taxation, and the large per capita wealth of the people make the maintenance of a good system of education easier than is the case in many other states, and good laws tend to secure these results. Good schools are maintained generally throughout the state, and the sentiment of the people is strongly in favor of good schools. Expenditures for education have multiplied four times in the past eleven years, though the school population has only doubled. School libraries are found in all districts, and \$25 per year may be spent from the public funds for books. Free textbooks are furnished in about two thirds of the schools of the state. Any school commission or board may employ a medical inspector, and require the examination of its school children. The teaching of agriculture, domestic science,

and manual training has recently been taken up with much enthusiasm, and the teaching of agriculture in central schools, to which rural schools may be affiliated, has recently been provided for. Standards for state graded and state rural schools have been formulated, and a state inspector of rural and graded schools appointed. The state has a good child labor law, and a reasonably satisfactory compulsory education law.

**Secondary Education** — High Schools are being developed very rapidly in the state, especially within the past five years. By 1911 the number of approved high schools in the state had reached ninety-five, and the total number was much larger. A State High School Board, consisting of the State Superintendent, the Presidents of the State University and of the Agricultural College, two city superintendents of schools, and one citizen, the last three appointed by the Governor, exercise the functions of a State Board of Education for high schools. They appoint a State High School Inspector, who acts as their executive officer, and approves high schools for state aid. Courses of two, three, and four years may be approved. A State Agricultural and Training School Board, consisting of the State Superintendent, President of the Agricultural College, and three practical farmers appointed by the Governor, act as a State Board of Control for, and determine the qualifications of teachers and principals in, the new county agricultural and training schools authorized by the law of 1911. These schools must be provided with a good equipment, and must offer agricultural instruction correlating with that given in the Agricultural College. State aid, up to one half, and a maximum of \$3000 a year, will be granted to such schools. State aid was also provided, to begin in 1912, for regular high schools which add instruction in agriculture, manual training, and domestic science. The State School of Science at Wahpeton, the State School of Forestry at Bottineau, and the State Industrial and Manual Training School at Ellendale are state schools of secondary grade. The encouragement given to communities to form graded schools, and to gradually develop these into two-year high schools, the provision for the gradual evolution of these into three- and four-year high schools, and the strong emphasis placed on instruction in agriculture and domestic economy are strong points in the North Dakota plan for secondary instruction.

**Teachers and Training** — A State Board of Examiners, consisting of the State Superintendent as secretary, and four teachers or superintendents appointed by the Governor as additional members, prepares all questions for the examination of teachers, oversees the grading of the answer papers, and grants all teachers' certificates in the state, with the one exception of teachers and principals in the

county agricultural and training schools. This board also serves, *ex officio*, as a State Teachers' Reading Circle Board, and controls both the teachers' and the pupils' reading circles for the state. These have both been in existence for a number of years, and have rendered valuable service. Four grades of teachers' certificates are issued, and form a graded series, each requiring increasing knowledge and experience and having increasing validity, the highest is issued only to college graduates. Special certificates may also be issued in special subjects. Graduates of the University of North Dakota, of the Dakota State Normal Schools, and of other colleges and normal schools within the state offering equivalent instruction may be certificated without examination and on similar terms. For the training of future teachers the state maintains two State Normal Schools at Mayville and Valley City, and graduates of high schools which offer a four-year course, with certain review and professional subjects in the last year, may also receive a teachers' certificate on graduation. A State Normal School Board looks after the normal schools of the state. So far as it applies, work in summer sessions may also be accepted in lieu of examination subjects.

County superintendents may, if they desire, hold teachers' meetings one Saturday each month, which teachers outside of cities and high schools must attend. Superintendents may also hold an annual teachers' institute, or instead may organize a county teachers' training school, of from three to four weeks' duration. State aid of \$100 a year is given each county for teachers' institutes, and, if a county training school is organized, the county must appropriate a sum equal to twice the number of teachers who have taught for four months in the county the preceding year. A portion of all teachers' examination fees also goes to the teachers' institute fund. Teachers are paid for one week for attendance. A state minimum wage law requires a minimum wage of \$35 a month. The average wage for 1910 was \$51.80.

**Higher and Special Institutions** — The University of North Dakota and the State School of Mines at Grand Forks, and the State Agricultural College at Fargo, stand as the culmination of the public school system of the state. Fargo College (Cong.) at Fargo, Wesley College (M.E.) at Grand Forks, Grand Forks College (Luth.) at Grand Forks; and the Presbyterian College at Jamestown assist in the work of collegiate education in the state.

In addition to the above institutions, the state also maintains the State School for the Deaf and Dumb at Devils Lake, the state secondary schools, mentioned above, and the State School for the Blind at Bathgate.

E. P. C.

#### References —

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**NORTH DAKOTA, UNIVERSITY OF, GRAND FORKS, N D** — Established by act of the Territorial Assembly Feb. 23, 1883, and opened its doors in September, 1884. In 1911 there were thirteen buildings, representing in their construction and equipment an expenditure of \$700,000. The student body numbers 972, of these 495 are in the colleges, 348 in the summer session, and 129 in the Model High School. The teaching staff consists of 105 members, thirty-seven of whom are of professional grade. The university maintains six colleges: Liberal Arts, Teachers, Mining Engineering, Mechanical and Electrical Engineering, Law, and Medicine, a mining substation at Hebron, N D, and a biological station at Devils Lake, N D. The State Public Health Laboratory and Geological Survey are under the authority of the Board of Trustees. The general and departmental libraries contain 45,000 volumes.

The university at the time of its establishment received 126,000 acres of land which, when finally sold, will give an endowment of \$2,000,000. The assets of the university in 1911 amount to \$2,400,000, the annual income is made up of payments from contracts and interest on land sales, the proceeds of the  $\frac{1}{16}$  mill tax, special appropriations for maintenance, and payments of fees and rents. The income in the year 1911-1912 was \$373,000, of which \$32,600 was for buildings, and \$41,000 for operation of the University Commons, leaving for the conduct of the university and its stations \$229,400.

The principle of affiliation of church colleges with the state university was first inaugurated at the University of North Dakota in 1904, resulting in the maintenance of Wesley College, a Methodist school in affiliation with the university.

The university has had the following presidents: Dr. William M. Blackburn, 1884, Professor Henry Montgomery, acting president, 1885-1887, Dr. Homer B. Sprague, 1887-1891, Dr. Webster Merrifield, 1891-1909, Dr. Frank L. McVey, 1909- F. L. M.

**NORTHEND, CHARLES** (1814-1895). — Educational writer, was educated at Dummer Academy and Amherst College. He was principal of the first grammar school at Danvers, Mass. (1836), and was afterwards superintendent of schools at Danvers and at New Britain, Conn. He was for many years

## NORTHFIELD SCHOOLS

secretary of the American Institute of Instruction, and was active in other educational associations. His publications, include *Teacher and Parent* and *The Teachers' Assistant*. These books passed through many editions, and for more than thirty years they ranked as the most popular educational books. He was also the author of *Letters to Parents*, *Exercises in Dictation*, and numerous articles in educational journals. W S M

**NORTHFIELD SCHOOLS** — These include Northfield Seminary for young ladies, at East Northfield, Mass., founded in 1879, and Mount Hermon Boys' School, four and one half miles distant, founded in 1881. Both schools are of secondary grade and prepare for college. They were established by the late D L Moody, to meet the needs of young men and young women of limited means who were ambitious to acquire the benefits of a thorough Christian education. In addition to this characteristic, two additional features are prominent. (1) The Bible is emphasized in every course of study, and each student is required to take a minimum of two recitations a week in this subject, under systematic instruction. (2) Each student is required to discharge some assigned duty each day in the dormitories, in dining hall and kitchen, or farm. The grounds and buildings of the seminary represent an investment of \$910,174, and the school has an endowment of \$575,188. Mount Hermon Boys' School has invested in grounds and equipment \$1,007,767, with a further endowment of \$627,823.

**NORTHRUP, BIRDSEY GRANT** (1817-1898) — State Superintendent of Schools, was graduated from Yale College in 1841 and from the Yale Theological School in 1845. He taught in the public schools of Connecticut, was agent of the State Board of Education of Massachusetts (1857-1867), agent of the State Board of Education of Connecticut (1867-1873), and Secretary of the State Board of Education (State Superintendent of Schools) of Connecticut (1873-1883). His publications include *Education Abroad*, *Forestry in Europe*, and *Lessons from European Schools*, and numerous reports on education. W S M

**NORTHWEST TERRITORIES, EDUCATION IN** — See CANADA, EDUCATION IN

**NORTHWESTERN COLLEGE, FERGUS FALLS, MINN** — A Lutheran denominational institution founded in 1900. The college grounds include eight acres located about half a mile from the center of the city of Fergus Falls. The institution comprises the following six departments: collegiate, normal, preparatory, commerce, music, art. The course of religious instruction is obligatory upon every regular student. There are (1912)

## NORTHWESTERN UNIVERSITY

nine instructors. The student body numbers 119. E J

**NORTHWESTERN COLLEGE, NAPERVILLE, ILL** — A coeducational institution established at Plainfield in 1862 by the Evangelical Conferences of Illinois, Iowa, Indiana, and Wisconsin as the Plainfield College, the present name being adopted in 1864. The college was moved to Naperville in 1870. The following departments are maintained: academy, college of liberal arts, German, commerce, music, art, physical culture. The entrance requirements to the college are fifteen units of high school work. The degrees of A B, B S, and B L are conferred. The faculty consists of twenty-five members, and the student enrollment in 1911-1912 was 396.

**NORTHWESTERN COLLEGE, WATERTOWN, WIS** — An institution founded in 1865 by the Evangelical Lutheran Synod of Wisconsin and comprising preparatory, collegiate, and business departments. The entrance requirements to the college are equivalent to the work of the preparatory department. The college course leads to the degree of A B. There is a faculty of twelve members, and the enrollment of students in 1911-1912 was 204.

**NORTHWESTERN UNIVERSITY, EVANSTON, ILL** — A coeducational institution, founded "in the interests of Christian learning," and chartered on Jan 28, 1851. The charter provides that a majority of the board shall be members of the Methodist Episcopal Church, but no religious tests are required of students. The trustees chose as the first president Clark Titus Hinman. The university purchased 397 acres of land twelve miles to the north of the center of Chicago on the shores of Lake Michigan. Here the university was established and opened for instruction in 1855. The place was named Evanston in honor of Dr John Evans, president of the corporation. The College of Liberal Arts was the only department of the institution until 1869, when the Chicago Medical College became a department of Northwestern University. The Law School, founded in 1859, became a department under sole control of the university in 1891. The College of Engineering was established in 1907, although for many years the university had offered courses in engineering in the College of Liberal Arts. The School of Pharmacy was incorporated in 1886 and became a department of the university the same year. The Dental School was organized in 1887 and was made a department of the university three years later. In 1895 the School of Music was established, the School of Commerce in 1908. A preparatory department was established at Evanston in 1859. On the campus, also, is Garrett Biblical Institute in close affiliation with the university.

The total enrollment of the university, 1911-

1912, including the enrollment in the affiliated schools, was 4344. The total enrollment in 1855-1856, fifty-five years previous, was ten. The growth of the university has kept pace with the development of Chicago, the city of its birth. Only one of the institutions of the Middle West that existed in 1850 has now a larger enrollment. The increase in material equipment is not less marked. In the first year the trustees collected on "the scholarship plan" \$90,000, which represented practically their entire assets. Sixty years later the assets amount to about \$9,000,000.

Expenditures for 1910-1911 were \$740,297. The assets of all kinds for 1911 amount to \$9,098,821. The value of buildings and grounds used for educational purposes, including libraries, museums, and sundry equipment, was \$3,376,130, and trust funds, in addition to educational property located in the center of Chicago, was \$4,555,766. The cash gifts for the year amounted to \$288,175.

In Evanston are located the College of Liberal Arts, the School of Music, the College of Engineering, Garrett Biblical Institute, the School of Oratory, and Evanston Academy. On the south side of Chicago is the Medical School, and in Northwestern University Building, situated in the heart of Chicago, are the Law School, the School of Pharmacy, the Dental School, and the School of Commerce. In the Northwestern University Building is also the Gary Library of Law, one of the largest law libraries in existence. Northwestern University Settlement is situated in a congested district on the northwest side of Chicago.

J. C. B.

#### NORTON, CHARLES ELIOT (1829-1908)

— Professor of the history of art at Harvard University and man of letters. After graduating at Harvard in 1846, he joined an East India counting house in Boston, he was sent, in 1849, to India and returned by way of Europe in 1851. In the following year he published anonymously *Five Christmas Hymns* and in 1854 a *Book of Hymns for Young Persons*. He still intended at the time to enter the ministry. In 1855-1857 and in 1868-1873 he was in Europe and made the acquaintance of the leading men of letters in England, including Carlyle, Ruskin, and Fitzgerald. He was a frequent contributor to the *Atlantic Monthly* almost from its establishment, and with Lowell he took charge of the *North American Review* from 1864 to 1868. In 1860 he wrote *Notes of Travel and Study in Italy*. He was appointed professor of the history of art in 1875 and held this office until he became professor emeritus in 1898. He organized exhibitions of drawings of Turner (1874) and Ruskin (1879). His reputation rests mainly on his work as an inspiring teacher and on his Dante studies and translations. He translated the *Vita Nuova* (1860 and 1867), and

the *Divina Commedia* (1891-1892). In 1881 he founded the Dante Society. His other works include *Historical Study of Church Building in the Middle Ages* (Venice, Siena, Florence) (1880), *Letters of Carlyle and Emerson* (1883), *Carlyle's Letters and Reminiscences* (1886-1888), *Letters of Lowell* (1894); and as literary executor for Ruskin he wrote introductions to the American edition of his works.

**NORTON, WILLIAM AUGUSTUS** (1810-1883) — Textbook author and scientist, was graduated from the United States Military Academy at West Point in 1831. He held professorship in New York University, Delaware College, Brown University, and Yale College. He published textbooks on astronomy (1839) and natural philosophy (1858), and made numerous researches in molecular physics and terrestrial magnetism. W. S. M.

**NORWAY, EDUCATION IN** — Norway, a constitutional monarchy, having an area of 124,129.7 square miles and a population of 2,392,698 (1910). The civil divisions for local government, which are also areas of educational administration, are eighteen counties (*amter*), towns, and rural communes (*herreder*), the latter are generally parishes or subparishes. The capital, Christiania, has a population of 243,801, Bergen has 76,917, and Trondhjem, 45,228. There are all together sixty-one urban communes. During the Middle Ages Norway formed an independent monarchy. In 1397 it entered the Calmar union with Sweden and Denmark, and when the union was broken (1527), Norway remained with the latter. By the terms of the peace of Kiel (Jan. 14, 1814) Norway was transferred from Denmark to Sweden. The union was effected only through the person of the King, Norway retaining its independent legislature. In 1905 the union with Sweden terminated, and the present King, Haakon VII, a son of the King of Denmark, was called to the throne. The Reformed Religion (Lutheran) was introduced into the kingdom in the fifteenth century and has exercised great influence upon the educational development.

**Educational History** — Education was originally under the control of the Church, and it was the duty of the parish clergy to see that children were instructed in religion and in letters up to the time of their confirmation. When the constitution of 1814 was adopted, there were four classical (cathedral) schools in the kingdom, but even in these schools the mother tongue was treated as a separate branch, for Norway was never dominated by the classical spirit. An act of 1827 provided that there should be a permanent school near every principal church in the country, and ambulatory schools for isolated districts. There was, however, no marked educational movement before the political awakening in the

third decade of the nineteenth century. Then arose the demand that national culture should reflect national ideals, and that it should rest upon a firm basis of elementary education supported by public authorities. In 1848 an act was passed by the Storting providing for public elementary schools in the towns. This was followed in 1860 by a new act regulating rural schools, and in 1869 by legal provision for continuation schools. These acts were finally replaced by that of 1889, carried by the Liberal party, which pertained to both towns and rural parishes. This measure not only required that elementary schools should be provided, but prescribed in detail the organization and programs of the different grades of schools, for although local authorities are responsible for the establishment and maintenance of schools, the law has left nothing essential to their unlimited choice.

Under the awakened consciousness of national life and needs, the classical schools were the chief subjects of criticism, and the conflict between the older humanities and scientific and modern subjects was worked out through a series of laws and experiments, beginning with the law of June 17, 1869, and culminating in that of July 27, 1896, which determines the present organization of the middle and secondary schools.

**Present System** — The national system of education in Norway is similar in many respects to the system of Sweden and Denmark, (*qv v*), but places greater emphasis upon practical training and modern subjects. It is noted for the complete provision of schools, for their adaptation to the different classes of society and the close coordination of the several orders of education.

The Department of Education and Ecclesiastical affairs has control of the system. The administration of primary schools is committed to school directors, one for each of the six dioceses of the kingdom. Bishop and Dean take part in the general supervision of the schools, and the clergy may supervise the religious instruction.

**The Primary Schools** — In each municipality (town or division of a county) there is a local board (*skolestyre*) which consists of a priest, the chairman of the municipal council (or one of the aldermen), one of the teachers chosen by the body of teachers, and additional members (men and women) chosen by the municipal council. In the towns, at least one fourth of the members so chosen must be parents who have children in the primary schools. The school board, which elects its own chairman, has charge of all the arrangements for the schools of the municipality, *i e* choice of sites, building plans, appointment of teachers, etc. Every year the board submits to the municipal council an estimate of the expenditures for the coming year.

The inspection of the primary schools is

intrusted to a committee consisting of one member of the school board as chairman, and three members (men or women) chosen in towns by the parents of the children attending the school, and in the country by parents and the ratepayers in a school district. This committee maintains constant supervision of the schools and of children of school age. The school board and the board of inspection in the country districts may bring the affairs of the primary school before a meeting of the ratepayers of the district and parents of children attending the school, who live in the district. Certain questions must be discussed at the district meeting before they can be decided, *e g* whether corporal punishment may be administered, changes in the district regulation, etc. In the large towns, the school board appoints professional inspectors, and where there are several schools, as a rule, a headmaster to each.

For every county, there is a county school board, consisting of three members chosen by the county council. This board has charge of the common educational matters of the county, and makes proposals to the county council concerning the income and the expenditure for county schools.

**School Provision** — In the country, every district included in a municipality must have a primary school with at least two classes, one for children from seven to ten years of age (infant school), and one for children from ten to fourteen. On account of the distances, the districts in many places are again divided into several infant school districts. In the towns, the primary school is divided into three divisions, intended respectively for children seven to ten years of age, ten to twelve, and twelve to fourteen. Each of these divisions may again be divided into several classes.

**School Buildings** — Special buildings must be erected or rented for primary schools. In the country, however, in the infant school districts and in primary school districts that have less than twenty children of school age, school may be held in rotation in the houses of the inhabitants of the district, where sufficient room can be procured. These "ambulatory schools" are steadily decreasing in number.

**Program of Studies and Time Allotment.** — The subjects of instruction required by law for primary schools and the distribution of time are shown by the table on the following page, which comprises a typical program for a county school of two divisions and for a graded city school.

If optional branches are added to the regular program, instruction in these must be given in extra hours. In the city schools, foreign languages may be included and elaborate provision is generally made for domestic subjects for girls. In the most northerly counties, where the Finns and Laps are found,

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their native languages may be used as auxiliary to the Norwegian

WEEKLY TIME-TABLE SHOWING THE DISTRIBUTION OF HOURS

OBLIGATORY SUBJECTS	COUNTRY SCHOOL		CITY SCHOOL						
	DIVISIONS		DIVISIONS						
			1			2		3	
			Class			Class		Class	
	1	2	1	2	3	4	5	6	7
Religion	7	7½	6/2	6/2	6/2	4	4	4	3
Norwegian	8	7	12	10	8	5	5	5	5
Arithmetic <sup>1</sup>	5	6	5	4	1	1	3	3	3
Writing	5	4	4	4	3	2	1	1	1
Geography		2		3		2	1	1	1
History	3	2			2	2	1	1	1
Natural sciences		2				1	2	2	2
Singing	2	2			1	1	1	1	1
Gymnastics		1½			2/2	2	2	2	2
Drawing		2				2	2	2	2
Manual work		2				2	2	2	2
Total hours	30	36	21	24	24	24	21	24	23

<sup>1</sup> Geometry is taken in the upper classes of the city schools

The distinctions between city and rural schools illustrate the flexibility of the system. In the country, boys and girls are generally taught in the same class, in the city, in separate classes, with modified programs for the girls. The classes in the country schools should have a minimum of thirty-five pupils and should not exceed forty-five, in the city schools, the range is from forty to fifty. The number of school hours a week in country schools exceeds the number in the city schools, but the annual session in the country is shorter, comprising from twelve to eighteen weeks as against forty weeks in the city.

The standard to be attained by the primary school is fixed by law for religion only. In this subject a thorough knowledge of the main facts of Bible history and Church history, and of the Catechism, according to the Evangelical Lutheran creed, is required. In the other subjects, it is left to the school board to fix the standard, in most of the rural municipalities, however, the standard of the various subjects, and the time-table, are determined in accordance with the "Normal Plan," which after the passage of the act of 1889 was sent out by the Central Department as a guide. Its requirements are indicated by the model time-tables. The examinations and form of leaving certificates are determined by the local boards.

The educational movement in Norway was marked from the first by regard for physical development and training. The Swedish or Ling system of gymnastics was early introduced into the teachers' colleges and adopted in the city schools. Great attention has also been given to hygienic conditions, and the school buildings of Christiania, of Bergen, and

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of other populous centers are models in arrangement and in their equipment of baths, of gymnasiums, and rooms for manual training and domestic arts. The spirit and methods of instruction in the schools are also decidedly modern.

Instruction is free in all classes of public primary schools. Needy children receive their schoolbooks and material from the municipality. In Christiania of late years the municipal council has also voted the necessary funds for supplying all needy children with a meal every school day.

**Teachers.**—Teachers of primary schools are appointed by the local school boards. Both men and women are eligible for appointment, and in town schools there must be one teacher of each sex. Only those can receive permanent appointment who have completed the twentieth year of age, belong to the Established Church, and have passed a teachers' examination. About one third of the situations, however, may be filled on terms of three months' notice, and for these appointments, and for visiting and assistant teachers, no examination is required. There are two grades of teachers' examinations. The lower, which corresponds to the entrance examination of training colleges, covers what is requisite for a permanent appointment in an infant school in the country. The higher teachers' examination, or leaving examination at the training colleges, is required for a permanent appointment in the town primary schools, and in the second division of the country primary schools. The examinations are in charge of a committee consisting of three members, who also inspect the teachers' training colleges.

There are at present ten colleges for the training of teachers for the primary school, of which six are public, one for each diocese, and four private. The public colleges are free. In the private colleges, by the aid of government grants, a considerable number of free students are admitted. Candidates for admission, both men and women, must be at least in their eighteenth year, must pass an examination in the primary studies, and offer testimonials of good character. The course of training covers three years and includes all the subjects taught in the primary schools. To each of the public colleges is attached a one-year preparation class for teachers of infant, or lower primary, schools. The public colleges register about 520 students, the private colleges about 400.

For the training of teachers (men and women) in sloyd, needlework, domestic economy, gymnastics, drawing, singing, and writing, courses are held at longer or shorter interval, according to requirement. Holiday or "continuation" courses lasting five or six weeks are also held for teachers of the primary schools. In these courses, of which there is one in each

diocese, particular attention is given to Norwegian history and natural science, and educational matters are discussed. Since 1894 summer courses of twelve days' duration have also been held annually at the University and at the Bergen Museum, these courses are especially intended to instruct teachers in natural science. The Government votes an annual sum, which of late years has amounted to 10,000 kroner (\$2680), towards traveling scholarships for primary school teachers. Several municipalities also provide traveling scholarships.

**Salaries** — The salaries of teachers, which vary greatly in different places, are naturally highest in Christiania. In this city the head teachers receive 2600–3800 kroner (\$744–\$1087), free residence and wood for fuel or compensation for it, calculated at 900 kroner. Assistant men teachers receive 1400–2600 kroner (\$400–\$744), women teachers 900–1500 kroner (\$258–\$429). For the country the minimum salary is in the infant school fourteen kroner (\$4) for each school week with thirty hours' instruction. In the higher divisions 18 kroner (\$5.15) for each school week of thirty-six hours' instruction. In addition to this teachers in the country, who give at least twenty-four weeks' instruction in the year, enjoy four increases of salary, each of sixty kroner (\$17.16) yearly in the infant school and 100 kroner (\$28.60) yearly in the higher divisions, after respectively four, eight, ten, and fifteen years' service. Moreover, one teacher, at least, in each commune must be furnished, without charge, a house and a piece of land. Teachers are pensioned by the state.

**Statistics of Primary Schools** — The efficient administration of the system is indicated by the large enrollment in the schools, about 370,000 pupils at the latest date reported (1909) or 15½ per cent of the population. Of the total 92,950 were in city schools. The teaching force numbered 8106, of whom 5611 (4183 men, 1428 women) were in the rural schools, or one teacher to every forty-seven pupils; the city schools employed 2495 (856

men, 1639 women), one teacher to thirty-three pupils.

The expenditure for the public elementary schools was 13,047,210 kroner (\$3,731,562), equivalent to \$10 per capita of enrollment and to \$1.54 per capita of population. Of the amount 42.7 per cent went to the support of city schools. The State appropriated 4,256,749 kroner, equal to 32 per cent, of the total expenditure.

**Sources of Support** — The State contributes one third of the regular salaries paid to teachers of primary schools. The remaining expenses fall upon the communes and the county funds. The latter, however, are derived from State grants to the amount of three fourths the total; the remaining fourth comes from the county revenues. These funds defray extra expenditures, *i.e.* increase of teachers' salaries for long services, aid toward the erection of school buildings, and provision of land for teachers or compensation for the same, educational apparatus, aid for poor municipalities, expense for substitute teachers to replace regular teachers in case of long illness, for continuation schools and artisan schools (*arbeidsskoler*).

The annual expenditure from public funds for teachers' colleges (*laererskoler*) not included in the totals above given is about 255,000 kr (\$73,000). A small proportion of this amount goes to private training colleges.

**Schools for Defectives** — Public provision for the education of children is completed by schools for defectives, *i.e.* the deaf, blind, and imbecile children. This work, which is under a director attached to the central department of education, is regulated by a law of 1881 and subsequent amending laws. In respect to general instruction, the aim of the schools for defectives is the same as that of the primary school; in addition the pupils are educated for a practical life. The school courses extend, as a rule, over eight years. Deaf children are admitted at the age of seven, blind children at the age of nine, and imbeciles, at present, at the age of fourteen or fifteen.

The latest statistics relating to these schools are as follows —

INSTITUTIONS		PUPILS			TEACHERS		
Classification	Number	Boys	Girls	Total	Men	Women	Total
For the Deaf	5	171	157	328	36	31	67
For the Blind	2	90	52	142	13	10	23
For the Feeble-minded	3	259	238	497	20	53	73

The institutions considered are all maintained by the State, which also supports a school for blind adults.

**Abandoned and Vicious Children** — By the act of June 6, 1898, which went into effect in 1900, Norway took an advanced position

in regard to neglected children and those who need special restraint. The age of criminal responsibility was raised by this act from ten to fourteen years and it was required that young criminals below fourteen instead of being punished should be brought under moral

influences and properly instructed. Children who commit crimes after having completed their fourteenth year, are liable to punishment, but until they reach the age of sixteen, educational measures may be employed with them. The act is applicable, also, to children who are in danger of becoming burdens to society either as lazy idlers or as criminals and convicts. Such children under specified conditions may be placed in the care of the State. The charge of children who come within the provisions of the act is committed to boards of guardians, formed in every municipality and consisting of a judge, a clergyman, and five members chosen for a period of two years by the municipal council. One of these members must be a medical man living or practicing in the municipality, and one or two must be women.

The boards of guardians have authority to remove a child from his parents and place him in a trustworthy family, or home, or in an institution, such as a reformatory school, or a *skolehjem*. If the board of guardians consider that the child may be left with his parents, they may warn both him and his parents and in certain cases may punish the child as merited.

A reformatory school may be erected by a single municipality or by several in conjunction. Its plan must be approved by the King. Children that are so depraved morally that their attendance at the ordinary school would be injurious to other children may be committed to a *skolehjem*. These institutions are of two classes, one for specially depraved children, and one for the wayward. The former are erected by the State, for boys and girls separately. At Bast, near Christiania, one has been built to accommodate 150 boys. A similar establishment for girls has been founded near Christiania. The more lenient institutions may be private or municipal, but must conform to the legal requirements.

The state charge of children that are removed from their parents ends when the cause ceases and as a rule is not continued after the child has completed his eighteenth year. Children that have been placed in reformatories of the strictest kind may, however, be kept there until they have completed their twenty-first year. The supervision of this class of children pertains to the Ecclesiastical and Educational Department. The cost of the work is divided between the State and the municipalities.

**Continuation Schools** — Provision for continuing the education of youths and adults after the period for attendance upon primary schools is made by a variety of agencies — the ordinary continuation schools (*Fortsaettelsskoler*) with sessions of from one to six months a year are intended for young people, fifteen to sixteen years of age, who have been out of school for a year or two and who wish to review their studies. These schools in 1909 numbered

166 with 2455 pupils (1628 males, 827 females). The expenditure was 68,613 kroner (\$18,388), of which 65 per cent was from public funds. Evening schools, intended for pupils seventeen to nineteen years of age, offer special courses, covering, on an average, instruction for fifty hours in the year. They numbered 569 in 1908 with 8299 pupils (of which 5516 were young men). The expenditure was 52,240 kroner (\$14,940), of which 88 per cent was from public funds.

County schools are similar in purpose to People's High Schools which were introduced from Denmark (*qv*). The former, however, which are maintained by public authorities, place special emphasis upon practical or technical subjects, *ie* in the schools for men, or mixed schools, upon drawing and sloyd, in the schools for girls only, upon needlework and domestic arts. The teachers of these schools are generally taken from the staff of the primary schools or, for the higher studies, from the force of secondary professors. The annual session is from six to seven months, schools for women only three months. The latest statistics show thirty-nine county schools with 1580 pupils (881 men, 699 women) and fifteen People's High Schools with about 650 pupils, of these a little more than half were men. The state subsidizes both classes of schools.

City evening schools and the county schools in some cases have developed into what are termed Working Men's Colleges. In these institutions adult men and women are instructed in the phenomena of nature, in the duties and relations of social life, and in the progress of knowledge and its industrial results. The first college of this class was erected in Christiania in 1885, and this example has since been followed in several towns and rural districts. The public libraries, which number about 700, cooperate with this work.

**Secondary Education** — Public secondary schools are under the general direction of the Department of Ecclesiastical and Educational Affairs. For the inspection of the schools and the arrangement of the leaving examinations, there is a council of seven members competent in matters of higher education; in respect to hygienic matters an expert is called to the assistance of the council.

The public secondary schools are either state or municipal schools. Each of the former is managed by a special board consisting of the head master, one member appointed by the Department, and three by the municipal council. The municipal secondary schools may be managed by the local school board, or by a special board. The principals and permanent teachers of the state schools receive their appointments from the King and are government officials. The municipalities provide the school premises, buildings, and equipments; the current expenses are met by gov-



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ernment grants, fees, and endowments. The municipal schools are also supported in part by government grants. Their principals and permanent teachers are appointed by the Department of Public Instruction and their qualifications and salaries are practically the same as for teachers of the state schools.

There are also many private secondary schools of the same standing as the public schools.

By the law of 1896 provision is made for two orders of secondary instruction, the lower based upon the primary school, the higher leading up from the lower to the university. In its complete form, the lower secondary school (*middelskole*) comprises four progressive classes, the course terminating with an examination (*middelskolleksamnen*). This school is coordinated with the second division of the city primary schools, the age for entrance being eleven years, if the school has less than four classes, the age and standard are correspondingly higher.

The gymnasium (higher secondary school) comprises three progressive classes leading to the *examen artium* which is required for admission to university studies. To enter the gymnasium, the applicant must be at least fifteen years old and must have passed the *middelskolleksamnen*. The course of the gymnasium is uniform for the first class, at the end of which there is bifurcation into the modern side and the linguistic-historical side. The latter may include a Latin section, although by the law of 1896 the classical languages (Latin

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and Greek) are relegated to the university. In connection with the first class of the gymnasium, or with the lower secondary school, there may be arranged a one year's course for pupils who intend soon to enter business life. Both classes of secondary schools are, in general, coeducational. The girls gain relief from excessive work, either by spending two years in a class or by taking only one foreign language and a short course in mathematics, a privilege accorded to boys also. The programs of the two orders of instruction are shown by the following time-tables:—

SPECIMEN TIME-TABLE FOR A  
MIDDELSKOLE

SUBJECTS	CLASSES			
	1	2	3	4
Religion	2	2	2	1
Norwegian	5	4	4	4
German	6	5	5	5
English	3	5	3	3
History	2	2	2	2
Geography	2	2	2	2
Natural Science	3	2	2	3
Arithmetic and Mathematics	5	5	5	5
Drawing	2	2	2	2
Writing	2	1		
Gymnastics	3	3	3	4
Manual Work	2	2	2	2
Singing	1	1	1	
Number of hours a week	36	36	36	36

Girls are instructed in domestic economy in extra hours

SPECIMEN TIME-TABLE FOR A GYMNASIUM

	MODERN COURSE			LINGUIST HIST COURSE WITHOUT LATIN			LINGUIST HIST COURSE WITH LATIN		
	Classes			Classes			Classes		
	1	2	3	1	2	3	1	2	3
Religion	1	1	2	1	1	2	1	1	2
Norwegian	4	5	4	4	6	5	4	5	4
German	3	3	3	3	3	3	3	3	3
English	1	2	2	4	7	7	4	2	2
French	1	2	2	4	4	3	4	5	
Latin								7	11
History	3	3	3	3	5	5	3	3	3
Geography	1	1	2	1	1	2	1	2	2
Natural Science	1	5	5	4	1	1	4	1	1
Arithmetic and Mathematics	1	6	6	4	2	2	4	2	2
Drawing	2	2	1	2			2		
Gymnastics	6	6	6	6	6	6	6	6	6
Singing									
Number of hours a week	36	36	36	36	36	36	36	36	36

The division of the time assigned to gymnastics and singing is left to the managers of the different schools.

The vacation amounts to twelve to thirteen weeks in the year, of which seven weeks are in the summer. Every school day comprises six periods of forty-five minutes each. Six hours

in the week, as a rule, one hour a day, must be given to physical exercises, manual work, and singing.

*Teachers* — The staff of the state secondary schools consists of principals (*Rektors*), head teachers, and assistant teachers, men and women. There are also special teachers for

gymnastics, singing, sloyd, domestic economy, etc. The teachers acquire their theoretical training at the university. The course of training which covers about six years is terminated by an examination (*laerereksamen*). After passing this examination the candidates must take a half-year course at the pedagogical seminary of the university, and are then examined in pedagogics, school method, and psychology. Simultaneously with this course the candidates gain practical experience in teaching at an appointed school.

The salaries are per annum —

For principals	4600-5400 kr. <sup>1</sup>	(\$1415 to \$1514)
For head teachers	3200-4400 kr.	(\$915 to \$1258)
For assistant teachers	2200-3200 kr.	(\$620 to \$915)
For women teachers	1200-1700 kr.	(\$343 to \$486)

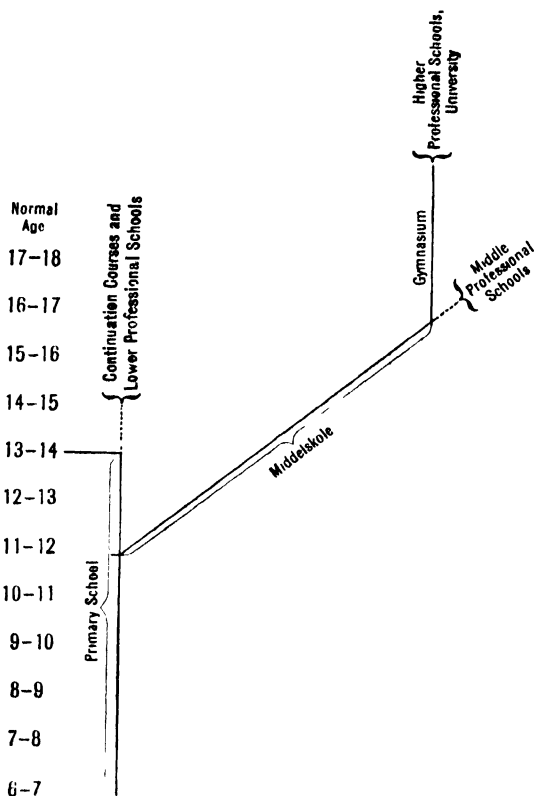
<sup>1</sup> Also free residence

**Statistics of Secondary Schools** — There are 14 state, 5 communal, and 7 private schools having gymnasium classes and authorized to prepare pupils for the *examen artium*, in addition there are 52 schools (45 communal and 7 private) that stop with the middle school examination. The total number of pupils in all classes of secondary schools in 1909 was 17,104, distributed as follows: Gymnasium classes, 1725 (of these 444 were girls), middle schools, 11,435 (girls, 5333), one year preparatory, 3944 (girls, 2252). The number of teachers in the secondary schools was 1313, including 813 men and 500 women.

The expenditure for the public secondary schools of both orders is met by state and local appropriations, endowment funds, and tuition fees. The fees are fixed for each school according to circumstances. In 1909 the expenditure amounted to 2,203,225 kr. (\$630,122). Of this amount the State bore 35 per cent and the local appropriations 16 per cent or a little more than half the whole amount.

In addition to the schools referred to above, there are several municipal and private schools without the examination rights, in which instruction is given beyond the scope of the primary school. These schools have a freer arrangement than the *middelskoler*, and have as a special object provision for the higher education of girls. In 1909 there was one communal school of this class in Christiania with 40 pupils (all boys) and 89 private schools. Of the latter there were, for boys only, 9 schools with 416 pupils, for girls only, 4 schools with 244 pupils, and 76 coeducational schools with 2890 pupils (1634 boys, 1256 girls).

**Coördination of Schools and Higher Institutions** — The system of public education is completed by the universities and by special technical schools. The close relation of the various classes of schools to each other, which facilitates the passage from one to the other, is illustrated by the accompanying diagram.



**Technical Education** — Technical schools, which are found chiefly in the towns, are of two orders, the lower technical schools which pupils may enter from the elementary school, and a higher order based upon the *middelskole*. The lower technical schools include (1) technical evening schools with three-year courses, comprising annual sessions of 8 months with instruction for 10 hours a week, (2) public drawing schools; and (3) industrial schools for girls with one-year courses in handicraft, and domestic arts. To this order belong also the Christiania Technical School, School of Mechanic Arts of Skienfjorden; School for Wood and Metal Work at Bergen. Of a somewhat higher or more specialized character than the above named schools are the following: middle technical schools at Trondhjem, Christiania, and Bergen, having four-year courses and requiring for entrance the leaving examination of the lower secondary schools (*middel-skoleeksamen*); an elementary mining school at Kongsberg with a course of two and one half years and twelve hours' session a week (age of entrance, eighteen years); commercial gymnasiums at Christiania and Bergen with courses of two years for men and one year for women; 22 schools of navigation; for the promotion of rural industries the following: agricultural schools, 19; schools of gardening, 16; dairy schools, 6; 1 agricultural high school.

The technical schools of the highest class comprise 6 schools of engineering, and a technical institute of dentistry. For promotion of the fine arts there are two national schools, the Royal industrial art school, and the conservatory of music, both at Christiania.

**The University** — The Royal Frederick University at Christiania was founded in 1811, and began its operation in 1813 with 11 professors, 3 lecturers, and 18 students. In 1912 it had 70 professors, 14 "docents," 19 fellows, and 1500 students. The university comprises five faculties, each of which elects its own president, or dean, for a term of two years. The deans form the academic council which constitutes the university's board of management subordinate only to the Ecclesiastical and Education Department. The university professors receive their appointments from the King. The minimum salary is 4500 kr. (\$1206) with three additions of 50 kr. (\$134) each after 5, 10, and 15 years' service. The 20 oldest professors, moreover, have an addition of 60 kr. each. The "docents" are also appointed by the King. The fellows, who have only a limited amount of lecturing to do, are appointed for one year at a time, by the university council.

The gymnasium leaving examination (*examen artium*) is required for admission to the university. The instruction is free, but fees are paid for admission to the various examinations (from \$5.36 to \$10.72). Before students can go up to any of the university degree examinations, they must have passed a preparatory examination, *examen philosophicum*. In this examination, philosophy is a compulsory subject, the five remaining subjects may be chosen by the candidate from science, languages, history, mathematics, etc. The time of preparation for the *examen philosophicum* is 2 or 3 terms. The average time required to work up for the various examinations is as follows: 9 terms for theology, 8 for law, 14 for medicine, 10 for philology and 10 for "real students." Clinical facilities are afforded medical students in two government hospitals whose head physicians are university professors. Theological students get their special training at a theological college connected with the university. There are various collections, laboratories, and scientific institutions belonging to the university. Among them are the University Library (350,000 volumes) which is also the National Library, with a reading room open to any one for several hours daily; the Botanical Gardens, the Historical Museum, the Astronomical and Magnetic Observatory, the Meteorological Institute, and the Biological Marine Station at Drobak. The income of the university for 1910-1911 was 910,280 kr. (\$243,955). Of this amount 64 per cent was supplied by the state appropriation. There was also an ap-

propriation of 225,000 kr. for the library and of 7400 kr. for new laboratory buildings.

The principal scientific societies are the Royal Literary and Philosophical Society at Trondhjem, founded in 1760, which has a library of about 7000 volumes, and the Literary and Philosophical Society at Christiania, founded in 1857, with which is associated the Fridtjof Nansen Fund for the promotion of science, the capital of the fund, at present, amounts to about 450,000 crowns (\$120,600). The Bergen Museum, founded in 1825, is a center of scientific activity in the western part of Norway. It possesses valuable collections, especially of natural history, a scientific library, and a biological station with laboratories, aquaria, etc. There are also Museums at Tromsø, Stavanger, and Arendal, with natural history and historical antiquarian collections. For the preservation of "Ancient Norwegian Monuments" there is an association, founded in 1844, supported by a government grant.

The Norwegian National Museum, founded in 1894, at Christiania, collects and exhibits everything throwing light upon the culture life of the Norwegian people. The industrial arts museums at Christiania, Bergen, and Trondhjem possess valuable collections and have had great influence in promoting beauty of design in the embroideries, copper utensils, silver jewelry, etc., for which Norway is noted.

The public expenditure for education in 1909 was 20,307,886 kr. equivalent to \$5,442,514. Of this total the state treasury furnished 8,955,289 kr. or 44 per cent. A T S

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**NORWICH UNIVERSITY, NORTHFIELD, VT.** — The earliest of American military colleges after West Point, was opened at Norwich, Vt., by Captain Alden Partridge in 1820, located at Middletown, Conn., 1825–1829, returned to Norwich in the latter year, and removed to Northfield, Vt., in 1857. It was chartered under its present name in 1834. Its founder sought to enrich the curricula of his day by adding thereto physical training, laboratory and field practice in science, engineering, agriculture, the mechanic arts, and military science and practice under military discipline. (See *Lecture on Education*, 1819.) Much of this he put into practice at Norwich and some came quickly into use elsewhere, although agriculture and the mechanic arts lagged forty years before they were adopted. Of Norwich students of 1835–1865 living in '61, with records now known, 69 per cent found service in the armies and navies of '61–'65, 58 per cent as officers. The Norwich History, covering the records of its students, evidences the founder's wisdom and foresight in departing from the conventional college plan of his day. The essentials of his plan have been retained but modified as experience has dictated, save that the elective system, which he was among the first to adopt, has long since passed away. According to the history named, the total enrollment to date has been 3853, graduates 809. Students now enrolled number 183, professors 14. The departments of instruction lead to the Bachelor degrees in Arts, in Science and Literature, in Chemistry, in Civil and Electrical Engineering.

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**NOSE, HYGIENE OF THE** — The nose may be called the hygienist or health inspector among the senses. In normal condition it tests the sanitary condition of the environment, of the air we breathe, and the food that we eat. Also it warms and moistens and purifies the air, and nasal respiration is essential to the proper nutrition of the brain. Ints care certain obvious rules of hygiene are important. Children should be taught proper habits and methods of cleanliness, not to blow their noses violently, and not to put things into them. Injuries to the nose should be attended to; for accidents, blows on the nose, falls from trees or walls or gymnastic apparatus, may cause deviation of the septum.

Anything that causes partial or total occlusion of the nostrils, like injuries to the septum, deformed growth, adenoid growths, hypertrophy of the faucal tonsils, the swelling

of the mucous membrane in colds, or the like, is hygienically a serious matter, since it is likely to cause defects of speech, defects of hearing, interference with the brain activity and with growth and development and the health in general. The most common cause of defective hearing is probably some nasal trouble, especially an adenoid growth. Nasal breathing is of primary importance not only for the health of the pupil but for efficient school work. The improvement in the mental ability after the removal of adenoids (*qv*), causing mouth breathing, has been a commonly observed result, and special tests made by the German specialist Kafemann, in which the ability of his subjects to add simple numbers was tested, in one series of experiments with the nostrils open, and in another with the nostrils occluded artificially, showed that the occlusion interfered with the mental activity and less work could be done.

It is important for the teacher to know the essential facts in regard to the hygiene of the nose. A child suffering from adenoids, for example, is liable to be treated unjustly and unwisely on account of irritability or disorderly conduct. The child is likely to be inattentive and backward in school work. Parents may be ignorant of the child's condition, and neglect is likely to mean a serious handicap in mental and physical development, speech defects, constant danger from colds, and ultimately deafness. (See ADENOIDS.)

The main points emphasized by recent investigations may be summed up briefly as follows. (1) The hygiene of the nose is of prime importance both for the health of the individual pupil and for the sanitation of the schoolroom, and the obvious rules in regard to cleanliness, care for injuries, and the like are emphasized. (2) Health inspection should always include careful examination of the upper air passages, the nose and naso-pharynx. (3) Nasal breathing is an important condition of efficient brain activity, and occlusion of the nose from any cause should receive special attention. (4) The most common permanent cause of occlusion of the nostrils is hypertrophy of the nasal pharyngeal tonsil, the so-called adenoid growth. This trouble is likely to be found in at least 5 or 6 per cent of the school children in perhaps most of the schools of this country. (5) While there is no consensus in regard to the specific cause of adenoids, the growth is apparently connected with the greater activity of the lymphoid tissue in childhood. (6) Adenoids are apt to occur in the early years before the age of six, and frequently they are found at birth. (7) The operation for adenoids is usually successful, it should not as a rule be performed before the child is six months old, but it is very desirable that the adenoid should be removed at least before the age of six years, in order that healthful development may not be ham-

dered. (8) It is desirable that careful examination of the nasal cavities should be made in the case of all children on entering school life. When adenoids or the like are found, parents should be advised of the condition of their children and the need of proper treatment. (9) No child should be sent to a school for the feeble-minded or the like without first being tested by a competent specialist to determine whether the mental retardation be not caused in part by an adenoid growth. (10) The hygiene of the nose and nasal breathing is of such importance for the actual work of the school that all teachers should be taught the main facts in regard to the subject.

W H B

See ADENOIDS; EAR, HYGIENE OF, MEDICAL INSPECTION

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**NOSS, THEODORE BLAND** (1852-1909) — Normal school principal, was graduated from the Shippensburg (Pa.) Normal School in 1874 and from Syracuse University in 1880. He subsequently studied at the Universities of Jena and Berlin in Germany and Paris in France. He was one of the founders of the Herbart Society in America and was active in movements concerned with the scientific study of education. He was principal of the State Normal School at California, Pa., from 1883 to 1909, having previous to his appointment as principal been an instructor in the institution. His publications include *Outlines of Psychology and Pedagogy* (1890), *Child Study Record* (1900), and numerous articles in educational reviews. He was the editor of *School Year Books*, a series of manuals for teachers in the elementary schools.

W S M

**NOTATION** — A word used in arithmetic to mean the writing of numbers, as distinguished from numeration, which is taken to mean the reading of numbers. This distinction is a modern one and is of no particular value, representing as it does the tendency to extreme classification of the eighteenth and nineteenth centuries rather than any educational necessity. Notation comes from *nota*, a word used by medieval writers to indicate a numeral in the Hindu-Arabic system. Thus Clichtoveus (1503 edition) and Tzwivel (1507) speak of the *nota circularis* for zero, and Noviomagus (1539) has a chapter *De notis numerorum*.

At present, in the teaching of arithmetic, it is common to speak of Arabic notation and Roman notation, meaning thereby the writing of the Hindu-Arabic and the Roman numerals. There are, however, many numerals besides these, not only those of the past but also those used in many parts of the world to-day. In our American and European schools, however, only these two are taught, and the Roman system is rapidly losing its importance.

**Roman Notation** — The late Romans used the symbols I, V, X, L, C, D, and M. They had no generally recognized system for the writing of large numbers, although Pliny and occasionally other writers used a bar over a numeral to increase its value a thousand fold. Thus X meant ten thousand. In general, however, large numbers were written out in words. The Romans made some use of the subtractive principle, IX meaning 10 - 1, while XI meant 10 + 1. This principle sometimes extended to a double subtraction, as in the case of IIXX for eighteen (*duo de viginti*). On the other hand, it was rarely used in the case of four, IIII being preferred to IV, as the clock face still witnesses. The subtractive principle appears in the case of XIX for nineteen, but rarely in the case of CD for 400, the Romans preferring CCCC. The form MCM for 1900 is purely modern, the Romans using MDCCC.

The origin of the Roman notation has been a matter of much speculation. In general, however, the symbols are thought to come from certain Greek letters that were not used in making up the Latin alphabet. In particular, L is thought to come from  $\Psi$ , C from  $\Theta$ , and M from  $\Phi$ . D (for 500) is half of the early form for 1000. Possibly V was suggested by a cancel mark across IIII, and X is two V's; or X may be derived from crossing out ten I's, and V may be half of it. This latter seems probable, since the five is occasionally found as an inverted V, thus A. There are various other theories, but nothing in the early inscriptions thus far known has developed anything definite beyond the one above given.

The late Roman numerals differed considerably from those of the classical period, as

is seen from the following table from the *Mystica numerorum significationis liber* of Bungus (Bongo), published at Bergamo in 1583-1584.

CIO	∞	∞	
III			3000.
IIIM			
CIO	100		4000.
∞	100		
V			5000.
V			
100			
100			
ICC			
V CIO			
V M			
100	∞		6000.
100	∞		
VII CIO			7000.
100	CIO	∞	
100	∞		
CIO	∞	CIO	8000.
∞	∞	CIO	

**The Hindu-Arabic Notation** — What are commonly called the Arabic numerals are of Hindu origin. The earliest trace we have of them is in certain inscriptions of the third century B.C., cut on stone in India in the time of King Asoka. The following table shows some of the earliest forms —

	1	2	3	4	5	6	7	8	9	10	20	30	40	50	60	70	80	90	100	200	1000
c 250 B.C.	I	II	III	IIII																	
c 100 B.C.	I	II	III	×	IX	II	XX	7	3												
c 250 B.C.	I	II	+	6																	
c 150 B.C.	=	7	4	7	2	α															
c 100 B.C.	=	7	1	7	7	7	3	α													
c 200 A.D.	=	7	1	7	2	3	3	α	α	7	7	7	7	7	7	7	7	7	7	7	7
c 150 A.D.	=	7	1	7	2	3	3	α	α	7	7	7	7	7	7	7	7	7	7	7	7
c 350 A.D.	=	7	1	7	2	3	3	α	α	7	7	7	7	7	7	7	7	7	7	7	7
c 600 A.D.	=	7	1	7	2	3	3	α	α	7	7	7	7	7	7	7	7	7	7	7	7

It will be observed that the zero does not appear, but that separate symbols for 10, 20, and so on are necessary. This was the case in many ancient systems of notation.

Without the zero it is impossible to have a place value, and since the oldest inscription in which the place value is evident dates from 595 of our era, we may say that the zero was a product of the sixth century. The earliest

undoubted inscription in which zero appears, however, is found in Gwalior, India, and dates from 876 of our era, although there is one manuscript that probably antedates this in which a dot is used for zero. By the time the place value was established the numerals had changed to such forms as the following. —

	1	2	3	4	5	6	7	8	9	0
a	1	2	3	4	5	6	7	8	9	0
b	1	2	3	4	5	6	7	8	9	0
c	1	2	3	4	5	6	7	8	9	0
d	1	2	3	4	5	6	7	8	9	0
e	1	2	3	4	5	6	7	8	9	0
f	1	2	3	4	5	6	7	8	9	0
g	1	2	3	4	5	6	7	8	9	0
h	1	2	3	4	5	6	7	8	9	0
i	1	2	3	4	5	6	7	8	9	0
j	1	2	3	4	5	6	7	8	9	0
k	1	2	3	4	5	6	7	8	9	0
l	1	2	3	4	5	6	7	8	9	0
m	1	2	3	4	5	6	7	8	9	0
n	1	2	3	4	5	6	7	8	9	0

It is uncertain when the numerals began to be known in Europe, but by the tenth century they had reached Spain and probably were somewhat known in Italy. The forms at this period differ somewhat from those of India, as may be seen from the table on the following page.

Among the earliest writers of prominence to recognize the value of these numerals was Fibonacci, Gerbert, and Sacrobosco (*qq v*). After printing from movable type was invented, in the fifteenth century, the forms of the numerals, like those of the letters, became quite definitely fixed, although there is still some variation in different countries, particularly in the written notation.

**Scales of Notation** — Our common system of notation is based upon the scale of ten. For example, 2405 means 5 units + 0 tens + 4 times the square of 10 + 2 times the cube of 10. This comes from the fact that we have ten fingers, and the fingers formed the primitive abacus (See **ABACUS**, **FINGER RECKONING**). It is apparent, however, that systems of notation might be devised on various

EARLIEST MANUSCRIPT FORMS

1	I	2	3	4	5	6	7	8	9	0	07
2	T	U	V	P	Q	R	S	3	4	5	08
3	1	2	3	4	5	6	7	8	9	0	09
4	1	2	3	4	5	6	7	8	9	0	10
5	1	2	3	4	5	6	7	8	9	0	11
6	1	2	3	4	5	6	7	8	9	0	12
7	1	2	3	4	5	6	7	8	9	0	13
8	1	2	3	4	5	6	7	8	9	0	14
9	1	2	3	4	5	6	7	8	9	0	15
10	1	2	3	4	5	6	7	8	9	0	16
11	1	2	3	4	5	6	7	8	9	0	17
12	1	2	3	4	5	6	7	8	9	0	18
13	1	2	3	4	5	6	7	8	9	0	19
14	1	2	3	4	5	6	7	8	9	0	20
15	1	2	3	4	5	6	7	8	9	0	21
16	1	2	3	4	5	6	7	8	9	0	22
17	1	2	3	4	5	6	7	8	9	0	23
18	1	2	3	4	5	6	7	8	9	0	24
19	1	2	3	4	5	6	7	8	9	0	25
20	1	2	3	4	5	6	7	8	9	0	26
21	1	2	3	4	5	6	7	8	9	0	27

scales. For example, if the scale of twelve were selected, we should need two more numerals, say *t* for ten and *e* for eleven. Then the number 9t3e would mean  $11 + 3 \cdot 12 + 10 \cdot 12^2 + 9 \cdot 12^3$ , and this would be 17,039 on our ordinary scale of ten. In some respects the scale of twelve would be more convenient than the scale of ten. For example, when we reduce the most commonly used fractions to decimal forms we have  $\frac{1}{2} = 0.5$ ,  $\frac{1}{3} = 0.3333 +$ ,  $\frac{1}{4} = 0.25$ ,  $\frac{2}{3} = 0.6666 +$ ,  $\frac{3}{4} = 0.75$ ,  $\frac{1}{5} = 0.2$ , and so on. But these fractions are expressed more easily on the scale of twelve, thus  $\frac{1}{2} = 0.6$ ,  $\frac{1}{3} = 0.4$ ,  $\frac{1}{4} = 0.3$ ,  $\frac{2}{3} = 0.8$ ,  $\frac{3}{4} = 0.9$ ,  $\frac{1}{5} = 0.24$ , and so on.

Educationally, the study of different scales of notation has no place in the elementary school. It is an interesting generalization in algebra, but its value to the average pupil is easily exhausted. D. E. S.

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**NOTEBOOK METHOD** — Many secondary schools and some elementary schools are placing an increased emphasis upon the notebook as a means of recording observations and readings in history, geography, nature study, elementary science, and other subjects. It is a successful device for holding the student responsible for results and for directing him toward definite and accurate impressions and ideas. As a method, given undue importance, its use possesses several distinct dangers. The pupil may become mechanical in the

recording of notes, without bringing reflection to the organization of his experiences, his note-taking may become a mere copying of the statements of teacher or text, and lead to waste in recording facts which are unimportant save as preliminaries in obtaining fundamental conclusions. H. S.

**NOTION** — The term is closely related to the term idea, but usually refers to an idea which is not clear, or to that aspect of an idea which is not explicit. One says that he has a notion of what the author means, but no clear idea. The term is very little used in technical writings. C. H. J.

**NOTKER** — The family name of a number of famous scholars of the Middle Ages, all of whom are probably related to one another. The earliest of these was *Notker Balbulus*, or the Stammerer (c. 840–912), who was educated at St. Gall and there studied Greek, Latin, music, poetry, and the Scriptures. He became master of the school and for a time was librarian. He was the composer of poems and songs, including, it was thought, the anthem *Media Vita in Morte Sumus*, and introduced the sequences into Germany. He was the teacher of *Notker Physicus*, who showed great ability in music, painting, writing, and medicine, and won favor at the court of Otto I.

The most famous member of the family was *Notker Labeo*, or the Thick-lipped (c. 950–1022), a nephew of Ekkehard I. He was a good student of music, poetry, mathematics, astronomy, the Scriptures, the Church Fathers, the classics, and the vernacular. He was regarded as the greatest scholar of his day, but his chief title to fame was his encouragement of the use of the vernacular. He himself translated a number of works into Old High German, e.g. Boethius, *De consolatione philosophiæ*, Capella, *De nuptus Philologia et Mercurii*, Aristotle, *De categoriis*, the *Psalms*, Terence, *Andria*, Vergil, *Eclogues*. He was also the author of an essay in German on musical instruments. The surname Teutomeus was given to him in recognition of this work. In a letter found at Brussels Notker recommends the study of the classical works as a preparation for the study of ecclesiastical writings, and urges the translation into the vernacular for greater ease of comprehension.

Of greater influence than his predecessors was *Notker* (c. 940–1508), Bishop of Liège, formerly Provost of St. Gall, with which he seems always to have been in touch. He was an enthusiastic teacher and was always surrounded by a group of scholars over whom he exercised an excellent influence and to whom he willingly gave his books. Pupils flocked to the Cathedral School at Liège, where provision was made for externs or lay students, and interns, or students who looked to the priesthood, whither they were sent by the

## NOTRE DAME, SCHOOL SISTERS OF

parents and clergy Liège thus became a center from which teachers were sent to most parts of northern Europe Of the pupils who had studied under Notker seven attained to bishoprics

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## NOTRE DAME, SCHOOL SISTERS OF

— See RELIGIOUS TEACHING ORDERS OF THE ROMAN CATHOLIC CHURCH.

## NOTRE DAME, UNIVERSITY OF, NOTRE DAME, IND

— One of the most famous Catholic institutions of higher learning It was founded in 1842 by the Very Rev Edward Sorin and was chartered in 1844 by the Legislature of Indiana The University is conducted by the Congregation of the Holy Cross. Until 1865 only a college of arts and letters was maintained In that year the college of science was added In addition there are colleges of engineering (1872), architecture, and law (1869), and a preparatory school Students are admitted to the college after graduation from a four-year high school The usual degrees are conferred on undergraduate and graduate students on completing the appropriate courses (three years in the college of law, four years in the other colleges) Twenty buildings, valued with their equipment and apparatus at \$2,800,000, are devoted to university purposes From the University Press is issued *The Ave Maria*, a literary and religious magazine with contributions from the best writers in Europe and America Notre Dame also awards each year the Laetare Medal to some Catholic layman for distinction in some branch of learning The faculty consists of 85 members. In 1911-1912 the enrollment of students was 987

**NOTT, ELIPHALET** (1773-1866) — College president, was born at Ashford, Conn, June 25, 1773. He was privately educated and was graduated from Brown University in 1795 For two years he was principal of the academy at Plainfield, Conn Later he went as a missionary to Cherry Valley, N Y, where he established an academy and served as both pastor and teacher After a brief pastorate at Albany he accepted in 1804 the presidency of Union College, which he held until his death. Although the institution was established nine years before he became its president, Dr. Nott was the virtual founder of the college He was a member of its board of trustees from the first; and it was during his administration that it rose to collegiate

## NOTTINGHAM

rank The engineering school, the medical school, and the Dudley observatory were organized during his administration. The discipline of the college under his presidency was parental He made military drills a feature of the collegiate work for purposes of physical training; and he introduced courses in gardening and agriculture He was active in the organization of the American Association for the Advancement of Education (*qv*), and was its second president In addition to his participation in various national and state educational movements, he was an ardent advocate of temperance, antislavery, and religious and civil liberty. He was a student of applied physics all his life, and secured patents on thirty different scientific devices One of these was the first stove used for burning anthracite coal His publications include *Counsels to Young Men* (1845), *Lectures on Temperance* (1847), and numerous pamphlets and addresses He died at Schenectady, N Y, Jan 29, 1866 W. S. M.

See UNION COLLEGE.

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## NOTTINGHAM, UNIVERSITY COLLEGE, ENGLAND

— An institution founded in 1881 by the "Mayor, Aldermen, and Citizens of Nottingham for the advancement of university learning" A higher literary and scientific education is provided for students over sixteen years of age A Royal Charter of Incorporation was obtained by the college in 1903 The following departments are maintained language and literature, including most of the "arts" subjects, chemistry and metallurgy, physics and mathematics, natural sciences, engineering A Day Training Department is maintained in connection with the Board of Education In the technical branches, courses with a special bearing on the local lace and hosiery industry are provided There are no conditions of admission beyond general fitness to profit by the courses

The College does not grant degrees, but prepares students for the examinations of the University of London The title of Associate of University College, Nottingham may, however, be conferred The College also has power to grant a diploma in mining engineering The majority of the students are enrolled in the evening classes The enrollment in 1910 was 607 day and 1718 evening students The College receives grants from the Treasury, the Board of Education, the Nottingham City and County Councils, and subscriptions for special purposes from many private sources, e g the Drapers' Company.

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**NOWELL, ALEXANDER** (?1507–1602) — Dean of St Paul's and educationist of Queen Elizabeth's reign, born at Read Hall, Whalley, Lancashire. Alexander was educated at Middleton, near Manchester, and "entered Brasenose College at the age of thirteen (*i.e.* 1520), he resided there thirteen years, and he afterwards bestowed on the society thirteen scholarships." He is said to have taught the textbook of Rudolphus Agricola at twenty years of age. In 1543 he became Master of Westminster School, described as being then "the chief seminary in the kingdom," which post he held till 1555, when he was succeeded by Nicholas Udall (*qv*). Nowell was diligent in teaching Terence for "pure language" and the original Greek of St Luke's Gospel and the Acts of the Apostles for "true religion." Nowell was made a Prebendary in Westminster Abbey, and in 1553 was elected M.P. for Leo in Cornwall, from which position he was required to retire on the ground of "having a voice in the Convocation-house." After a few years in exile during Mary's reign, he returned and was made Dean of St Paul's. Nowell was a consulting educationist in the establishment of schools. The Skinners' Company School at Tonbridge (established by Sir Andrew Judd) brought their statutes for revision to Nowell. He himself founded a grammar school at Middleton in Lancashire and provided scholarships at Brasenose College, Oxford. He drew up the statutes for the organized Friars school at Bangor, and nominated the schoolmaster at Colchester. He himself was actually principal of Brasenose College, Oxford, for a short time. But, as an educationist, Nowell's name is most closely associated with the catechisms which he drew up and presented to Convocation in 1562. These seem to have been three in number, a larger one suitable for Universities drawn up at the suggestion of Lord Burreigh, which summarized the doctrines of the Church of England, was written in Latin, and first printed in 1570. This was translated into English by Thomas Norton in the same year, 1570. The middle (size) catechism was also published in Latin in 1570 and translated into English by Thomas Norton in 1572. The *Catechismus parvus* was published in 1572. All the sizes were translated into Greek by William Whitaker. The small catechism of Nowell took its position in the school manual of religion as the chief and was used in the English schools of the sixteenth and seventeenth centuries.

F. W.

See CATECHISMS.

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**NOVA SCOTIA, EDUCATION IN** — See CANADA, EDUCATION IN.

**NOVA SYLVARUM.** — See BACON, FRANCIS.

**NOVUM ORGANUM** — See BACON, FRANCIS.

**NUMERALS** — See NOTATION.

**NUMBER** — The primitive idea of number was that of a collection of units, unity itself being excluded (See UNITY). It was not until about the opening of the seventeenth century that the view of unity as the source of number, but not itself a number, was modified. This is only one of many extensions of the primitive idea, others being seen in the gradual inclusion of fractions, irrational numbers, complex numbers, transcendental numbers (*qq.v.*), and so on. There is no satisfactory elementary definition of number that covers all of the possible types, but Newton's definition of number as the ratio of one quantity to another quantity of the same kind answers the purposes fairly well. Thus the ratio of 4 ft. to 1 ft. gives the positive integer 4, and its reciprocal gives the positive fraction  $\frac{1}{4}$ . The ratio of the diagonal to the side of a square gives the irrational number  $\sqrt{2}$ , and the ratio of a circle to its diameter gives the transcendental number  $\pi$ .

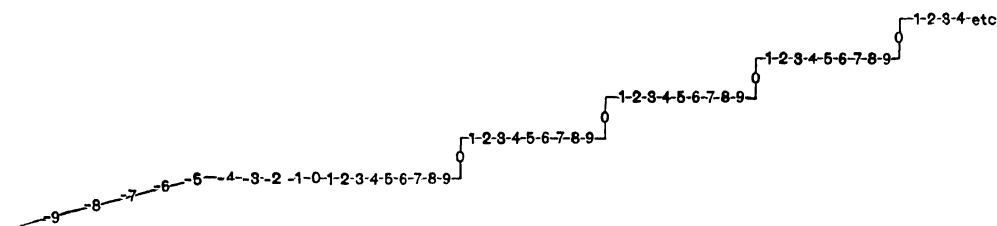
The distinction between abstract and concrete number is modern, number being essentially abstract in any case. In the sixteenth century the distinction appears in several works. Trenchant (1566), for example, speaks of the absolute or abstract and the denominate number (*L'absolu* *abstrét* and *le denommé*). In his category of denominate numbers he included not only 3 ft., but 3 fourths ( $\frac{3}{4}$ ). (See DENOMINATE NUMBERS.)

One of the oldest classifications of numbers is that based upon finger symbolism (See FINGER RECKONING). Numbers were divided into digits (fingers), articles (joints), and composites. In the geometry attributed to Boethius (*qv*) these three classes are said to be due to "the ancients" (*veteres appellare consueverunt*). They do not seem to have been known to Pliny (*qv*) and Apuleius, however, because they both speak of finger symbolism, but make no mention of these names. The digits were the integers from one to nine, that is, below the "first limit" (*infra primum limitum*), which was ten. Since, however, one was not considered a number, the digits were often considered to be only eight in number, as by Peletier (1549), who says "ce sont les huit figures, 2, 3, 4,

5, 6, 7, 8, 9" It is only in relatively modern times that the word has come thus to be used to represent the characters instead of the numbers themselves Gemma Frisius (1540), for example, uses digit to mean a number, the figures being called characters or elements (*characteres siue elementa*).

The articles were the multiples of ten, sometimes limited to nine in number (10, 20,

**NUMBER FORM** — A mode of imaging numbers, peculiar to some individuals. Most individuals, in thinking of numbers, make use of various forms of mental imagery, differing according to their individual types, as, for example, visual, auditory, or mixed Those who use number forms are visualists, who arrange the numbers in a definite spatial order with reference to each other, and with each



... 90), but usually unlimited (*et in infinitum progressi*, as a work often ascribed to Boethius gives it) Articles were later called "decimal numbers" (*nombre desenal*, Pellos, 1492; *lo numero decenal*, Ortega, 1515), and as such they finally disappeared

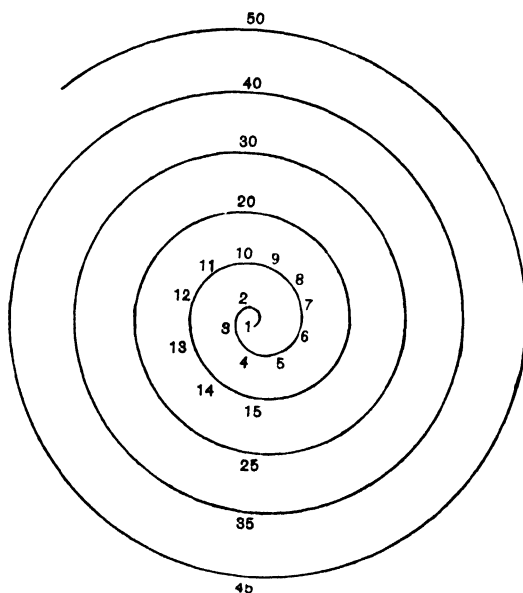
The composites were numbers composed of articles and digits, as 17, 48, 256, etc The word, however, had another meaning; namely, that of a number that is not prime This latter meaning finally dominated the other, and is the one now recognized On account of this double meaning some writers of the sixteenth and seventeenth centuries spoke of a digit plus an article as a mixed number (*q v*) or a compound number (*q v*), terms that have since been applied to other forms of number

The oldest known manuscript on arithmetic in the English language, perhaps of c 1300, has this classification "Some numbur is called digitus latine, a digit in englys Somme numbur is called articulus latine An Articuli in englys Some nombur is called a composyt in englys" This classification was found in most of the medieval books on theoretical arithmetic, but was usually wanting in the commercial works It was unwieldy, because it allowed for only eight or nine digits, but an unlimited number of articles and composites Many attempts were made to avoid the difficulty, with two resulting plans (1) to drop the whole thing, as Leonardo of Pisa (*q v*) did at the opening of the thirteenth century, recognizing, as Ramus (*q v*) did much later, that it was puerile and fruitless (*puerilis et sine ullo fructu*), or (2) to attempt to classify the infinite number of composites The latter plan was followed by Sacrobosco (*q v*) in the thirteenth century, who elaborated the classification of limits, but did not produce a system that any one seems to have understood

For other forms of number see the following special topics FIGURATE NUMBERS; FRACTIONS; IRRATIONAL NUMBERS; MIXED NUMBERS; NEGATIVE NUMBERS.

D. E. S

number occupying a definite spatial position The spatial relationships which the numbers thus assume are various, but the form always remains the same in the same individual. The figure shows two such number forms, the first of which was used by a student and the second of which was substituted for the first at a later period It has been held that thinking of numbers in such



forms is inherited, as the tendency seems to be common to members of the same family. In general, these phenomena may be grouped under the class of phenomena called synæsthesia. Synæsthesias are held by some authorities to be more frequently found in adolescents than persons of other ages E. H. C.

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**NUMBER, PSYCHOLOGY OF** — Psychologically there is a stage of evolution of consciousness of quantity which precedes the development of the number idea. One recognizes the presence of all the articles of furniture in his room, or the withdrawal of familiar articles, without going through the elaborate process of counting. Animals are able to recognize that one of their young has been taken away without being able to count. This direct recognition of quantity is, however, very limited. As soon as the objects grow at all numerous a special system of one to one designation must be developed or the individual object will be lost in the mass. This necessity of marking the objects in large groups undoubtedly furnished the practical motive which drove primitive man to the use of his fingers and to the use of pebbles, shells, or other devices for counting.

After a number system was developed, the next stage of development consisted in the discovery of number relations. Given three objects and two objects, there is always a like result from the bringing together of the two groups. The discovery of the relations of numbers was a slow process. The ancient Greeks were greatly interested in certain characteristics of number groups and built up a body of speculative philosophy around such simple matters as the indivisibility of prime numbers. In sharp contrast, however, to their large contributions to geometry, they did not contribute to the technique of number manipulation to any great extent.

The slow evolution of number ideas in the western world is due in large measure to the clumsy and unsuggestive terminology which grew up especially in the written symbols.

From a purely psychological point of view, one further general consideration may be pointed out. It is often urged that number problems be made concrete, that the interests of children in the schools may be aroused by combining number work and shop work. Indeed, some have gone so far as to suggest that number operations be allowed to arise incidentally out of school work, the number work being motivated by the necessities of measurement which confront the pupil. In reply to

these proposed reforms, it is to be pointed out that the number idea is an abstract idea, different in character from the idea which is derived directly from the inspection or manipulation of any object. The number idea develops by the cultivation of a technique of number operations wholly different in character from the technique of direct constructive manipulation. That this abstract, highly developed system of ideas will ever grow up incidentally is an idle hope. Number consciousness must be carefully cultivated, and number operations must be mastered by a concentration of attention on these operations. No amount of illustrative material will give rise to number ideas C. H. J.

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**NUMBER WORK** — See MENTAL ARITHMETIC

**NUMERALS** — See NOTATION

**NUNS** — See CONVENT SCHOOL; RELIGIOUS TEACHING ORDERS OF THE ROMAN CATHOLIC CHURCH

**NURSERY** — See INFANT EDUCATION, KINDERGARTEN, NURSERY RHYMES, also CHILD PSYCHOLOGY

**NURSERY RHYMES** — Those rhymes, ditties and jingles, rhythmic stories and nonsense verses that have been recited or sung to children time out of mind. The most universal of them are sporadic and have grown out of the universal personal relation of mother and child — others are the debris of ancient folklore bits of old ballads, rhyming, and therefore easily remembered, riddles, proverbs, etc., that have caught the ear of infancy. The unerring instinct of mother, nurse, and child has seized upon those scraps and snatches which were best suited to the awakening senses of the infant and without knowing that they were obeying a great psycho-pedagogical law mothers and nurses have for centuries been stimulating the sense of rhyme and rhythm, and exciting the wonder, fancy, and imagination of the children, with the material that awakens the best response and has the greatest educative value at the infant stage.

The elements in them which are so attractive to the infant ear and mind, are doubtless, first of all, the rhyming jingle, as in *Higgledy piggledy my fat hen*, then, perhaps, the nonsense

surprises, as in *Hey diddle diddle the cat and the fiddle*; *Three wise men of Gotham, I'll tell you a story about Jack a Nory*; and then the dramatic action as in *Little Miss Muffet* and *Little Jack Horner*. The most popular with children are generally those in which all these elements are most markedly present.

While no one knows when or where the majority of these nursery rhymes originated, many of them can be traced back to their sources; but it would overstep our space to attempt to point them out. Halliwell indicated the origin of several, but many more have been traced since he wrote. As most of them have been handed down by word of mouth for centuries, there are many variants of them to be found among English-speaking people everywhere, and the part of England from which the early settlers of certain sections of the United States came may often be suggested by the variant of a nursery rhyme which prevails among them to-day.

**Early Collections of Nursery Rhymes** — Orally current for centuries, thus "light literature of the infant scholar," snatches of which are caught in the literature of all the ages, was not collected in English until about the year 1756, when John Newbery, Oliver Goldsmith's friend and publisher, brought out in London *Mother Goose Melody, Sonnets for the Cradle, in Two Parts*. "Part I," ran the title, "contains the celebrated songs and lullabies of the good old nurses calculated to amuse the children and to excite them to sleep, Part II, those of that sweet songster and nurse of wit and humor, Master William Shakespeare, embellished with cuts and illustrated with notes and maxims, historical, philosophical, and critical." It was almost immediately afterwards reprinted by Isaiah Thomas, the famous printer of Worcester, Mass.

The immediate source of the name *Mother Goose* is to be found in *Les Contes de ma Mère l'Oye* — the title which Charles Perrault chose for his collection of fairy tales published in French in 1697. These were not published in English until 1729, but *Moeder de Gans* and *Mother Goose* were already familiar in nursery rhymes which had been orally current for many years, and John Newbery appropriated the name *Mother Goose* for more than one of his little books.

At the time this book was compiled Oliver Goldsmith was in the constant employ of the publisher Newbery, editing his little books, concocting his advertisements, writing his prefaces, devising his title pages, etc., and there is little doubt that he and Newbery made this collection together. The nursery rhymes are annotated in a jocose and sometimes rather coarse style that would hardly suit modern tastes.

This collection went through a few editions in England and in America and then, under the influence of the dreary tendencies of the

time, the nursery rhymes were neglected for a long period in books, though they continued to live in the hearts of the children and in the hearts and minds of their mothers and nurses.

Some of them, however, were from time to time appended as "fillers" to other little books by Newbery and other publishers of books for children who immediately succeeded him, and Joseph Ritson published in 1810 a collection of them under the title of *Gammer Gurton's Garland, or the Nursery Parnassus, a Choice Collection of Pretty Songs and Verses for the Amusement of all Little Good Children who can neither read nor run*.

With the beginning of the interest in folklore the nursery rhymes naturally attracted the attention of students and collectors, and in 1841 Halliwell printed his first collection for the Percy Society. Halliwell has enriched his collection of these rhymes and jingles with many valuable notes, and his book has been the storehouse from which all the later collections of nursery rhymes have been taken. Although he utilized the collections already made, there is no doubt that many of the rhymes in his book were collected for the first time from oral tradition, as his collection is much larger than any other. But the Newbery book was evidently unknown to him or to Ritson, as neither of them makes any reference to it in his preface. It was really not until 1844, or thereabouts, that the collection took strong hold of the American people, although, of course, the rhymes had been imported into the country and were orally current here, as in the mother country, from the earliest colonial days. The Boston editions of Monroe and Francis, issued between 1824 and 1860, have probably tended more than anything else to keep *Mother Goose* alive in this country. The most complete edition, which included Halliwell's notes and nearly all the illustrations that had been made up to that time for *The Nursery Rhymes*, called the Camden Edition, and compiled by Mrs. Valentine, was published sometime after the latter date. It is now out of print and scarce.

An absurd story was set on foot in the preface to an edition of the nursery rhymes published in 1877 to the effect that *Mother Goose* was a Boston woman and that she wrote and her husband, a printer, published the first collection of the nursery rhymes in 1719. The story is based on the statement of some one who thought he had once seen a fragment of such a book, but no one else ever saw or heard of it. Mr. W. H. Whitmore's *The original Mother Goose Melody*, 1892, tells all that can be told of the story and utterly explodes the myth of a Boston *Mother Goose*.

**Analysis.** — The best way, perhaps, to study the range of the English nursery rhymes in order to get a view of their educational value and interest, is in certain divisions and groups which to some extent follow the progress of the

development of the perceptions and interests of the children (I) The Mother-play division contains those nursery rhymes which grow out of the intimate personal relationship of mother and child the groups in which are the lullabies, cradle songs, slumber songs, etc., the finger plays and other games of mother and child (II) The Mother-stories division comprises stories about animals, stories about other people; the times, seasons, etc., rhyming ABC's, proverbs and riddles, paradoxes, etc.; cumulative stories (III) The Child-play division includes counting-out rhymes and children's games

*The Mother-play Division* — The first thing the baby hears is the lullaby or the cradle song, such as *Hush a bye, baby*, etc. — The earliest nursery rhymes said or sung to the infant are accompanied by movements and gestures, the sense of touch is used to aid the memory. Some of these are called *finger plays*, such as *Pat a Cake, Pat a Cake, Tickle ye, tickle ye in your hand, Brow Bender, Dance Thumbkin, dance*, etc., and with their appropriate movements they are among the first games that awaken childish glee. The feet as well as the fingers figure in some of these, such as *This little pig went to market*.

Froebel, the founder of the kindergarten, first made definite educational application of these plays and tales. The first collection of these, the *Mutter- und Kosenieder*, was published in 1844 (See further, FROEBEL and KINDERGARTEN)

Other rhyming games with movements in the division of mother plays are the *Dancing* and *See-saw* rhymes, such as *Dance, little baby, See-saw see-saw down, Ride a Cock-horse*, etc.

*The Mother-stories Division* — In this division children early make acquaintances with animals and their doings as in *Ding Dong Bell, Three Little Kittens, I love Little Pussy*, etc. Stories about other children and the doings of older folk such as *Little Boy Blue, Robin and Richard, Jack and Gill, Little Tom Tucker, Tom, Tom, the Piper's Son* form another considerable group. The flight of time, days and nights, weeks, months, and years, the sun, moon, and stars, the seasons and the weather, etc., furnish subjects for another, which may be illustrated by *Cock Crows in the Morn, March Winds and May Flowers, Thirty Days hath September, Rainbow at Night*, etc. The most typical of the rhyming ABC's, of which there are several, is *A was an apple pie*, of the riddles, *Two legs sat upon three legs, Old Mother Twitchett*; of the proverbs, *See a pin and pick it up; of the paradoxes, Three children sliding on the ice; There was a man of our town, If all the world was apple pie, There was an old woman and what do you think? The man in the wilderness asked me*. The cumulative stories, of which *This is the house that Jack built* or *The Old Woman and her pig* may be taken as the type, are among the oldest known in this group. No form of narrative is so easy to re-

member as this, — and it is small wonder that it is one which particularly appeals to the child.

*The Child-play Division* — The third division into which the nursery rhymes fall, that of *child play*, embraces the important group of "counting-out rhymes" in which the fingers are employed, of these there are literally hundreds, each with countless variations in different districts. Familiar examples are *Eeny, meeny, miny, mo, Intery, mantery, cutery, corn; Eena, deena, dina, duss, Handy, pandy, Jacky, dandy, Onery, two-ry, ickery Ann*. The subject of the rhymes of this class has been very fully treated by Mr. H. Carrington Bolton in his *Counting-out Rhymes of Children* (London, 1888). This group also includes dramatic games and games of skill and chance. Miss Alice B. Gomme in her *Study of Children's Games* has classified all the dramatic games under the incidents which show the customs and rites from which the games have descended. The customs shown in the games are, among others, those connected with marriage, love, and courtship, funerals, harvest, well worship, tree worship, foundation sacrifice, witches, child-stealing, and divination. There are contests between two rival parties for the taking of prisoners and the possession of ground territory, and contests between animals of prey and their victims, those games dealing with marriage, love and courtship, funerals, and harvest, are the most popular and the most widespread. Among these games may be mentioned, *Nuts in May, Here we go round the Mulberry Bush, London Bridge, Orange and Lemons*. The guessing game of *Buck, buck, how many fingers do I hold up?* through the modern Italian *mora* has been traced to ancient Greece.

*Distribution of the Nursery Rhymes* — The nursery rhymes furnish a rich field of study from the historical and sociological point of view, the point of view of the folklorist, and many others, but their chief interest to the educator lies in the foregoing presentation. It may, however, be instructive to glance at the remarkable distribution of the nursery rhymes all over the world. Every nation has its nursery rhymes and jingles and there is a very close family resemblance in all of them. Counterparts of many of our English nursery rhymes are found among the ancient Hebrews, the Zulus of South Africa, and the Indians of North America. The closest resemblances are to be found among those nursery rhymes which are concerned with things personal to the mother and child, the lullabies, the finger play and dancing games, and the stories of the cumulative order. Those in the other divisions differ somewhat in scheme and general idea, and still more in detail, especially as we approach the didactic rhymes, alphabets, proverbs, riddles, and paradoxes. National characteristics, religion, climatic and other conditions, of course, are responsible

for many divergencies of detail *L'Amour* and *Rondes du Mariage*, the dancing rhymes and games play a far more important part in children's rhymes and games of the continent of Europe than in our more Puritanical collection. The devil and the evil eye figure very frequently in the nursery rhymes of Southern France and of Italy, and these bristle with allusions to the method of warding off the effect of the *jettatura*, such as, for example *Si tu rencontrais le diable? Je lui ferais mes cornes*. The game of honeypots as played in France has a religious and a superstitious side as well. It is the good God who comes to buy a pot of flowers, when the selection is made, the one who is selected is treated as in the English game, the devil is supposed to get the one God does not buy, and all the others make the sign against the evil eye as they chase him away.

But perhaps these national characteristics are more markedly shown in all languages in the children's riddles and counting-out rhymes. The riddles, many of them, play on the same words and subjects as do ours, others deal with matters of which we do not openly speak, especially among our little ones, most of the counting-out rhymes are constructed upon pretty much the same plan as our own familiar groups already cited, and are as numerous and varied, some of them also contain things which we could not tolerate, and God and the devil, priests and nuns constantly figure in them.

The German *Kinder-reime*, *Liedchen*, *Spiele*, and *Marchen* are, as might be expected, more fantastic and fanciful, and thus approach more nearly to the character of the Swedish and Danish, which have a peculiar sweetness, grace, and charm. The children of Holland and the Flemish folk have a very wide range of traditional nursery literature, and in sound and in sense they approach very closely to those of England. The characteristics of the people of the olden times come out here very strongly. Eating and drinking and wife-beating figure prominently in them, and ships and cows and sheep take the place of other objects which figure in the rhymes of other countries.

There are probably more nursery rhymes in China than can be found in England and America. Mr Isaac Taylor Headland has in his possession over six hundred, collected, for the most part, in two out of eighteen provinces. In many of these rhymes there are features common to our own Mother Goose C. W.

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NURSES, CHILDREN'S — INFANT EDUCATION

NURSES IN SCHOOLS — See MEDICAL INSPECTION OF SCHOOLS, CONTAGIOUS DISEASES

**NURSING, EDUCATION FOR — Historical** — Among the occupations of women, nursing ranks among the oldest. It is indeed hardly possible to conceive of a time in human history when mothers did not care for their children and for the sick and helpless of their families. The slowly accumulated skill and knowledge thus gathered through the experience of primitive women, and passed down by tradition to successive generations, built up the rudiments of primitive nursing, which, mingled with those superstitions which have ever clustered about the sick bed, became a substantial part of the basis of primitive medicine. The records of ancient civilizations, Egypt, India, Greece, Rome, show the growth of medical and sanitary knowledge, discuss physicians of various types, describe hospitals, and lay down elaborate procedures for the care of the sick. There is little mention made of nurses, but it seems probable that certain nursing services were rendered by the "temple-women" or "priestesses," since it was the common custom to bring the sick to the temples for healing, where religious ceremonial could be combined with practical measures of care or treatment.

Between the nurses of the pre-Christian era and our own the historical links are broken, but there is a continuity of record from the days of the early Christian workers down to

the present time With the diaconate of the early church, the history of Christian nursing begins, and from the earliest apostolic days the care of the sick and poor was placed in the hands of deacons and deaconesses, who were consecrated by the church and ranked with the clergy Their chief functions were to visit and care for the sick in their homes, to assist the needy and to comfort the afflicted. They also brought the sick with them into their own homes to be cared for The order grew steadily, spread far and wide into other countries, and lasted for several centuries Eventually it became so strong that restrictions were placed upon its activities and freedom, it was brought into stricter subjection to the clergy, declined in importance, and was finally abolished altogether in the sixth century.

The order of deaconesses may well be looked upon with respect, as having laid the foundation not only of nursing but of modern works of charity It was replaced by monastic communities which had in the fifth century become numerous and important, and were already exercising guardianship, under the control of the church, over the hospitals and other charitable institutions, which were multiplying in response to the spirit of the time With these communities begins the history of the religious nursing orders whose work among the sick presents a shining record of heroic and devoted service, covering a period of over a thousand years Among the more famous orders, the Franciscans (*qv*), the Augustinians, and the Benedictines (*qv*) have been especially noted for their work among the sick For twelve hundred years the Augustinian Sisters formed the nursing staff of the Hotel Dieu in Paris, and from this ancient order came the hospital sisters who in 1639 crossed the Atlantic to establish in Canada a place where the sick could be cared for

There were many other nursing orders not all truly monastic in type The Crusades early in the Middle Ages brought into being the illustrious military nursing orders, and the Knights Hospitallers became famous for their splendid system of hospitals, an interesting example of which is found in the old hospital of St John at Valetta Other nursing orders were the free secular associations, of which the Beguines of Belgium formed the most interesting example They showed an effort away from the rigid formalism of the monastery toward spontaneous self-expression in work and life Their little houses clustered around the hospital and nursing was their important activity One of the most famous and the largest of all nursing orders is that of the Sisters of Charity, founded by St Vincent de Paul in 1634 Recent data showed this order established in twenty-four countries, and working, either serving or directing, in about 2000 hospitals and other institutions The sisters have an

honorable record of service in epidemics, war, and other disasters, and several have been decorated by France with the Legion d'Honneur Altogether, the records of the religious nursing orders are among the most splendid pages in history and their contributions to human welfare among the most valuable

The suppression of the monasteries was followed by a time of great hardship for the sick poor No new system was available to replace that of the religious orders, the sick were more and more relegated to the care of servants and attendants, the art of nursing was neglected, the status of the nurse became extremely low Writers agree that in all matters relating to hospitals and the care of the sick a period of stagnation set in during the latter part of the seventeenth century, lasting until the early part of the nineteenth The condition of nursing during the eighteenth century is clearly shown in John Howard's reports of hospitals and lazarettos, and the typical nurse of the early nineteenth century has been immortalized by Dickens in *Martin Chuzzlewit* The servant nurses of this period show nursing brought down to a state of marked degradation They had become free from any control or supervision of women, and were everywhere almost entirely subject to male officials They were ignorant and untaught, overworked and underpaid, ill-housed, ill-fed, and held in contempt No elevating or enlightening influences reached them Where the religious orders had seen in their work among the sick a direct and living service to God, these persons saw only disagreeable, laborious tasks, illumined neither by religious zeal nor by scientific knowledge Nursing became simple, hopeless drudgery

#### Nineteenth Century Reforms: Kaiserwerth

— While the actual reform in nursing began with the founding of the School for Deaconesses at Kaiserwerth on the Rhine, there were various factors and influences leading up to it The continued existence of small groups or communities of women selected to work among the sick poor, usually in connection with the church, often consecrated with religious ceremonies, showed that the order of deaconesses had never wholly died out The form only had changed The spirit and service remained, and these groups of workers among the sick and poor were virtually deaconesses The hope of reviving the ancient churchly order was frequently expressed by some of the clergy during the eighteenth century, and pamphlets were written urging it Groups of such workers were seen by Pastor Fliedner, the founder of the Kaiserwerth Schools, among the Moravians and Mennonites in Holland, and the profound impression they made on him had doubtless a direct influence in the formation of his plans

During the latter part of the eighteenth and early in the nineteenth centuries there

were interesting attempts at formulating instruction in nursing. A number of small nursing manuals appeared, and in several places courses of instruction for hospital attendants were offered. The more noteworthy manuals were those of Dr May (*Unterricht für Krankenwärter*, Mannheim, 1784) and Dr. Pfahler (*Unterricht für Personen welche Kranke warten*, 1793), in which principles of nursing as well as details were discussed. These were widely read at the time, and may be looked upon as important early contributions on this subject.

Courses of instruction for male nurses were established in Magdeburg, Prussia, at the end of the eighteenth century, and institutes for hospital attendants were founded in Vienna in 1812; in Strassburg in 1814, and at the Charité Hospital, Berlin, in 1830. Writers of the day speak of the opposition to these efforts, which were apparently looked upon as a dangerous innovation. The courses offered usually covered two or three months, and consisted solely of lectures by physicians. There could, of course, be no practical teaching without nurses to teach their practice, and thus only the principles of nursing, but not nursing itself, could be taught. A certificate was given at the School for Attendants in Berlin, and, as there was an old Prussian law relating to these, here may perhaps be found the earliest example of the recognition of a legal status for nurses. A stimulus more direct perhaps than any of these, was the wonderful activity of the women of Germany in hospitals and among the sick during the War of Freedom. A plea for a definite revival of the diaconate, which would provide Christian women to do Christian nursing, was made by Fliedner, who points to the work of these women in projecting his plans for the Training School for Deaconesses, which was later established at Kaiserwerth and jointly directed and developed by himself and his noble wife Fredericke. The importance and significance of this revival of the evangelical order of deaconesses can only be fully understood by careful study of the movement and the time. The plan of training embraced many activities, but so far as nursing is concerned the whole development of the modern system may be traced directly through its founder, Florence Nightingale, to this school where she first went to study nursing methods.

The fundamental principles upon which the system of training in nursing was based were that the hospital and other institutions existed only to provide suitable places for training the pupils; that systematic and continuous instruction was indispensable, that nurses could not be narrow specialists, and must be thoroughly prepared in every phase of their work. For this purpose some time must be passed in each department to insure familiarity with all; and most important of all

was the large authority given to the woman at the head, the matron who was made responsible for the entire arrangement of work, its control and direction, and the discipline of the pupils,—the restoration of an office which had long been extinct in the civil hospitals of the time. The general plan and system of work was substantially that of the modern training school, so closely have the lines then laid down been followed. The candidate was required to bring letters from clergyman and physician. There was a period of probation to test the personal and moral qualities, as well as the mental and physical. There was a preparatory department, the pupil was under no expense for living or tuition, and received a small allowance. The work was graded, and so were the workers, through several ranks. The chain of responsibility was unbroken from probationer to superintendent.

Nursing training was given in the hospital, where the pupil was to be taught the care of acute, chronic, and special cases, and parish or visiting nursing among the poor, thus following in the footsteps of the older religious orders. A large place was given to religious work, and nursing was but one branch of the training of deaconesses. The organization shows strikingly the combined influences of ecclesiastical and military ideals. The title of Sister (which still exists in many European and all English hospitals to-day), the time devoted to religious exercises and teaching, the insistence upon self-sacrifice as a part of a nurse's armamentarium came down from the religious nursing orders. The sharply defined organization for the fixing of responsibility, deference to superiority in rank, unquestioning obedience to command, precision of orders, forms, reports, and records, all bespeak military traditions. But the introduction of a system of training and teaching, the humane attitude towards patients as individuals, the respect for labor, the comparative freedom of opinion and action which were developed at Kaiserwerth were all new. The deaconess was not a nun under another garb. She represented a new idea,—that education and training for work were essential. Kaiserwerth, in fact, with its system of theory and practice, may perhaps be looked upon as an early instance of an attempt at genuine vocational education, and as such would justly claim to have set in motion far-reaching and permanent influences.

The Kaiserwerth deaconesses now number many thousands. They have branch houses all over Germany and in foreign countries; have under their care numerous convalescent hospitals, orphanages, infant schools, special schools for blind, deaf and dumb, though the educational system and ideals of the Fliedners have not been generally maintained. The life and work of the deaconess have come more and



more closely under clerical control, and restrictions, economic on the one hand, and intellectual and social on the other, have placed her out of the stream of nursing progress. In parish and mission work, however, she is still an important and beneficent factor.

From Kaiserwerth came the impetus which resulted in the first effort in England to give practical training to nurses. Mrs. Elizabeth Fry visited Kaiserwerth in 1840, and was so deeply impressed with its system and methods that on her return she brought about the establishment in London of an Institute for Nursing which was connected for practical purposes with Guy's Hospital. In 1848 St. John's House, an Anglican Nursing Order, and connected with Kings College Hospital, was founded in London. The preliminary plans call it "a collegiate institution" to prepare for work among the sick. Several writers, physicians and others discussed in the periodicals and press of the early nineteenth century the education of women for the care of the sick, and Southey contributed in his *Colloques in Society* an interesting and suggestive presentation of the subject as it then appeared. Plans, projects, and actual effort had, however, one distinctive feature. They provided a religious or semireligious order of workers, and reproduced with more or less fidelity the forms of the past.

**The Work of Florence Nightingale** — The creation of a new order, the establishment of new principles, and the founding of a system to develop and perpetuate them was the work of a famous English woman, Florence Nightingale. While Miss Nightingale is best known throughout the world for her remarkable work in army nursing and sanitary reform during the Crimean war, her greatest contribution to human welfare must ever lie in the system of education in nursing which she originated, established, and virtually endowed at St. Thomas's Hospital, London, in 1860. Miss Nightingale (born in 1820) came of a family of wealth, social position, and public spirit. She was highly and thoroughly educated in mathematics, natural science, classics, and languages, and had traveled extensively. She was by nature a student and an investigator. Careful mental training and discipline placed her in a position to work effectively, and her natural interest in the sick, which was displayed at an early age, led her to that prolonged and searching study upon which her brilliant achievements in sanitary and hospital reform rest. She sought every available opportunity for personal observation and study of the sick for practical experience, was twice at Kaiserwerth in training, and devoted years to a careful and exhaustive study of hospitals, organization, and nursing methods in every European country. In the awful crises of the Crimean war, the English government turned to her as the one person

qualified not only by special genius, but by special and severe preparation, to handle the colossal problems of sickness and suffering in the army, and to render the great services which her country needed. Her experiences and observations there are embodied in invaluable works on sanitary reform in the army, but the vital and permanent results of her work were the removal of old conceptions of nursing as a charity, a self-sacrificing labor for others, a meritorious act leading to heavenly reward, or a penance, and the recognition of nursing as a part of sanitary science, and of pity and palliation as unacceptable substitutes for prevention. Miss Nightingale's own view of nursing should be presented. "Nursing is putting us in the best possible condition for Nature to restore or to preserve health, to prevent or to cure disease or injury, to enable Nature to set up her restorative processes, to expel the intruder disturbing her rules of health and life. . . . Partly, perhaps mainly, upon nursing must depend whether Nature succeeds or fails in her attempt to cure sickness. Nursing is therefore to help the patient to live. Nursing is an art, and an art requiring an organized practical and scientific training. For nursing is the skilled servant of medicine, surgery, and hygiene."

The Nightingale School, founded by the contributions of a grateful British public to Miss Nightingale, was established on the following basis. It was secular and nonsectarian. It had a close, organic relation to a hospital of high standing with adequate facilities for teaching and experience. All practical work was based on careful teaching. Hospital officers in medical and nursing departments were specially paid for teaching; the head nurses for practical teaching, the medical men for lecturing, the matron for organizing and directing the work of the pupils. The school in its educational functions was independent of the hospital, though the students were subordinate to hospital régime, in so far as work was concerned. The theoretical teaching was by means of lectures, prescribed reading, and written reports. The actual instruction in the beginning covered but one year. It was the idea of the school to prepare women to carry this system of organization and training out into other hospitals and infirmaries, to become, as it were, pioneers and reformers, and this plan has been faithfully carried out. Preparation for private nursing was not included in the original plan, but nursing in the homes of the poor was definitely provided for. The Nightingale system, as it was called, spread quickly into the hospitals of the United Kingdom, and later found its way into various European countries. The introduction into the hospitals of a body of refined and educated women as workers and students brought about in them a striking transformation, a "moral renovation" as

one writer called it. The lessening of the mortality rate, the rapid advance of educational and scientific work and experiment in medicine and surgery, the rising confidence of the public, are unquestionably due largely to the cooperation with the physician of the scientifically educated modern nurse.

**American Advance** — In America the first attempt to provide instruction for hospital attendants was made by Dr. Valentine Seaman, a medical officer of the New York Hospital, who in 1789 established there a course of lectures in connection with the Maternity Department. Other efforts were made by the Society of Friends in Philadelphia in 1839, and by the Woman's Hospital in 1861, while in 1862 the Hospital for Women and Children in Roxbury, Mass., opened a school offering a year of practice and training in the hospital with a course of lectures from physicians, to which outsiders were admitted. This school is still in existence and has done good work.

In 1873 three important training schools were established in this country, all influenced directly or indirectly by Miss Nightingale's teaching and system. These were the schools connected with Bellevue Hospital, New York, the Connecticut Training School, New Haven, and the Massachusetts General Hospital at Boston. They were established by committees or bodies, usually of women, who undertook to provide suitable quarters for a group of students, and to pay for theoretical instruction, seeking only opportunity for practical instruction and training in the hospital. In each instance, as in the establishment of the Nightingale School, there was some opposition from medical men, who, whether satisfied or not with the existing conditions, were unwilling to accept the idea of educated women assisting them in the care and treatment of the sick. The students paid nothing for instruction or for living expenses, the school supplying one and the hospital the other in return for services rendered. Usually also the hospital paid a small allowance monthly to the students, designed to meet the expenses of uniforms, textbooks, etc. The training covered one year and the students were sent out into families during the second year, ostensibly for practice and experience in private nursing, but in reality to bring in, through payment for their services, additional funds for the maintenance of the school or hospital. At the end of two years of successful work a certificate was given.

The effect of the training school upon the hospital was as markedly beneficial in this country as in England, and shortly hospitals grasped the economic significance of the system, and began to establish schools of their own.

Medicine and surgery were making rapid progress and bringing about a great expansion in hospital buildings and work. Public charity

and philanthropy was expressing itself in more and better hospital facilities, and more and more were these institutions leaning upon the training school. The rapid growth in training schools during the last three decades is shown in the statistics of the Bureau of Education for 1911. These show in 1880, 15 schools, in 1890, 35 schools. Statistics secured by Mr. Sutton and published in his *Hospital and Training School Directory* in 1910 show over 1300 training schools in this country at that date. There are said to be about 30,000 students in the training schools of the country at this date (1913).

These schools are almost universally owned and managed by hospitals, whether these institutions are state, municipal, endowed, or private and special corporations. The responsibility of the school is readily assumed by hospital authorities for the following direct and definite reasons, and others more or less subtle and indirect: first, the obvious economy of carrying on a large, essential, and highly important department through a staff of student workers, second, the fact that through such a body under a proper system of organization, instruction, and supervision an efficient and stable system of nursing is insured, third, the ease, if educational standards are not rigidly enforced, of securing a sufficient number of student workers, fourth, the intangible but valuable asset of the spirit prevailing in an institution where the workers are all seekers after knowledge and skill. Under this system the school has become to all intents the entire working staff of the hospital, economic and other considerations pushing its members, while still students, upward into the responsibilities of official positions and downward into the performance of unskilled domestic duties. The need in all hospitals for continuous twenty-four hour service, the constant improvement in methods and elaboration of details, the very nature of the work, all have called for a comparatively large staff of workers, but hospital limitations in resources have kept the numbers of the students restricted. The hours of work consequently have been long, and students thus unable to profit fully even by such limited theoretical instruction as has been offered. Such conditions have made the development of a sound and progressive educational system extremely difficult, yet progress has been made, and many radical changes have been introduced during the last fifteen years. The course of instruction has advanced from two years to three; there has been marked improvement in actual teaching, in character, extent, methods; new subjects have been introduced and old subjects more thoroughly taught, clinical teaching and supervision of students' work in wards is vastly better than it was even ten years ago. Libraries, teaching facilities, are appearing, and during the last five years a demand for trained

teachers has arisen. About ten years ago preparatory courses were introduced into a few leading training schools, with the intent of giving the students the larger part of their groundwork in science before permitting them to begin practical work in the hospital. These courses have proved valuable, and are now established in eighty-six schools, chiefly the leading schools in the country. The time devoted to this scientific instruction is six months in some schools, but ordinarily does not exceed three months, in which the student will perhaps receive all the instruction in fundamental sciences of anatomy, physiology, bacteriology, chemistry, which the school can give her. It is a movement in the right direction, but a longer period should be encouraged. There are promising indications of progress in a few schools which have established relationships with universities or colleges, thus securing there the required scientific groundwork for their students. Typical instances of this affiliation may be found in the Northwestern University, Chicago, which provides teaching in fundamental sciences for three training schools, and in Simmons College, which has for years been affiliated with certain Boston training schools. There are also a few training schools having direct connection with universities through the medical schools of which they form a sort of sub-department. Advantages of many kinds arise from this connection, and as there are now fourteen schools related to universities on some such basis, there is good reason for assuming that extensions in this direction may be looked for. The training school recently established in the University of Minnesota is an interesting and important instance of this tendency. Much of such educational progress as has been made is due to the efforts of a few leading women in the profession. The most noted and able of these was Isabel Hampton Robb, the first superintendent of nurses and principal of the Training School connected with the Johns Hopkins Hospital, Baltimore, — a woman of exceptional power, initiative, and organizing ability. Under her régime many important advances were made in nursing.

There are aspects of the work, however, in which little progress has been made. The hours of practical work still remain excessively long. In nearly 50 per cent of all schools the students still work ten hours daily, and twelve hours at night. The eight-hour day established in some hospitals many years ago has not made great headway, and a full eight-hour system is found only in four schools in the country, though sixty-nine in all have introduced a partial system which provides eight hours by day, and ten or twelve by night. It is of course manifestly impossible to develop any sound system of instruction until the hours of practical work can be greatly reduced, and

from the standpoint of the patients, of stability in hospital service, of expense, this will be difficult to accomplish. In all schools the time devoted to theory is meager, the maximum time throughout the three years not exceeding three hours weekly. Emphasis is, at all times, laid strongly upon the practical, and the true relation of theory to practice, of thought to action, is but dimly apprehended.

**Professional Associations** — Educational progress has been greatly stimulated by and indeed it may almost be said to date from the organization of nurses into alumnae associations, state and national. The Society of Superintendents of Training Schools for Nurses formed in 1893 has rendered steady and valuable services in the improvement of hospital and training school work. Through its efforts courses were established at Teachers College in 1899 to prepare graduate nurses for supervision and teaching in training schools. Recently this has been developed by endowment into a department in which the original plan has been carried further, and preparation offered in sanitary and social science for public health workers. This society also brought into existence the Associated Alumnae of Training Schools which has recently become the American Nurses' Association. Both have been vigorous and active in securing legislation, in supporting professional journals, in urging forward and strengthening good educational and professional standards, training, and ideals. In any criticism of the weakness of the modern training school, the strong features of its work must not be overlooked or minimized. The student's actual theoretical teaching may seem weak, but the lecture and classroom have a comparatively small place in her training. Clinical bedside instruction, daily work under the constant supervision and criticism of expert workers, rich opportunities for study and observation, close daily association in work with medical and surgical experts and specialists, are the main and most important educational factors.

**The Present Situation** — Beyond this the moral and ethical demands upon the student, inherent in the very nature of her work, are such as to form an educational influence of a very high order, and to develop a personal discipline and a sense of responsibility of distinct social value. The work of nursing is rooted deeply in vital human needs. It has, and has always had, an extraordinary appeal to many women. For years, while few occupations besides teaching and nursing were open to women, there were a great many applicants to training schools. The early schools attracted many women of excellent education, much ability, altruistic leanings, courage, spirit, and devotion. The opening up of many new opportunities for women has drawn from the large number of candidates formerly available, and the long hours of work, meager edu-

cational advantages, and other conditions have made nursing, or rather the training process, seem unattractive to the ordinary intelligent women of the day. There is now serious difficulty in securing enough students to maintain the system without so lowering or disregarding educational standards, as to imperil the welfare of the sick and the status of the profession. Those schools offering the best and soundest educational work, shorter hours for students and good living conditions, attract a reasonable number of satisfactory candidates. But no school can be assured of a student body of desirable caliber large enough to staff the entire hospital. The moment hospital requirements become the main or ruling factor in the selection and admission of students, standards of education or of personal fitness cannot be maintained, and standards and character of work in both school and hospital must eventually deteriorate.

Two forces are now at work which are beginning to influence training schools appreciably. The first is found in the legislation, providing for state registration of nurses, which has now been secured in thirty-four states, largely by associations of nurses. While most of these laws are permissive only (but seven are mandatory), they have set up definite, if moderate, educational and other standards, and have accomplished genuine improvements in hospital and training school work.

The other factor affecting educational methods is the passing of the nurse from the actual care of the sick in hospitals, and homes, over into the field of public health work. Preventive work for the protection of infant life, of the health of the school child, of the health of the young industrial worker in factory or shop, and in relation to tuberculosis, is largely relegated to the nurse as the logical person to apply directly the teachings of sanitary and medical science. Health nursing of which Florence Nightingale wrote nearly half a century ago is now beginning to take shape, and as educational propaganda form an essential factor in such work the nurse must be so educated and trained as to be able to meet this new requirement. There are nearly a thousand associations, large and small, in which nurses are engaged in public health work.

A new and important demand is made upon the hospital training school which must eventually be met either by it or by other institutions of another type. Already such efforts are projected. Since, however, there are already the elements of a practically perfect system existing in the modern hospital and training school, it would seem better to make such changes in the relationship between them, such reshaping and reconstruction, as will provide autonomy for the training school. Such changes, partly governmental, partly economic, would enable the school to fulfill

adequately its essential functions, and to serve its full purpose in the community. On any other basis than this it is almost certain to degenerate.

**Other Countries** — The general situation as regards nursing in other countries may be briefly summed up as follows:—

*In Australia* the nursing profession is highly organized, and works in close cooperation with medical men. Educational and professional questions are prominent and given first importance. A system of voluntary minimum requirement and examination has been universal and effective because state subsidies of hospitals enable governments to make conditions, and the National Association of Nurses, in which doctors are included, has been able to get government endorsement of standards. The minimum is three years in general work, — special studies and special examinations for intending superintendents of hospitals and training schools. State registration and examination has just, during the current year, become law in Queensland. Very similar conditions exist concerning nurses in New Zealand, except that it has had state registration and examination under national law since 1901, with excellent results. The course of training covers three years.

*In Japan*, training for nurses under the Red Cross is highly perfected. The training of nurses is, however, carried on under a paternal system and nurses have little voice or direction in the development of their own standards. Patriotism and self-sacrifice are the leading motives among Japanese nurses, but they are also very markedly efficient in details of practical work. The course covers three years. City hospitals have training schools but not of the same standards as the Red Cross.

*In India* there is a vast movement to obtain a minimum of practical and theoretical work in training native women. At present there are great variations and very little uniformity in efforts. Mission schools exist with a very weak and inadequate curriculum. A few hospitals are established on the best English models. Complications of language add to the difficulties of the work, but associations of superintendents and alumnae, made up, however, almost entirely of English and American nurses, are at work upon the nursing problem.

*In China* an excellent attempt at hospital and training school work has been recently initiated under the auspices of the Chinese government with a medical woman in charge of the hospital and an English trained nurse as head of the school.

*In Italy* pioneer work has been done for some years in Naples, Florence, and Rome by English and American nurses. Their work has brought about modern training schools in connection with several hospitals, more recently the Policlinico in Rome under the pro-

tection of Queen Helen. This has a modern system and a three years' course, and has a promising future.

In France there has for some years been a state of unrest in hospital and nursing fields, owing to the secular strife which removed nuns from hospitals under government control and brought about a crude process of laicisation, largely with untrained women. The Nightingale system of nursing was introduced into two Bordeaux hospitals by Dr. Anna Hamilton, and an admirable and thorough educational system has been established. The French government is now entirely committed to the principle of education for nurses and a new school of nursing was established under the city administration in Paris in 1907, in connection with the Salpêtrière and on a sound educational basis.

In Germany the general high state of cultivation by the government of technical and advanced education has not been extended to nursing, the reason perhaps being that it was long left to religious bodies to perform as unpaid labor of self-sacrifice and humble devotion. German nurses are now demanding three years of training and systematic teaching. The government has enacted permissive state examinations and registration with a minimum term of one year of training. A strong organization of nurses in Germany has given strength to the nursing movement, and it is seeking alliance with the woman's movement to demand higher conditions of labor and better instruction.

In Belgium a very elementary state registration act has been in force for several years. The early stage of transition from nursing by religious orders to the modern system is clearly seen here. Brussels city administration has founded a training school on the plan of the Paris school.

In Holland there appears to be complete indifference to the educational demands of nurses on the part of state authorities and a striking contrast is here shown to the desire of the French government to educate. Holland public men are satisfied with public school grade (at twelve years) for nurses, and the outlook for better standards is small at present.

In Scandinavian countries there is a general three years' course which is not well balanced. Educational requirements for pupils are generally high and the training excellent, although a number of subjects must be taken as specialties, thus making five or six years of study and training necessary.

In Great Britain, notwithstanding the fact that the modern system of training was developed in England, that district nursing and school nursing both originated there, it has been impossible up to the present to establish definite standards of education and registration for nurses. Every hospital is a law unto itself. Hospital directors resist the movement

for registration urged by nurses, and show a general public unwillingness to regard nursing as an educational question. Three years' training is general. There is little theory, but high standards of practical work. From the very beginning many women of especially high educational and personal qualities have been drawn into nursing ranks. The movement for legislation concerning nurses and registration has been on foot in England since 1888.

M. A. N.

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**NUTRITION** — See FOOD AND FEEDING OF SCHOOL CHILDREN

**NYMPHOMANIA** — Abnormally great and uncontrollable desire for sexual excitement and gratification. The term is applied to woman, and the term satyriasis to man. Both differ from erotomania in that the latter is largely mental, the physical gratification being mainly replaced by ideas of love and of sexual matters in modified forms. These conditions are often found in children, especially in the feeble-minded. S. I. F.

See SEXUAL ANOMALIES

**OAKES, URIAH** (1632-1681) — Fourth president of Harvard College, was graduated from Harvard in 1649. While a student at Cambridge he invented a set of astronomical calculations. After graduation he went to England and was pastor at Titchfield in Hampshire. He was silenced "with the other nonconforming ministers" and returned to America and was president of Harvard College from 1675 to 1681. In the opinion of Dr Mather, America never had "a greater master of the true, pure Ciceronian Latin."

W S M.

#### OATHS OF TEACHERS — See NEVADA.

**OBERLIN COLLEGE, OBERLIN, O** — A coeducational institution founded in 1833 by two home missionaries, natives of Vermont, Reverend John J. Shupherd and Mr. Philo P. Stewart, and named after the devoted and far-sighted Alsatian pastor and philanthropist, Jean Frederic Oberlin (*qv*). The founders hoped to establish a community and educational center that might do in the Mississippi Valley work something like that accomplished by Oberlin in Steinthal. There was no definite attempt to be revolutionary, except in the Christian standards of the community established. But in the outcome, the institution did prove a pioneer in various directions. Full college education was opened to women, college coeducation of the sexes adopted, race barriers thrown down in the decision of the trustees in 1835 to admit students "irrespective of color," and the community became a center of anti-slavery and missionary agitation. Work in the preparatory department of the College began in 1833, and in the College department in 1834. The theological department was instituted in 1835, under the leadership of Reverend Charles G. Finney, the theologian and evangelist. The early teachers were largely from New England, and the college standards adopted from the first were those of the best New England colleges. Four young women were enrolled as freshmen in the regular college course in 1837, three of these were graduated in August, 1841, and are supposed to have been the first women to receive degrees in the Arts under the standards prevailing in the best men's colleges of the day. The Oberlin Conservatory of Music was organized as a department of the college in 1867. The College now regularly gives the degrees of A.B., Mus. B., A.M., and B.D. The entrance requirements for admission to the College of Arts and Sciences are fifteen units. The same requirements are now made for admission to the Conservatory of Music. Candidates for the degree of B.D. in the Theological Seminary must have the rank of college graduates. Oberlin is on the original list of accepted colleges of the Carnegie Foundation for the Advancement of Teaching.

The College has always had a self-perpetuating Board of Trustees, without denominational tests of any kind. Since 1890 the Alumni have elected one fourth of the Board by direct vote. There are at present seventy-five professors and associate professors, and sixty-eight other teachers and officers. For the year 1911-1912, there were enrolled in all departments 1780 students (all but 300 of college rank, and 998 in the College Department itself) from forty-five states and sixteen foreign countries, more than one half from outside Ohio. The alumni list numbers 6691; and the total number of students who have studied in Oberlin College since 1833 is 38,133. The college library contains 120,000 bound volumes, and about the same number of unbound volumes and pamphlets. The productive endowment of the college (March 1, 1912), is \$2,207,046.32, and the value of buildings (twenty-two), grounds, and equipment, is \$1,634,338.14. The total assets of the college amount to more than \$4,000,000. The entire annual income of the institution from endowment and term bills for the year 1910-1911 was \$386,735.50.

H C K

**OBERLIN, JEAN FREDERIC** (1740-1826) — Philanthropist and educator, was for nearly sixty years pastor of the Ban de la Roche (Steinthal), a big and sterile district, some thirty miles southwest of Strassburg. His heroic and successful efforts to civilize a people suffering from the ravages of war and lapsing towards barbarism attracted the attention of Europe. He had roads constructed and better houses built, he taught improved methods of farming and introduced fresh industries, but his most fruitful work was the education of the young and his most novel device the establishment of infant schools. These were directed by motherly women, one of whom, Louise Schepler, was awarded a Monthyon *grand prix de vertu* and is described on her tombstone as "*fidèle servante et collaboratrice de Papa Oberlin conductrice de la jeunesse*." The aims of the infant schools were rooting out bad and forming good habits, inculcating the first notions of morality and religion, teaching the elements of reading, writing, and arithmetic, and eliminating the use of patois. The little ones were assembled in spacious rooms. The youngest played together while the rest were learning to spin, to knit, and to sew. Natural history and scripture were taught by pictures. In fine weather the *conductrices* took their charges for walks and made them find the flowers which had been described to them. These became the subjects of familiar talks and a desire to grow them was created.

In 1801 Mme. de Pastoret, inspired by Oberlin's example, established in Paris a *salle d'hospitalité*, but it was more a crèche

than an infant school and does not appear to have lasted very long

D S-N

See INFANT SCHOOLS

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**OBERREALSCHULE** — The upper scientific school in the Secondary School System of Germany

See GERMANY, EDUCATION IN

**OBJECT AND SUBJECT** — The older classic use of the terms subject and object was the opposite of that current to-day. According to the Aristotelian logic only substances, things existing as individuals not as qualities or properties of things, could be subjects of propositions and the subject matter of adequate knowledge. Subject and substance were thus practically identified, some trace of this meaning remains in the current use of the term subject matter. Scholastic philosophy, under the influence of Arabian thought, introduced the term "object" to designate things in their "second intention," that is, not as things on their own account, but as objects of thought or mental consideration. A chimera would thus exist objectively but not as a subject, according to the opponents of Platonic realism, universals (man, as distinguished from individual men) also had existence only objectively. Modern philosophy effected a complete reversal of this usage. The tendency began with the introduction of the psychological mode of thinking of Locke and his successors, and was practically completed by Kant. As the function of the self as the center of thinking, feeling, knowing, was insisted upon, the term subject was more and more used as a synonym for ego, mind, self, and the adjective subjective to denote mental existences. The problem of the relation of subject and object came to mean the problem of relation of mind and the world, especially as they enter into the constitution of knowledge. By the transcendental idealistic school much was made of the fact that the thinking ego is at once subject-object, since the thinking self is capable of presenting itself to itself as object. In self-consciousness, as thus defined, was found the key to the problem of the relation of particular minds or sentient subjects to the world, — a conception that had a great vogue in post-Kantian idealism

J D

See EPISTEMOLOGY, METHOD; SELF

**OBJECT TEACHING** — Object teaching was not, as the term may seem to imply, a mere method of imparting knowledge through the means of objects themselves, but a complete scheme of elementary instruction. It may be said to be an application of the inductive method to the teaching of children. Its aim was to begin with the training of the senses and proceed from this to the development of the entire nature of the child. The chief laws of its method were (1) instruction by actual inspection, (2) go from the easy to the difficult, (3) give in each hour, if possible, a little whole in contents and form, (4) use conversation. All the great thinkers and educators from Luther on, Rabelais, Francis Bacon, Comenius, Locke, Rousseau, and the rest, forecast the principles which were developed by subsequent effort into object teaching.

Comenius (1592-1670) was probably the first definitely to formulate the principles of object teaching and to work out a graduated system of instruction applying the inductive method to schoolroom procedure. "Since the beginning of knowledge must be with the senses," he says, "the beginning of teaching should be made by dealing with actual things. The object must be a real, useful thing, capable of making an impression upon the senses. To this end it must be brought into communication with them: if visible, with the eyes, if audible, with the ears, if tangible, with the touch, if odorous, with the nose, if sapid, with the taste. First the presentation of the thing itself, and the real intuition of it, then the real explanation for the further elucidation of it" (*The Great Didactic*, Ch. XX, §5-7). But inasmuch as the presentation of the thing itself is so frequently impossible, he advised the use of pictures as the representations of things, that the words which related to them might be understood. He prepared and published textbooks, putting his theories into practice. These books were translated into various languages and were used for many generations wherever there were schools for children. The best known of these is the *Orbis Pictus*, or the *World in Pictures*. (See COMENIUS.)

After Comenius, Rousseau (1712-1778) is worthy of special mention as having been the first to base his educational theories on the child to be educated. The child's experience, accordingly, the facts of nature round about him, is to furnish the material for education. "In general, never substitute the sign for the thing itself, save when it is impossible to show the thing, for the sign absorbs the attention of the child and makes him forget the thing represented" (*Emile*, Book III). It was as a result of acquaintance with *Emile* that Pestalozzi first conceived the idea which he subsequently expanded into the system of which he is worthily entitled to be called the father. (See ROUSSEAU.)

Pestalozzi (1746-1826) did the most, not only to formulate object teaching, but also to put it on a scientific, philosophic basis. "The most essential point from which I start is this: Sense impression (ANSCHAUUNGSUNTERRICHT) of nature is the only true foundation of human instruction because it is the only true foundation of human knowledge. All that follows is the result of this sense impression and the process of abstraction from it" (*The Method*, translated by Lucy Holland and Frances Turner and edited by Ebenezer Cooke, second edition, p. 316). "The means by which a man whose mind is cultivated makes clear to himself all knowledge gained by sense impression come from number, form, and language. The instruction of children therefore should proceed from these three elemental points: (1) to teach them to look upon every object that is brought before them as a unit,—that is, as separated from those with which it seems connected, (2) to teach them the form of every object,—that is, its size and proportions, (3) as soon as possible to make them acquainted with all the words and names descriptive of objects known to them" (*How Gertrude teaches her Children*, translated by Lucy Holland and Frances Turner and edited by Ebenezer Cooke, second edition, p. 145). According to these principles Pestalozzi divided his object lessons into three classes: (1) those on number, (2) on form, (3) on speech. Those on number were mainly lessons in mental arithmetic, those on form comprised geometry, drawing, and writing, those on speech included instruction in speaking and singing tones, instruction in words, or the means of becoming acquainted with single objects, and instruction in language itself, or the means of expressing one's self clearly, not only upon number and form, but also upon all other qualities of things, as well those qualities which are perceived through the five senses, as those which are perceived, not by means of a single intuition of them, but by means of our faculties of imagination and judgement." Thus the lessons on speech became the basis for instruction not only in spelling, reading, and language, but in geography, history, and natural history as well. It is not within the purpose of this article to criticize. It is well known, however, that in developing these principles Pestalozzi failed to observe the order in which he first formulated them. In his books, instead of providing for beginning with the object itself and calling attention to its identity and form, he began with words about objects and not even about objects to be under observation at the time, but about objects remote and incapable of being brought within the view of the child. In his schoolroom practice his impatience impelled him continually to prompt the pupil in both the idea and the expression of it, so that he often omitted altogether the first two elemental points of in-

struction and allowed the third to degenerate into an exercise in mere words. His so-called object lessons were not object lessons in fact, and were not even lessons in language. (See PESTALOZZI.)

In Germany Pestalozzi's disciples caught the spirit of his method. Taking his philosophic principles rather than his exposition of practice of them as a basis, they adapted them to their own needs and wrought out a system of their own, whereas Pestalozzi set up the human body as the nearest and ever present object lesson to the child, they proceeded in a more natural manner and struck out the following sequence: schoolroom, family, house, house floor, the sitting room, the kitchen, the ground, the cellar, the yard, the habitation, the city, the village, the garden, the field, the meadow, the wood, the water, the atmosphere, the sky, the season, the year and its festivals, man, body and soul—God. Or again, Diesterweg (1790-1866) finds seven different kinds of intuitions to be awakened: sensuous, mathematical, moral, religious, æsthetic, purely human, and social. Others were still more independent in working out and applying the Pestalozzian theory. Early in the last half of the nineteenth century object teaching had become established in the majority of the elementary schools of Germany. This had not been accomplished without serious opposition. The famous Prussian Regulation of October 3, 1854, spoke plainly on this subject. In 1872, however, a committee appointed by the Congress of Elementary Teachers meeting in Berlin submitted to Dr. Falk, the Minister of Ecclesiastical Affairs and Education, a set of resolutions or requests among which was one recognizing the importance of object teaching and asking for the organization of training schools in accordance with the pedagogic principles of Pestalozzi. For half a century before this time the question of object teaching had been engaging the best efforts of the leading educators in Germany. Among the many books on the subject may be mentioned those of Plamann, Denzel, Harnisch, Diesterweg, and Carl Richter (*q v*).

In France Pestalozzi and his methods were repudiated by Napoleon and were given no countenance in the schools during his time. From the downfall of Napoleon to the Franco-Prussian War the value of the labors of Pestalozzi was recognized by the leading educators of France, and his methods were in some instances put into practice. Jullien and Chavannes both placed their children under Pestalozzi's tuition and endeavored in various ways to arouse interest in Pestalozzi's work. Maine de Biran (*q v*) opened a Pestalozzian school at Bergerac in 1808, which continued in existence for nearly seventy years. Object teaching was not adopted as a system in the schools of France nor put into general use in



any way prior to the Franco-Prussian War. After the close of this war a new impetus was given to the Pestalozzian movement. At the exhibition of 1878 a conference of the teachers of France considered the question of sense-impression teaching, which resulted in placing it on such a firm basis that it was generally introduced into all the elementary schools.

In England the object lesson as a separate branch of study was first given prominence by Charles Mayo (*qv*), who had spent almost a year in Pestalozzi's School at Yverdon, and his sister, Elizabeth Mayo, through the Home and Colonial Training School at Grav's Inn Road, London, attempted to reduce the Pestalozzian principles and methods to a practicable shape by the preparation of graduated courses of instruction. Manuals about objects and lessons on those objects to be learned and recited to the teachers were the ultimate result of the attempt of Charles Mayo "to preserve the Idea but adapt the Form" to those circumstances in which he might be placed. (See INFANT SCHOOLS, HOME AND COLONIAL INFANT SCHOOL SOCIETY.)

In America object teaching was employed in the various Pestalozzian schools of Joseph Neef (*qv*) in Philadelphia in 1809, in Village Green, Pa., in 1813, in Louisville, in 1816, and in New Harmony, Ind., in 1825. The Westfield Normal School (established at Barr, Mass., in 1839, removed to Westfield, Mass., in 1844) was the pioneer in introducing object teaching into the public schools. This school was also the first to show that all branches of learning may be taught by the same objective method. Object teaching at Westfield, however, attracted little general attention. It was left to the Normal School at Oswego, New York, to become the center of object teaching in America. In 1860 Edward A. Sheldon (*qv*) while on a visit to Toronto saw in the National (Educational) Museum there collections of the pictures, models, objects, and appliances used by the Home and Colonial School Society in England. The schools of Oswego had been developed out of his philanthropic activities, it was in the interest of these schools that he visited Toronto, and on his return to Oswego he at once began the reorganization of the schools there with special reference to object teaching. He was well fitted to make this adaptation by his previous thinking along the same lines and by his own earnest and partially successful efforts to make practical the education of the poor. In 1861 Miss M. E. M. Jones formerly connected with the Home and Colonial Training School, above referred to, came to Oswego as a training teacher and further elaborated the principles of object teaching. She was succeeded in the following year by Hermann Krusi, Jr. (*qv*). The system became thoroughly established at Oswego. Mr. Sheldon and the other authorities at

Oswego stood firm against the hostility aroused by their new methods. At their invitation in 1862, a committee of the leading educators of the country investigated the nature of the new work. Subsequently, as a result of a paper read by Mr. Sheldon before the National Teachers' Association held at Chicago in 1863, that association appointed a committee to look into and report upon the principles of object teaching. This committee reported at the meeting of the association held at Harrisburg in 1865. With only one dissenting voice the report was heartily in favor of the adoption of object teaching in the elementary department of the public schools. The Oswego Normal School continued to be the center of influence for object teaching until its principles and methods became fused with those of the nature-study movement. In 1876 Professor H. H. Straight, a disciple of Agassiz and Shaler, went to Oswego. His views of science teaching in the elementary school underwent gradual but decided change under the Pestalozzian influence in which he was placed, and the object lesson of Oswego was modified in turn by Professor Straight, who recognized the need of system and correlation. William T. Harris (*qv*), inspired by Pestalozzian principles, worked out a method for the teaching of natural science. The study of natural science was introduced not only into all grades of the elementary schools of St. Louis, but through the direct and indirect influence of Dr. Harris, it became incorporated, in one form or another, into the curricula of most of the common schools of the United States. So that it is reasonably certain that nature study at least in spirit is the direct descendant of object teaching. It may safely be asserted that, not only in America but in all other advanced countries as well, most of the accredited methods of elementary instruction now in use, can be traced more or less directly to the principles of object teaching. E. R.

See OBJECTIVE METHOD, CONCRETE AND ABSTRACT, REALISM IN EDUCATION, etc.

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**OBJECTIVE METHOD** -- The use of concrete experiences, of sense perceptions, as a basis for teaching ideas, concepts, relations, etc., and for giving the meaning of language symbols, is termed an objective method of instruction. It assumes a wide variety of forms. When first introduced into the elementary classroom, it implied the bringing of objects into the classroom, later it included school excursions, where pupils leave the school-room to make observations of natural and institutional facts. Laboratory teaching is

a form of objective work. The action work employed by primary children in acting out the meaning of sentences read by them, and the more complicated children's dramatizations of literature are derived modes of objectification which aid in giving clear sense impressions. Such visual aids as pictures, graphs, and maps are likewise objective inasmuch as they are pictorial substitutes for real objects.

Prior to the second quarter of the nineteenth century there was little object teaching. The use of objects in giving a concrete basis for abstract notions seems to have gained its initial hold on the schools through the introduction of Pestalozzian methods of teaching. The introduction of school subjects requiring objective treatment, such as elementary science, nature study, and manual training, fortified the previous movement and gave it considerable extension. Together these two movements established the respectability of objective teaching. Schoolroom experience quickly gave it an empirical sanction. It remained for the modern psychological movement in education to give it a scientific sanction and to refine its uses.

It is quite fair to say that the use of objective work decreases more or less gradually from the first to the last year, the underlying assumption being that the use of objects has a teaching value that decreases as the maturity of the pupils increases. Current practice does not proceed far beyond the application of the simple and somewhat crude psychological statement that the youngest children must have much objective teaching, the older less, the oldest least of all. The lack of a more refined analysis of the worth of object teaching necessarily leads to some neglect and waste. Examples from the teaching of arithmetic, where objective teaching has been a matter of greatest controversy, will indicate the status of objective teaching in general. If a topic occurs late in the course of study, as in the case of square root, the subject is not so well taught because of the current prejudice or tradition against the use of object teaching in the higher grades. On the other hand, it is also probable that the teaching of addition is often accompanied by wasted time and energy simply because lingering over objects in the lower classes is the current fashion. Reform in the direction of a more refined and exact use of object teaching is suggested by the extended objective treatment of fractions and mensuration, which partially disregards the increased maturity of the children studying these topics. This is a considerable departure from the slight objective treatment of other arithmetical topics taught in the same grades. Such exceptional practices suggest that the novelty of a topic is the condition calling for objective work in instruction. It is immaturity in a special subject or situation which determines the amount of basal objective work required.

The correlation is not with the age of the pupil, but with his experience with the special problem or subject in hand. It is of course true that the less experienced the student is, the greater the likelihood that any subject presented will be novel and strange. Only in this indirect manner does the novelty of subject matter coincide with mere youth as an essential principle in determining the need of objective presentation. The naive assumption of the older enthusiastic reformers that objective work is a good thing psychologically, one of which the pupil cannot have too much, is by no means the accepted view of the modern educator. With the latter, objective presentation is an excellent method at a given stage of immaturity in the special topic involved, but it may be uneconomical, even an obstacle to efficiency, if pushed beyond.

There is, then, a certain coincidence of the psychologist's scientific criticism and the conservative teachers' common-sense criticism when both look suspiciously upon a highly extended object teaching. The teacher, on grounds of experience, says that too much objective teaching is confusing and delays teaching. The psychological critic says it is unnecessary and wasteful. The result is that the distribution of objective work has somewhat changed of late. More subjects are developed in the higher grades through an objective instruction than before. Perhaps no fewer subjects in the lower grades are presented objectively, but the extent of objective treatment of each of these has undergone considerable curtailment.

The existing defects in objective teaching are not restricted to a false placing or distribution. The quality of the teaching use of objects is likewise open to serious criticism. Object teaching is a device so successful, as against prior non-objective teaching, that it has come to be a standard of instruction as well as a means. As long as objects—any convenient objects—are used, the teaching is regarded as good. Given such a sanction, the inevitable result is an indiscriminating use of objects. The process of objectifying tends not to be regulated by the needs of the child's thinking life, it is determined by the enthusiasm of the teacher and the materials convenient for school use.

The first fact which is noted in estimating objective teaching is the artificiality of the materials employed. Primary children count, add, etc., with things they will never be concerned with in life. Lentils, sticks, tablets, and the like are the stock objective stuff of the schools, and to a considerable degree this will always be the case. Cheap and convenient material suitable for individual manipulation on the top of a school desk is not plentiful. But instances where better and more normal material has been used are frequent enough in the best schools to warrant the be-

lie that more could be done in this direction in the average classroom. The "playing at store," the use of actual applications of the tables of weights and measures, are cases that might be cited.

The materials used are not only more artificial than they need be, but are too restricted in range. As has already been said, the types of material capable of convenient and efficient use in a schoolroom are not numerous. But the series can and ought to be extended. More forms of even the artificial material should be used, thus minimizing the danger of monotony. The blame for the narrow range of materials used falls partly on school boards who do not vote a sufficient allowance for teaching materials to primary teachers, partly on teachers who do not exercise sufficient ingenuity in devising new forms of objects or show the vigor requisite to a shift from one material to another, and partly on the supervisory staff which has neither been insistent upon nor sensitive to the need of a more interesting range of objective stuffs.

Even the narrow range of materials in general use might be better employed than it is. There is, of course, a distinct tendency to vary the object, merely because a child gets tired of it as a material. But a different quality of variation is required when the pupil is to derive abstract notions from concrete materials. It is too frequently the case that the teacher will treat the fundamental addition combinations with one set of objects, *e.g.* lentils. In all the child's objective experience within that field there are two persistent associations—"lentils" and "the relation of addition." The accidental element is thus emphasized as frequently as the essential one, and being concrete has even a better chance to impress itself. A wide variation in the objective material used would make teaching more effective, particularly with young children.

The nature of the materials proper to objective teaching has likewise been too narrowly interpreted. Objective teaching has meant, almost exclusively, instructing or developing through three-dimensional presentations. There is a wide range of two-dimensional representations, *i.e.* pictures, which have been neglected, which for all the psychological purposes of education have as much worth as so-called objects. Such quasi-objective material has been little used by teachers save as it appears in textbooks. Even the textbook writers have not used pictures with a deep sense of their intrinsic worth. They are printed as a mere substitute for objects in a period when objects are popular pedagogical materials. The geometric figure or diagram has had a restricted use with both the teacher and the textbook writer. Its most frequent use has been in treatments of mensuration. There are, of course, obvious disadvantages to pictures and diagrams. The things repre-

sented in them and by them are not capable of personal manipulation by the child in the ordinary sense. But they have a superiority all their own. They offer a wider, more natural, and more interesting range of concrete experience.

There are other curious phases of narrowness in the current pedagogical interpretation as to what constitutes a concrete or objective experience. It will be noted that visual objects are the ones generally employed and that they are generally inanimate objects. Of late there has been some tendency to use hearing and touch as a concrete basis to teaching. Advantage is also taken of the social plays of children, and then games with things. Here the children themselves, and their relations and acts, are the experiences from which abstract notions are obtained. With some of the best teachers in the lowest grades it is no longer unusual to see children moving about in all sorts of play designed to add reality to, and increase interest in, language and its concepts.

The conservative teacher's use of objects is artificial and lacking in unity. If he brings a series of objects into the development of a single topic, they have little relation to each other. They represent no actual grouping. Their sole connection with one another is that they exemplify the same abstract truth. Beans, cardboard squares, and shoe-pegs may all be employed in the same lesson. The progressive teacher offers more logical unity in their materials. To "play at store," to utilize games, to deal with things within a single picture, is to bring the concrete materials into the classroom with a more nearly normal setting. It is in no small measure due to this better use of material that the progressive teacher is gaining power throughout the elementary grades.

Inductive teaching has been one of several movements affecting objective teaching. The effort of teachers to escape the slavishness of mere memoriter methods and to approximate real thinking led to the introduction of inductive teaching. Necessarily objective teaching became more or less identified with the new movement and was influenced by it. So, it has been said of objective work in arithmetic, as it has been said of laboratory work in the sciences, that such instruction is a method of "discovery" or "rediscovery." Such an alliance has had its beneficial effects upon objective teaching, it has redeemed it from the aimless "observational work" of an earlier "objective study." But too frequently it confused an objective mode of presentation with a scientific method of learning truth, two activities having a common logical basis, but not at all the same. Under the assumption that the "development" method is one of "rediscovery," the tendency is to give the child as complete a range of concrete evidences as would be necessary on the part of the scien-

tist in substantiating a new fact. The result is that long after the child is convinced of a truth the teacher persists in giving further objective illustrations of it. The child loses interest in the somewhat monotonous continuance of objective manipulations, and the teacher has naturally wasted time and energy. If the fact or the process that the teacher wishes to convey can be transmitted with fewer objective treatments (the authoritative treatment of the teacher counting for something in school as authority counts everywhere), then it is unnecessary to exhaust the objective treatments of a fact. Inductive teaching and learning are not equivalent to inductive discovery; and to hold them identical is necessarily the too great use of objects in teaching.

Another modern movement in teaching method which has had a conspicuous effect on objective teaching is the movement toward "self-activity" on the part of the child. The recent favor enjoyed by manual training, nature study, self-government, and other active phases of school life is an index of the general movement in mind. Its influence has not only forced the introduction of new subjects, it has changed the manner of presenting the older subjects of the elementary curriculum. Reading, language, spelling, and arithmetic have responded by incorporating an active use of objects by the children themselves. There was a time when objective work in the schools was a passive matter so far as the child was concerned. Any active manipulation of the objects that might be required was cared for by the teacher, the child being merely a passive observer. This is at present much less the case than formerly, the influence of "self-activity" having entered into contemporaneous pedagogy. The present situation is one where the child sometimes merely observes objects and sometimes actually handles them. At one extreme the teacher himself demonstrates in the presence of the class, and records the relations in appropriate symbols, the class being in the position of interested spectators of a process. At the other extreme the teacher puts the objective materials on the desks of the children and, with a minimum of instruction in advance, directs them towards the desired experiences and conclusions.

There is probably no single type of method which has been as influential for good in the schools as objective teaching. But the appropriate refined use of the varied forms requires an analysis and care which the average classroom practitioner has not given. More accurate interpretations and applications of the method are necessary. H. S.

See EXCURSIONS, SCHOOL, OBJECT TEACHING

**OBLATES OF MARY IMMACULATE, THE** — See TEACHING ORDERS OF THE CATHOLIC CHURCH.

**OBSERVATION SCHOOLS** — Schools connected with institutions for the training of teachers where the prospective teacher observes practical work of instruction in connection with his theoretical training. The term is used to distinguish such an affiliated school from those where the prospective teacher is allowed trial teaching usually termed a Practice School (*qv*) or a Training School. It is also distinguished from closely related schools which may be termed Experimental Schools (*qv*), which are used for educational experimentation under expert direction. The term Observation Schools, however, is used synonymously with the term Model School (*qv*).

**OBSERVATIONAL GEOMETRY.** — See GEOMETRY.

**OBSERVATIONAL METHOD** — See OBJECTIVE METHOD

**OBSESSION** — An impressive and persistent idea similar to a fixed idea, which holds the field of consciousness to the exclusion of normal ideas. The idea is of exaggerated importance and usually leads to certain abnormal actions. Although at times the ideas are understood by the individual to be abnormal, they cannot be restrained. Pathological action is not a necessary part of the obsession for many persistent ideas lead to no special action, any constant recurrence of one idea is properly called an obsession.

The commonest forms of obsession are fears relative to the performance of certain acts, or to the power or influence of certain conditions or things. The fear of walking under a ladder, of walking on the cracks of the sidewalk, of leaving a pin lying on the street, are examples of the commonest obsessions which, however, do not become pathological because of later education and of the demands of business or professional life. They may, however, lead to more marked abnormalities, such as the phobias (*qv*). The fear of open places (agoraphobia), the fear of closed places (claustrophobia), the fear of high places (acrophobia), the fear of fire (pyrophobia), are the most common of these.

Obsessions of doubt are also frequent. These are of having performed some action which should not have been performed, or not having done a thing or of having done it improperly, or of having given undue or improper credence to certain things, mainly religious. The so-called *dehvre de negation* may be considered an extreme example of this. The individual denies the existence of the world, the existence of his own body, and everything. This leads to delusions that he is unable to die and, if the emotional tone is depressed, he may believe that his sufferings are to continue throughout eternity. On account of the insistent idea the obsession eventually may

lead to the committing of crimes, to certain genital acts, to scruples, to disjointed thought, and to hypochondriacal ideas resulting at times in suicide. Here also belong the so-called simple monomanias (*q v*). The kleptomaniac has an insistent idea, he is obsessed, he must take the article which is close at hand, the dipsomaniac cannot withstand his insistent idea, he cannot let an opportunity to take alcohol go by, even though he must steal a drink, the pyromaniac must start a fire, the impulse cannot be controlled. There are also the doubters (*folie du doute*), who are forever considering the possibilities and proprieties and the values of certain actions. At times these are simple, the doubt referring to simple acts such as having closed the safe, or locked the door, or that the clothing has been improperly buttoned or fastened. These doubts lead to the repetition of the action. The man returns to his shop and examines the safe again, the man and woman feels of the buttons or hooks to see that they are properly fastened. When doubts are exaggerated, they may lead to the performance of the same act dozens of times. The questionings and objections and doubts sometimes, because they cannot be answered, result in an *aboulia*, in which condition the individual does nothing because he cannot decide whether a certain action will give a proper result.

These conditions are found in psychasthenia (*q v*), neurasthenia (*q v*), hysteria (*q v*), and in other functional neuroses and psychoneuroses. A special pedagogical interest lies in the facts that they usually begin in childhood on account of some mental accident, and that they develop as time passes. The treatment of these cases can be carried out only when the cause or causes are discovered, and with these as a basis a reconstruction and reeducation or perfection of habit in the individual is brought about. Both etiology and treatment indicate fully the importance to the teacher of a knowledge of the condition.

S I F

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**OCCIDENTAL COLLEGE, LOS ANGELES, CAL** — A college established in 1887 by men of Presbyterian faith for the purpose of providing opportunity for Christian education for the young people of Southern California. Three years later, having absorbed McPherron Academy, it was incorporated under the laws of the State of California as Occidental College of Los Angeles. During

the year 1911-1912 its enrollment numbered 300 and its teaching force twenty-two professors and instructors. The present campus, to which additional adjoining land has been added, contains twenty-five acres, and plant of three buildings, the old plant having been destroyed by fire in 1896. The college will move to a new site September, 1913. During the past five years the college has become non-denominational, and the academy has been discontinued. A. G. P.

**OCCOM, SAMSON** (1732-1792) — American Indian educator. He belonged to the tribe of the Mohicans and was educated at Moor's Charity School at Lebanon, Ct., conducted by Eleazar Wheelock (*q v*). He taught at New London, Ct., and for ten years he conducted an Indian School on Long Island. In 1766 he was sent to England by Dr. Wheelock to solicit the funds which secured the establishment of Dartmouth College (*q v*). He was a minister of the Presbyterian church, and devoted the remainder of his life to religious and educational work among the Indians. W. S. M.

**OCCUPATIONS** — See ACTIVITY; INDUSTRIAL EDUCATION, KINDERGARTEN.

**OCKHAM (OCCAM), WILLIAM OF.** — See SCHOLASTICISM, SCHOOLMEN.

**O'CREAT** — N. O'Creatus, as he describes himself, was a pupil of Adelard of Bath (*q v*), and to this scholar he dedicates one of his books, a work on multiplication and division: "N. O'Creati liber de multiplicatione et divisione numerorum ad Adelardum Bathoniensem magistrum suum." The preface to this work begins as follows: "Prologus N. O'creati in Heleceph ad Adelardum Betensen magistrum suum." The meaning of Heleceph (Helecep, Ars Helecep) is unknown, although there are several conjectures, as that it is from the Arabic *algeyff*, a study. The life of O'Creat is as unknown as the curious word that he uses, for we know nothing of his birth or death or works. He lived in the twelfth century, and was probably a teacher of some distinction, acquainted with Arabic as well as with Latin. The name seems to show that he came from Ireland, and it is possible that he learned Arabic from Adelard, who was a master of this language. D. E. S.

**ODESSA, ROYAL NEW RUSSIAN UNIVERSITY** — See RUSSIA, EDUCATION IN.

**ODO, ST** — See CLUNY.

**ODOR** — Odors are the stimuli for the sense of smell. The general assumption is that odorous substances give off small particles which are borne in the air to the olfac-

tory membrane and there induce chemical changes in the nerve. What the chemical character is that serves to excite the nerve is not known, although there is some evidence that substances of similar chemical composition have similar odors. Practically all of the odorous substances belong in the fifth, sixth, and seventh groups in the periodic classification. Odors are all named from objects, there are no true names for odors.

W. B. P.

See OLFACTORY SENSATIONS

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**CENOPIDES** — See GEOMETRY

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**OHIO NORTHERN UNIVERSITY, ADA, OHIO** — A coeducational institution established in 1871 as the Northwestern Ohio Normal School. In 1885 the name was changed to Ohio Normal University, and in 1898 this institution was sold to the Central Ohio Conference of the Methodist Episcopal Church, which obtained a new charter under the present title in 1904-1905. The following departments are maintained, commerce, engineering, law, liberal arts, music, pharmacy,

normal school, fine arts, and expression. Fifteen units of high school work are required for admission to the college of liberal arts. The usual college degrees are given. The enrollment of students in 1911-1912 was 1869. There is a faculty of thirty-eight members.

**OHIO, STATE OF** — Ceded by Virginia to the Federal Government in 1784, organized as a part of the Northwest Territory by the Ordinance of 1787, and admitted as the seventeenth state in 1802. It is located in the eastern part of the North Central Division, and has a land area of 40,740 square miles. In size, Ohio is about the same as Virginia, a little smaller than Pennsylvania, and about the size of England proper. For administrative purposes the state is divided into eighty-eight counties, and these in turn into townships, cities, incorporated towns, and special school districts. In 1910 Ohio had a total population of 4,767,121 and a density of population of 117 persons to the square mile.

**Educational History** — The land ordinance of 1785, providing for the rectangular survey of lands in the Northwest Territory, in which "lot No. 16 in every township, for the maintenance of schools within the said township," was ordered to be reserved for sale, marks the beginning of educational legislation for Ohio. In the contract for the sales of tracts of land, made by the Continental Congress in 1787 with the Ohio Company, and in 1788 with John Symmes, lands for schools, religion, and a university were reserved and granted. (See NATIONAL GOVERNMENT AND EDUCATION.) In 1799 the Northwest Territorial legislature enacted a law against trespass on school lands, imposing a fine of \$8 for any injury to certain specified trees, and \$3 for injury to any unspecified tree. This was the only territorial legislation in Ohio having any reference to education.

On the admission of Ohio in 1802, in return for a tax exemption for five years on all national lands sold, Congress gave the sixteenth section in each township to the inhabitants thereof for the benefit of schools, and the new state put into its state constitution three clauses relating to education and learning. These declared that religion, morality, and learning should be forever encouraged, guaranteed equal benefits to the poor in the schools supported from the land funds, and permitted the incorporation of societies and institutions for the support of schools and the advancement of learning. In 1802 the legislature created the University at Athens, and in 1809 Miami University (*qv*) was founded. In 1803 the legislature incorporated the Trustees of the Erie Literary Society, in 1805 the Trustees of the Dayton Library, and in 1808 the legislature granted incorporation to Academies at Chillicothe and Dayton. For the next

nine years almost the only educational legislation was the chartering of such institutions, and in 1817 the necessity for these special acts was removed by the enactment of a general law for the incorporation of schools and library companies. The only other educational legislation up to 1821 was the enactment, in 1806 and 1810, of laws authorizing the organization of any school township having twenty voters, the election of three township trustees and a township treasurer to look after and care for the school sections, and further authorizing the trustees to divide the townships into such school districts as they might see fit, and to grant to any schools organized their share in the profits of the school land section. No other means of school support seems to have been provided before 1821.

The first public school law was enacted in 1821, but was so inadequate that the law of 1825 is usually regarded as the real beginning of the public school organization in Ohio. This ordered the trustees of the civil townships to organize school districts, retained most of the provisions of the Act of 1821 with reference to the duty of school officers, made the first provision for the certification of teachers, and levied a one half mill county school tax. The school revenues were still inadequate, and the rate bill was continued as before. The branches of study to be taught were reading, writing, and arithmetic. Three examiners of teachers were to be appointed by the county court of common pleas, who, in addition to examining teachers, were to visit and supervise the schools.

The year 1827 marks the establishment of the common school fund of the state. In 1824 Ohio petitioned Congress for permission to sell its school lands, which Congress granted in 1826. The law of 1827 authorized the sale, ordered the money to be placed in the State Treasury to the credit of the townships, and pledged the faith of the state to pay interest on the deposits at 6 per cent. In 1831 the salt lands, given to the state at the time of its admission to the Union, were also devoted to education. New general school laws were enacted in 1829, 1831, 1834, and 1836. Each was merely the combination of its predecessor with such minor amendments as had been enacted in the interval. In 1827 the minimum school tax on each householder was fixed at \$1, though this might be paid by two days' labor on the schoolhouse, a provision which continued until 1838. In 1827, also, all fines for immoral conduct in any school district were to be paid over to the district school funds. In 1829 the first special city school law (see CINCINNATI) was enacted, negroes were debarred from school privileges, the county school tax was increased to three fourths mill, and school district meetings were more fully provided for. The provisions for voting school district taxes, and the exemptions,

were somewhat minutely specified. A three months' school term and the first grading of teachers' certificates were also provided for. In 1831 the school district directors were constituted a body politic and corporate, a census of school children was provided for, the basis of apportionment was changed from householders to census children, and teachers' certificates were to be based on a knowledge of reading, writing, spelling, and arithmetic, with special certificates to women on reading, writing, and spelling only. In 1834 an assistant examiner of teachers for each township, to be appointed by the county board, was provided for. In 1833 and 1834 the fuel tax was provided for in the law, and school directors were authorized to furnish the quota of any one neglecting to do so, and to charge the same to the delinquent. In 1836 the county school tax was increased to one and one half mills, with permission either to county commissioners to levy two mills or to townships to levy an additional one and one half mills.

In 1829 there was organized at Cincinnati the Western Academic Institute and Board of Education, which in 1832 became the Western Literary Institute and College of Professional Teachers. For ten years this was almost the only strongly stimulating agency in education in the state. It sought to promote the diffusion of knowledge as to education, and to elevate the character and quality of the teachers of the state. Among its members were Albert Picket, Lyman Beecher, Samuel Lewis, B. O. Peers, and Professor Calvin E. Stowe. Money was subscribed, an agent was sent to visit the schools of the state, and delegations appeared before the legislature in the interests of education. Under the influence of this society, Professor Calvin E. Stowe was commissioned by the legislature to visit Europe and to report on the systems of elementary instruction found there, and 10,000 copies of his report were ordered to be printed by the legislature in January, 1838. In 1836 a state convention for promoting education was held, and in 1837 the legislature was prevailed upon to make the beginnings of state school supervision, by the creation of the office of Superintendent of Common Schools. The Superintendent was elected by the legislature for a one-year term, and was to receive a salary of \$500. His duties were almost entirely statistical and clerical. Finally, in March, 1838, and largely as a culmination of these efforts, what has become known as the great school law of 1838 was enacted. This was based on the recommendations contained in the first report of the new Superintendent of Common Schools, and marked a great advance in school legislation for the state. It was based on the idea of strengthening the power of the state and of the townships at the expense of the districts. The office of State Superintendent of Common



Schools was continued, but changed to a three-year appointment, and the salary increased to \$1200. A state common school fund was created, as distinct from the common school fund or township fund, established in 1827. In this new fund were placed the salt lands, devoted to education in 1831, interest at 5 per cent on the Surplus Revenue, distributed in 1837 (see NATIONAL GOVERNMENT AND EDUCATION), the state's revenue from banks, insurance, and bridge companies, and some other minor sources of income. The income on all of these items amounted to about \$200,000 a year and this was to be distributed to the townships on the basis of the school census. A state school tax of one half mill was also voted a few days later, and the required county school tax was increased to two mills. For the townships, every township clerk was made *ex officio* township superintendent of schools with the usual supervisory duties. He was also to estimate the money needed to provide a six months' term of school, and to submit to the voters of the township the question of levying the tax. The township treasurer was also given the custody of all state, county, and township school funds, the district treasurers being left only the district taxes for building, fuel, and furniture. School directors, too, were given greater independence of action. They could now levy annually a tax of \$20 for incidental expenses without the sanction of the district meeting, and the old limitation of district taxation to resident property holders was withdrawn. All voters were now admitted to the district meetings. School directors were authorized to determine at what ages children could be admitted to school, and to permit instruction in a foreign language (German). Cities and towns were declared separate school districts, wherein the electors were to choose either three directors for the whole city or town, or one for each subdistrict (school). Directors in cities and towns were empowered to establish schools of different grades, and to make rules and regulations for their management.

The law of 1838 was the first comprehensive school law for the state, and was in the direction of a strong and efficient educational administration. It was, however, like much good early legislation, in advance of public sentiment, and the law was soon materially modified. In 1839 the county school tax was cut in half, the township taxes were reduced, and the township superintendents' supervisory powers were materially lessened. In 1840 the office of State Superintendent of Common Schools was abolished, and the duties of the office transferred to the Secretary of State. The clause in the law requiring reading, writing, and arithmetic to be taught in the English language was repealed, and German district schools were reorganized. The first attempt at a graded course of study was is-

sued this year. In 1842 the enumeration of children was taken from the township superintendent and restored to the district clerks, and the term of the district school director was lengthened from one to three years. In 1847 the county school tax was further reduced to two-thirds of a mill.

On the other hand, some constructive legislation for both city and district schools was enacted during this period. The city legislation began in 1829, when the first special city school law (Cincinnati) was enacted, and it was continued in 1839 by a special law for Zanesville, in 1845 for Columbus, in 1846 for Dayton, in 1847 for Akron, and in 1848 for Cleveland. Night schools were first authorized in 1839, but only for males. The Akron law, at first applying only to Dayton and Akron, was soon amended to apply to all cities and incorporated towns, two thirds of whose inhabitants petitioned the council for special city or town school organization. This law gave the Board of Education power to establish "a central grammar school where instruction should be given in the various branches and parts of study not provided for in the primary schools and yet requisite to a respectable English education." The Cincinnati central high school dates from 1847. In 1849 another similar law was enacted which gave the school corporations greater powers, and extended union school privileges to townships and school districts having 500 or more inhabitants. The Akron law and the law of 1849 mark the establishment of the graded and town school system in Ohio.

For the township and district schools, other minor legislation was enacted before 1853. In 1846 school districts were authorized to establish school libraries, and to expend therefor \$30 the first year and \$10 thereafter. In 1847 county teachers' institutes were authorized and funds for maintaining them provided. The Ohio State Teachers' Association held its first meeting this year. The same year county superintendents were authorized to be appointed in twenty-five specified counties, but this law was repealed in 1853. In 1848 the establishment of schools for negroes, debarred from educational privileges since 1829, was authorized, and the next year the establishment of separate schools for negroes was made optional. An effort to get better school returns was made by a law of 1848, requiring teachers to make an annual report to the township treasurer, but it was not until 1858 that complete returns from all of the counties were for the first time made. In 1849 the first advance beyond the 3 R's was made by a law adding English grammar and geography to the subjects for teachers' examinations, and to any school, on petition of three or more householders. In 1850 a law was passed creating a State Board of Public Instruction, state district supervision, state

uniformity in teachers' examination questions, and state life diplomas, but the legislature failed to appoint the five persons provided for, and the law never went into effect. A city superintendent of schools for Cincinnati was first authorized in 1850. In 1851 the law of 1838 was restored in most of its important particulars. The township clerk was restored to his full powers as township school superintendent, and given \$1 a day additional for time spent in school visitation. The annual district meeting remained strong, but district directors were now allowed to levy \$50 without a vote of the district, the county school tax was restored to 1 mill, and the income from the state common school fund was increased to \$300,000 a year.

In 1850 a new state constitution was prepared and adopted by the people. This contained but a brief article on education, merely guaranteeing the security of all educational and religious funds, directing the legislature to provide for free schools, and prohibiting sectarian aid from any school funds. Under this new constitution, the third important school law for Ohio (the Rice Act of 1853) was enacted, abolishing the rate bill and making other important changes and improvements. A State Commissioner of Common Schools, to be elected by the people for three-year terms, was created, and a state school tax of three mills, to provide free education for all, took the place of the \$300,000 lump sum previously distributed. A state tax of one tenth of a mill was also added for common school libraries. The county school tax disappeared, and township taxation for schools superseded district taxation. County superintendents were abolished, but county boards of examiners, to be appointed by the probate judge, were continued, and \$1.50 a day was now granted to them for their services. Orthography was added to the list of examination subjects for teachers. Evening schools were opened for the first time to both sexes, separate schools for colored pupils were permitted in districts having thirty or more colored pupils, and the minimum school term was increased from six to seven months. The beginnings of township control were made in the, at first nominal, subordination of the district system. The school districts were reduced to subdistricts and deprived of their corporate powers, though each retained three trustees. The school district meeting was also abolished, except for the annual election of one trustee. The subdistrict trustees still retained the power to elect teachers, inspect the schools, build and repair buildings, and purchase supplies. The clerk of each subdistrict board, together with the township clerk, now became a township school board, with the township treasurer, *ex officio*, as treasurer of the board. This township board was given oversight of all school property, estimated the township school tax,

made regulations relating to studies, textbooks, and discipline, and fixed the boundaries of the subdistricts. Township boards were authorized to appoint one of their own members as township school manager, though few such appointments were ever made. The control of any "central or high school" maintained by the township was vested in the township board. Any township might establish schools higher than the primary grade, if approved by the voters of the township. Cities and villages were given power to establish "central or high schools" without approval by the voters of the district. In 1854 it was stated that at "the commencement of 1847 there was not a single well-organized public high school in the state, now there are more than forty in which thorough academic education is given, besides nearly an equal number in which instruction is given in some of the higher branches." Following this important organizing law, there was no other important educational legislation for twenty years.

The new school code of 1873 was a codification rather than a new school law. All preceding legislation was repealed, inconsistencies were straightened out and conflicts of authority eliminated, and the whole was restated in new form. It made no new contributions to the development of the state's school system, nor did it add any important element to the administrative machinery. It is classed, nevertheless, with the laws of 1825, 1838, and 1853, as marking a fourth stage in the development of the state school system. Its chief additions were a classification of city and town school corporations, the separation of school government from municipal government, any school district (city, town, or township) was authorized to appoint a superintendent of schools, an examination in the theory and practice of teaching was added to the examination subjects for all teachers, teachers' institutes were required in all counties, and separate city institutes were authorized; an end was put to German schools by ordering all instruction to be in the English language, the state school tax was further reduced to one mill, while district taxation up to seven mills was permitted. The next new school code was not enacted until 1904, and in the interval a number of important school laws were added.

In 1875 the expenditure of school moneys for evening schools, for books, apparatus, etc., was authorized for any city, town, or special district. In 1881 all districts were permitted to spend school money for school library purposes, and in 1893 all districts were permitted to establish evening schools. In 1882 United States history, in 1888 elementary physiology, in 1896 civil government, in 1904 literature, and in 1911 agriculture were added to the list of teachers' examination subjects. In 1882 the State Teachers' Reading Circle

was organized and began its work. In 1887 an industrial department in Wilberforce University was established by the state. In 1888 the State Board of Examiners was increased to five, three grades of life certificates and four of county certificates were authorized, and boards of city school examiners were created. Still later, village boards of examiners were also created, so that little except the granting of rural certificates was left to the county boards of examination. In 1885 the union of township, village, and special districts to maintain a high school was permitted. In 1887 the laws requiring separate schools for colored pupils were repealed. In 1889 the first comprehensive school law was enacted, and this was amended and strengthened in 1890, 1893, 1898, and 1902. In 1891 an experience qualification was imposed for membership on county boards of examination. In 1885 the period for textbook adoptions, fixed at two years by the first legislation on the subject in 1871, was increased to five years, and boards of education were authorized to buy textbooks and supplies and to furnish them to pupils at cost. In 1890 a schoolbook board was created, to approve books and fix prices. In 1891 this board was authorized to contract with authors or compilers direct, and in 1894 all boards of education were permitted to supply free textbooks, and to levy an additional tax for the purpose.

In 1892 the process of subordinating the district system to township control, begun in 1853, reached its culmination in a law which abolished subdistrict trustees and created representative township boards to manage the schools of the townships. This constructive legislation was undone in 1898 by a law which restored the subdistrict director system, but two years later townships were permitted to abolish the subdistrict system by a vote of the people, and in 1904 the township was once more made the unit. In 1892 physical training in city schools was required, and in 1893 a schoolhouse sanitation law was enacted. In 1893 the kindergarten was included as a part of the public school system, and a local tax of one mill authorized therefor. In 1894 women were permitted to vote at school elections. In 1896 the United States flag was required on all schoolhouses. In 1898 the articulation of the county schools with the high schools was secured by a law providing for the examining and the awarding of diplomas to those completing the rural schools, and permitting any township board to pay the tuition of rural pupils at a high school. In 1898 two adjacent townships were permitted to unite to support a high school, and in 1900, and again in 1902, the payment of high school tuition was made mandatory. In 1894 the centralization of schools and the transportation of all pupils to a central school was begun in Kingsville Township, Ashtabula County;

in 1896 the same plan was permitted in three counties, in 1898 the plan was permitted to be put in operation anywhere in the state, and in 1900 a revised law gave the initiative to the township boards, or, if they failed to exercise it, to the people by initiative proceedings.

Although a number of recommendations had been made by the State School Commissioners looking to the establishment of a normal school for the state, Ohio took no action until recently. In 1886 the first appropriation was made, consisting of \$5000 a year, to Ohio University at Athens to establish a teachers' training course. This was done, but the appropriations grew steadily less, and in 1896 the course was dropped altogether. In 1900, after much agitation, and after receiving a petition containing over 20,000 signatures, the legislature finally made the first provision for normal schools in the history of the state. A state commission was appointed to locate one state normal school. In 1902 two state normal schools were created instead, by adding a normal school department to the two smaller state universities in the southern part of the state,—Miami University at Oxford and Ohio University at Athens. A State Normal School Commission was also created in 1902, to consider the location of additional normal schools. The Commission reported in 1903, recommending the creation of a State Board of Education of five, to have control of the schools, and to exercise a few other functions. No action was taken on this recommendation. In 1906 the legislature declared it as a state policy that the Ohio State University at Columbus might maintain a teachers' college, but should never maintain a normal department, and that the two state institutions in southern Ohio should not provide instruction extending beyond the A B and the A M degrees, thus clearly differentiating the work of the three state institutions. In 1910 two additional state normal schools were created, to be located in northern Ohio.

In 1902 the Brumbaugh law, classifying the school system of the state, and providing for three grades or classes of high schools, was enacted, and the child labor and compulsory education laws were re-written and harmonized. In 1902 a new municipal code was made necessary by a supreme court decision nullifying the Cleveland special legislation, and in 1904 a new and revised school code, the fifth for the state, was formulated and approved by the legislature. The school code of 1873 had been almost entirely changed by the amendments of thirty years. The new code not only gathered up and classified these changes, but itself made a number of additions of importance. The subdistrict system was finally eliminated, boards of education were given a four-year term, the school districts of the state were classified and their powers restated, school superintendents were given increased tenure and

powers, village boards of examination were abolished and the certification laws were revised, teachers were ordered to be paid for attending county institutes, uniform questions for all teachers' examinations in the state were made mandatory, and the approval of all local courses of study by the Commissioner was required. In 1906 a minimum salary law was passed, which required a salary of \$40 a month for an eight-month term. State aid for weak districts was provided to carry out the law. In 1909 two high school inspectors were authorized for the State Commissioner's office, and the State Inspector of Workshops and Factories was given power to inspect school buildings and to approve all schoolhouse plans. In 1910 the commission on the recodification of the laws made its report, the report was accepted by the legislature, and a new edition of the recodified laws was issued. In 1911 agriculture was added to the subjects to be taught in the public schools, and was made a required subject for teachers' certificates after August, 1912. The state was also to be divided into four agricultural districts, with a district supervisor of agricultural instruction to be appointed by the State School Commissioner for each. In 1912 a constitutional convention met to revise the constitution of the state.

**Present School System** — At the head of the present school system of Ohio is a State Commissioner of Common Schools, elected biennially by the people. His duties are largely clerical and supervisory, with no important powers lodged in the state office. The duties of the State Commissioner include office work, visiting the judicial districts of the state each year, meeting school officials, delivering lectures, preparing blank forms and issuing the school laws, issuing an Arbor Day manual, preparing all questions for the examination of teachers and for eighth-grade examinations, and making an annual report to the Governor. He has supervision of the school funds and, on complaint, may appoint an examiner to examine into the funds of any district. All private and denominational schools make statistical reports to him each year. He has the appointment (1909) of two state high school inspectors, who visit the high and other schools of the state, assist at and inspect teachers' institutes, and virtually act as Deputy State Commissioners. He also has the appointment (1911) of four district supervisors of agriculture, who are also in effect state deputies, and are appointed for two-year periods at a salary of \$2000 a year. The State Commissioner also appoints each year one member of the State Board of Examiners. The State School Commissioner has few other functions. As in Massachusetts, what he can accomplish depends largely on the personality of the Commissioner himself. Excepting a State Board of Examiners, to grant life certificates, there are no state edu-

cational boards. The system is essentially decentralized.

With the exception of the years 1847 to 1853, Ohio has never had the office of county superintendent. A county board of examiners for teachers' certificates has existed since 1825, and still constitutes the only county educational authority. A county board of three is appointed by the probate judge, one each year for three-year terms. Two of the three have taught at least two years, and also within five years, all must be residents of the county, and each must not be connected with any private or parochial school, or with a book firm. This board holds monthly examinations for teachers' certificates, examinations for graduation from the common schools in April and May, and conducts a county grammar school commencement in August. The pay of the members is regulated by the number examined, and is small. The State Auditor apportions the school funds to the counties, and the county auditor makes the county apportionments, and receives and transmits all school reports.

The real authority and government of the schools of Ohio rests with the school districts, of which there are four kinds: (1) Each city is a city school district, (2) each village having a \$100,000 valuation, and others by majority vote, is a village school district, (3) each civil township, with any attached territory, and excluding separately organized villages or cities, is a township school district, and (4) any contiguous territory, outside of cities and towns, having \$100,000 valuation, may be organized as a special school district. Adjacent territory may be annexed to any school district, or transferred from one to another by mutual consent, or by petition and hearing before the probate judge. Except in cities, all school districts have boards of education of five members, elected at large, and for four-year terms, only part going out of office each biennium. Cities under 50,000 inhabitants have boards of education of from three to seven, elected similarly at large and for four-year terms while larger cities may vary from four to thirty-seven, part at large and part by subdistricts. (See CINCINNATI, CLEVELAND; COLUMBUS.) Women may vote at all school elections. Each board is a body politic and corporate, and may make rules and regulations for its own government, not inconsistent with law. The city, village, or township treasurer acts *ex officio* as treasurer for the district, but in special districts a district treasurer is appointed. In township districts, the township clerk acts *ex officio* as clerk of the district, but in other districts the board elects or designates the clerk. The clerk, or the clerk together with the superintendent, if there be one, makes an annual report to the county auditor. Township districts are subdivided into subdistricts, unless the same have

been abandoned and the township centralized. If the subdistricts still exist, which is the usual condition, a director is elected annually in each subdistrict to have charge of the school property, to provide fuel and repairs, and to act as a means of communication between the people of the subdistricts and the township board. The township board on its own initiative, and, on petition of one fourth of the electors, must submit the question of centralization to a vote. If carried, all subdistricts are abolished and the schools of the township are operated as a unit. Small schools may, however, be abandoned and the children transported.

Every board of education has charge of the school buildings in its district, may condemn land for school purposes, and may repair, rent, or build school buildings, within the limits of its funds. A graded course of study must be adopted and approved by the State School Commissioner. A sufficient number of schools must be maintained for not less than eight nor more than ten months, though boards in cities may provide vacation schools and playgrounds, in addition. Any school board may establish a public library, appoint a board of library trustees, and levy a tax up to one mill for its maintenance. If no public library is maintained, up to \$250 may be appropriated annually for school libraries. Boards may also found and maintain a museum in connection with the library. Cities may maintain special schools for tubercular children, and any school district may be authorized by the State School Commissioner to provide day schools for the oral instruction of the deaf. Cities may establish a city normal school, and may provide separate teachers' institutes. Any board of education may establish a high school, without a vote of the people, if the funds at hand will permit. High schools must be maintained at least seven months for third grade high schools, and at least eight months for all other classes. Any school district, on petition of twenty-five eligible pupils, must provide instruction in evening schools, to which adults may also be admitted. Districts may also provide instruction in manual training, domestic science, agriculture, or commercial work, or establish trade or vocational schools. Boards of education may appoint teachers, a superintendent, truancy officers, medical inspectors, and a superintendent of buildings. In cities, the superintendent has the nomination of teachers, and city boards may appoint a school director, who acts as a business manager. Cities may employ a superintendent for any period up to five years, while in all other districts a superintendent may be employed from one to three years. Each board of education adopts its own textbooks for five-year periods, from lists furnished by the State School Commissioner, from publishers who will agree to provide books

at not over 75 per cent of the wholesale list price, and boards may either sell the books to the pupils at cost or provide free textbooks. All instruction must be in the English language, though instruction in German as a subject of study is permitted.

**School Support** — The state now makes an annual appropriation from the treasury equal to \$2 for each child, six to twenty-one, in the state, not including married persons, as returned by the annual school census. This is approximately equal to the former one-mill state tax. The interest on the permanent school funds is also paid from the state treasury, and requires the equivalent of about one tenth of a mill. The interest on the sixteenth section funds is paid to the townships to which they belong, the state appropriations and interest on the state common school fund is made to the counties and school districts on school census, and the interest on the swamp land fund is apportioned to the counties on the basis of the number of males over twenty-one years in each. About 83 per cent of the school funds in Ohio come from local (district) taxation, the average levy in the townships (in 1910) being 7.71 mills, and 11.05 mills in the separate districts. No county school tax has been levied since 1853. Cities can not levy less than six mills, school boards in village and special districts may levy up to twelve mills, and in townships up to ten mills, while townships may levy five mills additional for high school purposes. Each district board estimates and levies the amount of money necessary for tuition, building, contingent, bond, and interest funds, and any district may levy five mills additional by vote of the people. Any city maintaining a municipal university may levy two mills additional for that purpose, and any township in which a state normal school is located may levy the same amount for it.

**Teachers and Training.** — The state employed 27,841 teachers in 1910, 3573 of whom were in high schools, and 8640 were men. For the training of future teachers the state now has four state normal schools (Athens, Bowling Green, Kent, and Oxford), and city training schools are maintained by five of the cities (Akron, Cleveland, Columbus, Dayton, and Toledo). Teachers' institutes are now maintained in each county annually, with about three fifths of the teachers in attendance. Schools may dismiss for institute for four days in cities and one week elsewhere, and teachers must be paid for such attendance. Teachers may be employed for from one to four-year periods in cities, and from one to three-year periods elsewhere. Any board of education may vote to establish a district pension fund, and after doing so must pay from 1 to 2 per cent of all income from taxation into this fund. All teachers accepting the provisions of the law also contribute \$2 a month to the fund.

After twenty years of service, half of it in the district, the Board may retire any teacher, and after thirty years of service, half of it in the district, a teacher may ask for retirement. The maximum pension is \$450. Teachers' certificates are granted for one, two, three, four, five, and eight-year periods, the one, two, and three-year certificates being classed as provisional certificates, and the five- and eight-year certificates being classed as professional certificates. The latter can be granted only after forty months of teaching experience, and are renewable. The four-year certificates are granted to graduates of professional courses in such normal schools and colleges, in Ohio or elsewhere, as have been approved by the State Commissioner of Common Schools. All certificates are also classified as (1) high school certificates, (2) elementary school certificates, and (3) special certificates. All examination questions are prepared by the State School Commissioner, and are uniform throughout the state. All high school teachers and superintendents of schools must hold a high school certificate. County boards of examination may recognize certificates from other counties, if they see fit. Life certificates are issued by the State Board of Examiners on the basis of experience and an examination in professional subjects. All teachers' certificates always date from September 1st, though twelve examinations are given each year. A state minimum salary law requires \$40 a month for at least eight months each year.

**Educational Conditions** — While Ohio has a large city population and a number of rapidly growing cities, still 44.1 per cent of the total population live in the rural districts. The southern part of the state is more rural than the northern. About one eighth of the total population is foreign born, though the foreign born element lives largely in the cities. Ohio is a manufacturing as well as an agricultural state. The people of the state have always clung closely to local government, so that the school system is weak as regards central control. It is only recently that a very decentralized form of school administration has been in part superseded by township control. The county administration is as yet quite weak. The centralization of schools for a time made some notable progress in parts of Ohio, though the movement apparently has about come to a standstill. As late as 1910, only 178 of the 1319 townships in forty-six of the eighty-eight counties reported any degree of centralization. One fourth of these townships were in four counties, and centralization had been completed in only fifty-five townships. Forty townships have also employed township superintendents. An eight months' school term is required by law, and state aid has been granted to weak districts to enable them to pay the minimum salary and still provide an

eight-months' term. The school library system has been well developed, as have also the traveling libraries sent out by the Ohio State Library.

**Secondary Education** — The high school has had a marked development in Ohio, there being about 850 high schools in the state. Nearly one fourth of these are township or township-union high schools. No special state aid is granted for secondary education, the high school being a tax on the district maintaining it. The high schools of the state are divided into three classes, four-year, three-year, and two-year. The two-year schools alone are allowed to drop to terms of seven months. There are two state high school inspectors, and the state university examiner also visits the high schools, but there is no state course of study for them.

**Higher and Special Education** — The Ohio State University (*qv*) at Columbus, founded in 1870 as an agricultural and mechanical college and later developed into a large and important institution, stands as the culmination of the public school system of the state. The Ohio University (*qv*) at Athens and Miami University (*qv*) at Oxford are state institutions of collegiate rank and state normal schools combined. The state also grants aid for an industrial department for the colored race in Wilberforce University (*qv*). Toledo University and the University of Cincinnati (*qv*) are municipal institutions. Ohio is distinctively the state of small church colleges, there being twenty-six, with six others now classed as nonsectarian, although most of these were once denominational. Seven of these colleges date from before 1840, and almost all from before 1885. Sixteen of these have less than \$150,000 of endowment funds to-day, and most of them are small and struggling institutions.

Of special institutions, the state maintains the State Institution for the Feeble-minded, the State School for the Blind; and the State School for the Deaf, all at Columbus, and the Ohio State Reformatory, at Mansfield. Two cities report day schools for the deaf.

E. P. C.

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## OHIO STATE UNIVERSITY

**OHIO STATE UNIVERSITY, COLUMBUS, OHIO** — An institution which grew out of the Morrill Act of 1862, commonly known as the Land Grant Act. In 1864 the legislature passed an act accepting the grant, but not until 1870 was the law enacted providing for the organization of the Ohio Agricultural and Mechanical College. In consideration of the location of the College, Franklin County provided a fund of \$300,000 by a bond issue. This was subsequently increased by \$25,000. Three hundred and thirty acres of land lying within the city limits west of High Street and three miles north of Capitol Square were purchased as a site. Additional purchases of adjacent land make an estate of 453 acres.

The College was opened for students on September 17, 1873. In 1878 the legislature reorganized the institution, changed the name to the Ohio State University, and made the first appropriation in the history of the state for higher education. The proceeds of the sale of the public lands were by law made a part of the irreducible debt of the State upon which the State pays 6 per cent interest. The statutes provide that all money given to the university, unless otherwise directed by the donor, shall become a part of this irreducible debt which is but another name for an endowment fund. That fund for general purposes now amounts to \$167,687.62. The fund for designated purposes amounts to \$65,631.31, making a total of \$233,318.93.

The institution is governed by a board of seven trustees, appointed by the Governor and confirmed by the Senate, for terms of seven years. The organization provides for seven colleges as follows: Agriculture, Arts, Philosophy and Science, Education, Engineering, Law, Pharmacy, and Veterinary Medicine. There are at present (1912) twenty-six buildings used for instruction, three residences, Oxley Hall for young women, and the Ohio Union Building for general social and clubhouse purposes. The value of the plant, including the endowment mentioned above, as shown by the inventory is \$5,624,933.70. The total income for the year ending June 30, 1911 was \$924,611.11. The enrollment for the year ending June, 1911 was 3439. For the same year 422 degrees were granted. The graduate school was organized in September, 1912. The University faculty is composed of all persons having the rank of professor and now numbers eighty-three. The College faculties consist of all persons having the rank of assistant professor, associate professor, and professor, and now numbers 153. The instructional force includes about seventy additional members. The following have served as president: Edward Orton, 1873-1881; Walter Quincy Scott, 1881-1883; William Henry Scott, 1883-1895; James Hulme Canfield, 1895-1899; William Oxley Thompson, 1899-. W. O. T.

## OHIO WESLEYAN UNIVERSITY

**OHIO UNIVERSITY, ATHENS, OHIO** — The oldest higher institution of learning in the "Old Northwest." Before Ohio was admitted to statehood the Territorial Legislature, in session at Chillicothe on Jan. 9, 1802, made provision "that there shall be an University instituted and established in the town of Athens." The institution was to be named the American Western University. The Ohio State Legislature reenacted the provisions of the Territorial Act, with but few changes, by another act dated Feb. 18, 1804, which gave the name Ohio University to the institution to be established and has ever been regarded as the charter of Ohio University. Students were admitted in the spring of 1808, when Rev. Jacob Lindley, a Princeton graduate, was put in charge of its educational work. The whole number of degree graduates, of baccalaureate rank, in the history of the university, is men, 669, women, 159, total, 828. The total number of different students enrolled increased from 405 in 1901 to 1832 in 1912. There is a faculty of seventy-five members.

The university buildings are twelve in number, not including five buildings occupied as residences. Conservative valuation of the property of the University is \$1,500,000. The financial support of the university is derived from three sources, namely, the mill-tax, special appropriations, and local receipts from incidental fees, rents, and interest on permanent funds forming a part of the irreducible debt of the state of Ohio. Receipts from all these sources, in 1911, amounted to \$253,366.05. Salary payments for the fiscal year ended Nov. 15, 1911, amounted to \$100,310.08, of which amount the sum of \$81,095.52 was for teaching service exclusively.

Two degrees are given in the College of Liberal Arts, — A. B. and B. S. The degree of B. S. in Education is given those who complete the four-year courses in the State Normal College. To receive either of these degrees the student must have a credit of not less than 120 semester hours based upon at least fifteen units of secondary work. The field of instruction covered is shown by the following classification of colleges and departments: college of liberal arts, the state normal college, the college of music, the college of oratory, the school of commerce; the department of physics and electrical engineering, and the department of mathematics and civil engineering. A. E. ∞

**OHIO WESLEYAN UNIVERSITY, DEL-AWARE, OHIO** — Was founded under the patronage of the Methodist Episcopal Church in 1841, when an academy was opened. The charter was granted in 1842, and in 1844 the College of Liberal Arts began its work. In 1877 the Ohio Wesleyan Female College, established in Delaware in 1853, was incorporated in the university. Since this time the

university has been coeducational in all departments. In addition to the college, the university now maintains an academy, and a Conservatory, including a School of Music and a School of Fine Arts, both established in 1877. The policy of the institution in recent years has been to enlarge the work and increase the efficiency of the college. Accordingly, the Cleveland College of Physicians and Surgeons, established in 1863 and made a part of the university in 1896, was in June, 1910, given over to the Medical Department of Western Reserve University. A School of Oratory, established in 1894, is now organized in connection with the college. A School of Business, established in 1895 and since 1908 organized as a part of the academy, was discontinued in June, 1912. The government of the institution is in the hands of a Board of Trustees elected by the Ohio, the North Ohio, the Cincinnati, and the Central Ohio Conferences of the Methodist Episcopal Church, the Association of Alumni, and five trustees-at-large elected by the Board. Students are admitted to the College by certificate from representative high schools or by examination. The entrance requirements are fifteen units. Undue specialization in elective work is guarded against by the distribution of subjects in groups, and the careful limitation of the student's courses in each. To differentiate the B. A. degree, a minimum of one year's work in college Latin or Greek is made a part of the language requirement, and for the B. S. a larger requirement in mathematics and science is provided than for the B. A. The total enrollment of students in 1912 was 1249. Of these 912 were in the college, 113 in the academy (including the School of Business), and 224 in the Conservatory. The faculty includes twenty-six persons of professorial grade, and forty instructors and assistants. The Rev. Herbert Welch, D. D., LL. D., is President.

H. W.

#### **OKLAHOMA AGRICULTURAL AND MECHANICAL COLLEGE, STILLWATER, OKLA.**

— A state institution organized in 1891 as a land grant college. The college is at the head of a system of state agricultural schools. It provides courses of instruction in agriculture, mechanical arts, engineering, military science, domestic science, training of teachers, and the related branches required by law. The college plant embraces eleven buildings and 1000 acres of land. Two years of high school work are required for entrance to the freshman class. The degree of B. S. is conferred in the different divisions of the college. The enrollment of students in 1911-1912, including all attending special and short courses, etc., 2100. The faculty includes seventy-one members.

#### **OKLAHOMA STATE BAPTIST COLLEGE, BLACKWELL, OKLA.**

— A coeduca-

tional institution opened by the Oklahoma Baptist Convention in 1901. There are maintained an academy, college of liberal arts, college of fine arts, and business college. The entrance requirements to the college of liberal arts are fifteen units of high school work. The degree of B. A. is conferred. The enrollment in 1911-1912 was 208, and the faculty consisted of seventeen members.

#### **OKLAHOMA CHRISTIAN UNIVERSITY, ENID, OKLA.**

— A coeducational institution opened in 1908. A preparatory school, colleges of liberal arts, bible, music, and business, schools of oratory and fine arts, a teachers' college, and hospital training school for nurses are maintained. The entrance requirements to the college of liberal arts are fifteen units of high school work. The following degrees are conferred: A. B., B. D., and A. M. The enrollment in 1911-1912 was 350 in all departments. The faculty consists of twenty-two members.

**OKLAHOMA, STATE OF** — Originally a part of the Louisiana Purchase, and set aside for Indians in 1834. In 1848 the slender western extension was obtained from Mexico, and for a long time was known as the Public Land Strip. This strip and the western half of the present state were opened to settlement, April 22, 1889, and were organized as Oklahoma Territory in 1890, while the eastern half continued as an Indian reservation up to 1898, when a territorial form of government was provided for it also. In 1906 Congress authorized the two territories to unite and to apply for admission as one state, and in 1907 the two were admitted together as the forty-sixth state. Oklahoma is located in the western part of the South Central division. It has a land area of 69,414 square miles, which is about the same size as the six New England states and New Jersey combined. For administrative purposes the state is at present divided into seventy-six counties, and these in turn are divided into cities, towns, and school districts. In 1910 Oklahoma had a total population of 1,657,155, and a density of population of 23.9 persons per square mile.

**Educational History** — On the opening of Oklahoma Territory to settlement the influx of settlers was very rapid. On the first day, 20,000 people crossed the border, and the first night Guthrie, which in the morning had been a vacant plain, had a population of 10,000 people. Before the end of the year, 60,000 people were in the territory, and in the next ten years the population increased over 400 per cent. Government Indian schools had existed in parts of the territory for some time. The first white schools were opened in Guthrie, El Reno, Kingfisher, and some other towns in 1889. The first high school was opened in Kingfisher in the same year. In the organic



act of 1890 Congress gave the new territory \$50,000 to be used in organizing the first schools. The first territorial legislature in 1891 enacted a detailed school law, which provided for the township form of organization, for township boards, with important educational functions resting with the secretary, for county superintendents, a Territorial Superintendent and Auditor combined, and a Territorial Board of Education, for territorial diplomas, and for three grades of county certificates, with uniform examination questions prepared by the Territorial Board of Education, normal teachers' institutes, and for a free textbook system, but with no appropriation to carry it into effect. This law laid down the main outlines of the present school system. A State University, an Agricultural and Mechanical College, and the State Normal School, at Edmond, were also created in 1891. In this year Congress authorized the Governor of the Territory to lease the school lands by public bids, for periods not exceeding three years, so these lands have brought in some income for the schools from the first. The township system was soon found to be unsuited to the needs of the new state, and was abandoned in 1893 for the district system, with district meetings and district boards, and this form of organization has since been retained. A new school law was enacted at this time, based, in large part, on the law of 1891, and this 1893 code still remains as the substantial basis of the present school laws. The school legislation since 1893 has been more in the nature of additions than fundamental changes in the system then laid down.

In 1907 statehood for the two territories combined was attained and the new state began the task of organizing schools in the old Indian Territory, which had previously been practically without public schools. A few tribal common schools, manual labor institutions, and seminaries existed for the Indian population, and in some of the towns common schools for the whites had been formed, though none of the latter had existed over nine years, and most of them had been formed within the two to five years preceding statehood. There were no rural schools, and more than 150,000 children of school age had no opportunities for schooling. By the end of the first year, 2200 districts had been organized and schools established, and the beginning of the school year 1908-1909 saw 3441 rural schools in the old Oklahoma and 2200 in the Indian Territory, and about 3000 teachers in addition in city and town school systems in Oklahoma proper, or a total of 5641 school districts and about 9900 teachers employed in the new state nineteen years after settlement.

The state constitution of 1907 guaranteed the perpetuity as trusts of all lands and funds given for education, directed the legislature

to establish and maintain a system of free schools, in which all the children of the state should be educated; provided for compulsory education during the period from eight to sixteen, directed that separate schools for the negro race be established and maintained with equal accommodations, provided for a uniform series of textbooks for the schools, directed the legislature to provide for instruction in the elements of agriculture, horticulture, stock feeding, and domestic science, vested the supervision of the schools in an *ex officio* State Board of Education, gave to the State Board of Agriculture the supervision of the state agricultural and mechanical colleges, provided for a Board of Commissioners to manage the school lands and funds, and provided for the election of a State Superintendent of Public Instruction, and for a county superintendent of public instruction for each county. The legislature of 1907-1908 made but few changes in the school law, the law of 1893 still being in use in large part. In addition to a few minor changes in the law this first legislature revised the textbook law, the normal institute law, and the separate school law. It also established the Oklahoma School for the Deaf at Sulphur, the Oklahoma School for the Blind at Fort Gibson, a home for destitute children at Pryor Creek, and a State School of Mines at Wilburton. A State Commission on Agricultural and Industrial Education, to establish a district secondary school of agriculture in each supreme court district in the state, at the rate of two a year; and an addition to the certification law to provide that all teachers, after 1909, must hold certificates covering agriculture and allied branches, were added in 1908. In 1909 a new salary schedule for county superintendents was adopted. In 1910 cities organized under charters were given liberty to determine the number and method of election of boards of education.

The legislation of 1911 was of fundamental importance. The most important measure was the reorganization of the State Board of Education. The constitution of 1907 had provided that, until otherwise ordered by the legislature, the State Board of Education should consist of the Governor, Superintendent of Public Instruction, Secretary of State, and the Attorney-General. In 1911 a new State Board of seven members, with greatly enlarged powers, succeeded to the powers formerly exercised by the old State Board of Education, the State Textbook Commission, and the boards of regents of the several state institutions. A constitutional amendment was also proposed to the people giving to the legislature power to levy taxes for schools, to provide a method for the distribution of the proceeds (the constitution of 1907 required a census basis of distribution), and to provide for state aid to secure a five months' school throughout

the state. The State Superintendent was empowered to appoint a State Inspector of Schools, at \$1800 and expenses, and county superintendents were given a clerk and enlarged allowances for visitation. A "union-graded or consolidated school district fund" was created, to be derived from the sale of Section 33 lands in Green County, the proceeds of which are to be distributed to the different counties approximately in proportion to the school census, and to aid in the construction of buildings for union and consolidated school districts. County superintendents had added to their powers that of employing teachers for all minority race (usually colored) school districts.

**Present School System** — At the head of the present state school system of Oklahoma is a State Superintendent of Public Instruction and a State Board of Education. The State Superintendent is elected by the people for four-year terms, while the State Board consists of the State Superintendent as president, *ex officio*, and six persons, two of whom must be practical schoolmen, appointed by the Governor for six-year terms. Two of the appointed members go out of office each biennium, thus giving a continuing body. Once appointed, the members can be removed only for cause. The appointed members receive \$6 a day and expenses for serving. The president may appoint a secretary at \$2000 and a stenographer at \$1200. This board has general supervision of the public schools and the state institutions of the state. It formulates courses of study for the common and high schools, the teachers' and pupils' reading circles, the county normal teachers' institutes, and the higher educational institutions of the state; it formulates rules and regulations concerning teachers' certificates, prepares all questions used at the examinations, and examines applicants for certificates; it prepares questions for the examination of graduates from the eighth grade of the common schools; it classifies the public schools of the state, and accredits schools; and it makes reports to the Governor and legislature, and prepares estimates for the educational appropriations. The board also succeeds to the powers of the former board of textbook commissioners, and selects and adopts a uniform series of textbooks, supplemental books, registers, reports, maps, charts, globes, and apparatus for the schools of the state, fixes their sale price, and makes contracts with publishers and manufacturers to furnish the same. Succeeding the boards of regents for the different state institutions, it controls the educational policy of the higher and special institutions of the state. A State Board of Land Commissioners, consisting of the Governor, Secretary of State, Auditor, State Superintendent, and president of the State Board of Agriculture, looks after the school lands and funds of the state. A State

Commission on Agriculture and Industrial Education, consisting of the State Superintendent, the president of the State Board of Agriculture, and the president of the Agricultural and Mechanical College, and working under the direction of the State Board of Education and in harmony with the Agricultural and Mechanical College, the normal schools, and the State Board of Agriculture, has charge of the establishment of the secondary schools of agriculture in each judicial district. The State Superintendent of Public Instruction acts as the executive officer of the State Board of Education, and, as such, has general supervision of the instruction in the public schools of the state. He gives opinions to city and county superintendents on disputed educational matters, publishes the school laws, visits each county each year, approves of the arrangements made by county superintendents for county normal teachers' institutes, receives reports from school officers, and makes a biennial report to the State Board of Education and to the Governor. He is *ex officio* a member of the State Board of Education, the State Board of Land Commissioners, and the State Commission on Agricultural and Industrial Education. He has the appointment of a State Inspector of Schools, at \$1800 and expenses, who acts for and with him in visiting schools.

For each county there is a county superintendent of public instruction, elected by the people for two-year terms. He receives a salary of from \$1200 to \$1800, according to the size of the county, receives his actual expenses for one visit to each school each year, and is also allowed to appoint a clerk at \$600 a year. He has the general supervision of the schools of his county. He visits the schools and examines the instruction and the material conditions, confers with the district school officers, encourages teachers' associations, and holds a public meeting in each school district once each year for the consideration of educational questions, organizes a county teachers' normal institute each summer for the academic and professional instruction of his teachers, receives reports from the district clerks, appoints to fill vacancies on the district school boards, and provides each district with the necessary books, blanks, and registers, divides the county into school districts, black and white, and rearranges the same; appoints the teachers for the minority race (usually colored) schools in school districts, keeps a record of all teachers employed, of the semiannual apportionment of school funds, and of all his official acts, and makes a quarterly and an annual report to the State Superintendent.

All cities of the first class constitute separate school districts and may provide for the number, manner of election, and terms of their boards of education. In other cities,

two are elected from each ward, for two-year terms, one half going out of office each year. All voting for boards of education must be on separate ballots. City boards are bodies corporate, and, excepting the treasurer, elect their own officers, have control of the city school property, may establish kindergartens and high schools as desired, may elect a city superintendent, who holds office at the pleasure of the board, may examine their own teachers, through an examining committee, consisting of the city superintendent and two persons appointed by the board, and may levy their own taxes, up to the limit allowed by law (seven mills for all city purposes, schools included).

Each county is divided into a number of school districts, for each of which the people, in annual district meeting in June, elect a district board of three, consisting of a director, clerk, and treasurer. One is elected by the annual meeting each year, and the county superintendent fills any vacancies on the board. The district meeting also has power to vote taxes, locate or change the location of schools, authorize the sale of school property, advise the district board as to litigation, and may determine the length of school term, above three months and less than nine. The clerk of the board attends to all reports and clerical matters, while the treasurer receives and pays out all moneys belonging to the district. The Board employs all teachers, manages the schools according to the law, and cares for the school property. If there are colored pupils in the district, they are transferred to some adjacent district, if less than ten in number, and separate schools must be maintained for them if more than ten. Separate school boards are also provided for in the latter case. The same holds true for a small number of white pupils in a colored district. In all minority race districts the teacher is appointed by the county superintendent, and the expense of maintenance is paid from a county tax, levied for the purpose. County commissioners may also provide a schoolhouse, at county expense, for the minority race, when the district is unable to do so. Equal equipment and instruction is to be furnished the two races.

**Educational Conditions** — The white population is increasing so rapidly that the proportion of Indians and negroes, though numerically increasing in themselves, is rapidly decreasing. In twenty years, from 1890 to 1910, the white population increased eight and one third times, the colored population seven and two thirds times, and the Indian population increased but one fourth. The total population in 1910 was 87.2 per cent white, 8.3 per cent negro, and 4.5 per cent Indian. The eastern part of the state (the old Indian Territory) contains about two thirds of the negroes and about five sixths

of the Indians. The white population is over 96 per cent native born. About 80 per cent of the population live in the rural districts, though the cities are increasing in population faster than the rural districts. The western part of the state has but a small percentage of illiteracy, and that in the eastern part, chiefly Indian and negro, is decreasing rapidly. The state is essentially an agricultural state with great future agricultural and mineral possibilities. In time it will be one of the richest of our states, and the large endowments for education and the intelligent character of the white population insure the development of a very important state school system.

The rural schools are graded, the standards for certification are up to the average, and a good graded course of study is in use. Union-graded schools and the consolidation of districts and the transportation of pupils are permitted. Though a young state, Oklahoma has already made greater progress in the consolidation of small schools than have many of the older states. Eighty-six consolidated districts were reported as formed by 1911, and the new "union-graded or consolidated school-district fund" will do much to help the consolidation movement. Agricultural instruction has recently been made a very important part of the instruction, the law of 1908 requiring that "the elements of agriculture, horticulture, animal husbandry, stock feeding, forestry, building roads, domestic science, and elementary economics" shall be a part of the instruction for all public schools. Since 1909, teachers have been required to show some knowledge of agriculture for certification. All rural school sites must not be smaller than one acre. All schools must be taught in the English language. The state has, for its needs, a relatively good compulsory education law. All children, eight to sixteen years of age, not disabled or incapacitated, must attend school from three to six months each year, as determined by the school board and the people of each district. All indigent pupils are furnished the necessary books to enable them to attend, and the children of a widowed mother, who is dependent on their labor for support, are, upon investigation, given scholarships, under which the county pays the mother the requisite maintenance. Any school board may appoint truant officers to enforce the law. A small school library fund is set aside in each district for the purchase of books. Women may vote at all school elections and on the same terms as men.

**School Support.** — Oklahoma was treated most generously by Congress on its admission to the Union. Sections 16 and 36 in Oklahoma proper, previously reserved, were given to the state for its permanent common school fund, and \$5,000,000 in gold was given to the state in addition in lieu of

the similar grants in the Indian Territory. The school section grants totaled 1,413,083 acres, and the minimum sale price was fixed at their appraised value. The lands have been valued at an average of \$20 an acre and recent sales have markedly exceeded this sum. It is probable that a permanent school fund of from \$40,000,000 to \$50,000,000 will in time be built up from these land grants. The 5 per cent fund (see NATIONAL GOVERNMENT AND EDUCATION) was also granted for the permanent school fund. In addition to these grants for common schools, Section 13 in each township (706,540 acres) was also granted to the state, to be used, one third for the State University and the University Preparatory School, one third for the normal schools of the state, and one third for the agricultural and mechanical colleges for the two races. Section 33 was granted to the state for charitable and penal institutions and for public buildings, and part of this grant will also go for educational purposes (schoolhouses). In addition to these grants, and in lieu of the swamp land and internal improvement act grants (see NATIONAL GOVERNMENT AND EDUCATION) Congress made the state the following specific grants: —

For the State University	250,000 acres
For the University Preparatory School	150,000 acres
For the Agricultural College (white)	250,000 acres
For the Agricultural College (colored)	100,000 acres
For the State Normal Schools	300,000 acres
Total specific grants	1,050,000 acres

These grants should produce even more than the section grants for common schools, as the state was able to locate these grants on any unoccupied government land, instead of taking fixed sections of land.

The interest on the state school fund and the income from the lease of school section lands is apportioned semiannually to the counties and districts on the basis of the number of children in each, six to twenty-one years of age. This is worth about \$1.80 per pupil per year at present. A constitutional amendment, to be voted on in 1912, proposes the authorization of a state tax and state aid to maintain a five months' school and gives the legislature power to change the basis of apportionment. In each county, all fines, penalties, forfeitures, proceeds of estrays, and marriage licenses are added to the county school fund, and county commissioners may also levy in addition a county school tax, but the total for all county taxes for current expenses, including schools, must not exceed six mills. This, together with the state funds received is apportioned to the districts on the school census basis. Counties supporting a county high school may also raise one mill additional for county high school purposes. Each school district may, in addition, vote an annual district tax, up to five mills, for all

school purposes, and distribute this tax for different school purposes as it sees fit.

**Teachers and Training** — The state employed 10,020 teachers in 1910 for the 5820 school districts in the state. Only about 8 per cent of these were teachers in the colored schools. County teachers' certificates are of three grades and are issued on examination for one, two, and three years, respectively. A temporary certificate is also issued and is much used. In each county a summer normal teachers' institute of from two to six weeks is held, and teachers attending this may have their certificates renewed. These summer normal institutes follow a course of academic and professional work outlined by the State Board of Education, and all institute conductors and instructors must be certificated by them. Four examinations for certificates are held each year. First-grade certificates are valid in any county in the state, second-grade certificates only in counties adjacent to the one in which they were issued, and third-grade certificates only in the county of issue. State certificates and diplomas are also issued by the State Board of Education. For the training of new teachers the state maintains six state normal schools, as follows: —

The Northeastern State Normal School, at Tahlequah  
 The Southeastern State Normal School, at Durant  
 The East Central State Normal School, at Ada  
 The Central State Normal School, at Edmond  
 The Northwestern State Normal School, at Alva  
 The Southwestern State Normal School, at Weatherford

**Secondary Education** — Any district, town, or city may establish a high school, as may any county. Consolidated schools or union school districts may also establish a high school as a part of the regular instruction. Only a few county high schools have so far been established, but most of the cities and towns have provided them. A number of the centralized schools have a good high school as a part of the instruction provided, and the number of such schools may be expected to increase rapidly under the new (1911) state building aid provided. In 1911, 435 school districts reported classes above the eighth grade, and fifty-one accredited high schools also were reported. The University Preparatory School, at Tonkawa, is a large state secondary school for whites, offering the classics, science, modern languages, business courses, and instruction in art, domestic science, manual training, music, and military tactics. A second school of this type was established in 1911 at Claremore. In 1908 the first two of the state agricultural high schools for whites were established at Warner and Tishomingo; in 1910 four more were established at Broken Arrow, Helena, Lawton, and Goodwell. These schools are to be agricultural and industrial schools of secondary grade, and must provide instruction leading to the agricultural and mechanical colleges and to

the state normal schools. The State Agricultural College is to be the technical head of this agricultural system of education, and is to issue a course in agriculture and related subjects for the elementary and secondary schools of the state. Each state agricultural high school must have at least eighty acres of land, and must conduct an experimental farm and offer short courses for farmers each winter. Twenty thousand dollars was appropriated by the state for a building for each school.

**Higher and Special Education** — The State University at Norman, the State Agricultural and Mechanical College at Stillwater, the State Industrial Institute and College for Girls at Chichasha, and the Colored Agricultural and Normal University at Langston stand as the culmination of the educational system of the state. The State School of Mines at Wilburton is also a part of the state's higher educational system. The denominational college has found but little demand for its services so far in the state, and only four are reported. All of these are institutions of very limited endowment. The Oklahoma Industrial Institution for the Colored Deaf, Blind, and Orphans at Taft, the Oklahoma School for the Blind at Fort Gibson, the State School for the Deaf at Sulphur, the State Orphans' Home and School for Destitute Children at Pryor Creek, the State School for the Feeble-Minded at Enid, and the State Training (Reformatory) School at Paul's Valley, are the special institutions supported by the state. E P C

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**OKLAHOMA, STATE UNIVERSITY OF, NORMAN, OKLA** — A coeducational institution established at Norman by act of the territorial legislature in 1892. The following schools and colleges are maintained: college of arts and sciences (1893), school of pharmacy (1893, 1908), school of medicine (1910), school of fine arts (1903), school of applied science and school of mines (1904), summer school (1908), college of engineering (1909), school of law (1909), school of teaching (1909). The entrance requirements are the completion of four years of high school work. The usual degrees are conferred on graduates and undergraduates on the completion of the appropriate requirements. The university is supported from the general revenue of the state and from income derived from lands granted by Congress. The enrollment in all departments in 1911-1912 was 793. The faculty consists of ninety-seven members.

**OLD AGE** — See SENESCENCE

**OLDENBURG, GRAND DUCHY OF, EDUCATION IN** — See GERMAN EMPIRE, EDUCATION IN

**OLFACTORY SENSATIONS** — The sense organ of smell is the olfactory membrane in the upper part of the nasal cavity, where the endings of the olfactory nerves come to the surface. The organ is stimulated by chemical responses induced by the particles of the odorous substance borne in the air. It is not known how many simple smell qualities there may be. That there are specific qualities with distinct structures is probable from the fact that when the nose has been fatigued for one odor, certain odors will not be noticed, while others will give sensations of normal intensity. Disease may also render one insensitive to several odors, while still normally sensitive to others. These experiments and observations have not been carried far enough to give a complete classification of smells.

W B P

See ODORS

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**OLIVER, HENRY KEMBLE (1800-1885)**

— Leader in the movement for child labor legislation, was graduated from Dartmouth College in 1818. He was principal of high schools at Salem, Mass., 1819 to 1830, and of a private secondary school from 1830 to 1844. He was Adjutant-general of Massachusetts for four years. In 1848 he engaged in the textile industry at Lawrence, and during the next eighteen years he added to his business duties enormous public labors. He was member of the school committee of Lawrence, mayor of the city, and member of the state legislature. He gave up business in 1866 to accept a post as agent of the Massachusetts State Board of Education. He made extended studies of the conditions of factory children and was one of the earliest advocates of child labor laws. In 1869 he was made chief of the Massachusetts Bureau of Labor Statistics. Under the administrations of Horace Mann and George S. Boutwell (*qq v*), Mr. Oliver rendered important service as an institute lecturer in Massachusetts. His publications include numerous papers on education and a series of schoolbooks on music. W S M

#### Reference —

- OLIVER, H K. How I was educated from six to fourteen. *Proceedings of the American Institute of Instruction* (1871)

**OLIVET COLLEGE, OLIVET, MICH** —

A coeducational institution founded in 1844 by Mr J J Shupherd eleven years after he

founded Oberlin. From the first it has been undenominational. The Congregationalists partially adopted the college, and it is now known as the Congregational College of Michigan, although without any organic relation to the denomination. Olivet has been vitally connected with the educational interests of Michigan. Its professors have served for many years in the office of the State Superintendent of Public Instruction and on the State Board of Education, and through their public lectures and published bulletins have had marked effect on the educational development of the state. The present value of the grounds, the fourteen buildings, equipment, and endowment amounts to about \$600,000. The library, museum of natural history, and equipment for teaching sciences are exceptionally good. The usual undergraduate departments, including music, are maintained. The entrance requirements for all students who intend to proceed to the degree (B A) are fifteen units of high school work. The enrollment in 1910-1911 was 238 students. The faculty consists of twenty-four members.

E G L

**OLMSTED, DENISON** (1791-1859) — College professor and author of science textbooks, was graduated from Yale College in 1813. He was tutor at Yale and for ten years professor in the University of North Carolina. From 1825 to 1859 he held a professorship at Yale. In 1840 he was made a member of the Board of Commissioners of Common Schools in Connecticut. His educational writings include *State of Education in Connecticut*, *An Academy for Schoolmasters* (in which he outlined a scheme for a college for the training of teachers), and *Ideals of a Perfect Teacher*. His textbooks include *Natural Philosophy* (1831), *School Philosophy* (1832), *Astronomy* (1839), and *Rudiments of Natural Philosophy and Astronomy* (1842). Professor Olmsted was actively identified with the American Institute of Instruction and the American Association for the Advancement of Education (*qq v*).

W S M.

**OLNEY, JESSE** (1798-1872) — Text-book author; was educated in the common schools. For several years he taught in the district schools of New York and later in the Hartford Grammar School. For ten years he was a member of the Connecticut legislature. He was the author of many schoolbooks, including geographies, readers, arithmetics, and histories. His common school geography passed through ninety-eight editions, and its sale is said to have been exceeded in its day only by Noah Webster's spelling book.

W S M

**OLYMPIC GAMES** — Probably growing out of very ancient local athletic festivals, the Olympic Games in Elis were the oldest and

greatest of the Panhellenic festivals. The nationalization of this festival is assigned traditionally to the year 776 B.C. The Greek era began with the Olympic games celebrated once in four years, and every period of four years was called an Olympiad. It was from the first under the charge of the Eleians, but they invited competitors from neighboring states, and the custom of attending the games spread to more distant cities. From an Eleian event, the festival became Peloponnesian and finally Panhellenic. Early in the sixth century, other festivals were established: the Pythian games, celebrated on the Krissean Plain; the Nemean games, held in the groves of Nemea; and the Isthmian games, which took place at Corinth. These festivals survived to the close of Greek history, but the Olympic games continued to be the most glorious until the end.

The original motive for these festivals was the glorification of the strong and agile body. Athletic contests always constituted the chief attractions, but the festivals served to bring together the greatest lyric poets, sages, statesmen, orators, artists, sculptors, and potters. These celebrations were great national holidays which served as pleasant occasions of reunion for congenial spirits and tended to the diffusion of national ideas.

According to a fairly reliable tradition there was originally, and for twelve following Olympiads, only one contest the *δρόμος*, a foot race, consisting of a single lap of a stadion of 200 yards. Other races of two, seven, twelve, and perhaps twenty-four laps were added later. About the time of the eighteenth Olympiad, the wrestling match and the Pentathlon (*qv*) made their appearance. An athlete had to win at least three of the contests to be crowned victor of the Pentathlon. Boxing and the chariot race are said to have been added in the twenty-third Olympiad. The games gradually grew more and more elaborate, and the time over which they extended was increased from a single day to five or six.

The festival was conducted by about ten judges, elected by the people of Elis a year beforehand. The candidates for the various contests were required to present themselves for examination thirty days before the festival. Each candidate must prove himself to be of pure Hellenic stock, and must give evidence of having trained during ten months in a gymnasium. During the last thirty days before the festival, the candidates practiced in the gymnasium under the supervision of the judges. After an athlete had been entered for a contest, it was considered the greatest ignominy for him to withdraw for any reason; indeed, for so doing he was heavily fined. Eleven days before the festival, the judges caused to be proclaimed by heralds throughout all the cities of Hellas the truce, sacred

to Olympian Zeus, which was to last one month. It was this truce that made the Olympia possible as a Panhellenic institution, for during the thirty days' truce, all wars between Hellenic states were held in abeyance, and travelers were allowed to journey through them unmolested.

The athletic contests were conducted with much attention to details. In the foot races they were very particular that all should start at the same time and from the same line, and no fraud or trickery was permitted. It was also contrary to rule for an athlete to slacken his speed purposely to allow his fellow contestant to win. The foot races were run in heats of four, and the winners of each heat ran in the final race, in which the winner was crowned as victor. The victor in the running race at Olympia was regarded as an honor to his country, and gave his name to the current Olympiad, and on reaching home entered his native city to the notes of a triumphant song, written by a Pindar or Simonides. The last Olympiad was the 293d and ended in 394 A.D.

**Modern Revival of Olympic Games** — After a lapse of more than 1500 years, the Olympic games were revived at Athens in 1896 under circumstances of interest to the modern educator. The motive behind the movement for the organization of the modern Olympic games was the interest of a French nobleman in educational reform, Baron Pierre de Coubertin, after leaving the *École des Sciences politiques* in 1883, spent some time in England studying the educational and social conditions in the public schools. He was profoundly impressed with the educational ideals of Thomas Arnold (*q.v.*) as described in *Tom Brown's School-days*, and exemplified in the English public schools. He appreciated the large educational value of athletic sports in the physical, social, and moral development of adolescent boys and resolved to devote himself to the task of securing similar educational advantages for his fellow countrymen.

Ten years of energetic and persistent effort brought only meager results. During this period De Coubertin introduced sports in a few schools and *lycées* in Paris, he organized athletic contests in connection with the Paris exposition of 1889, he made a tour to study physical education in American colleges, he organized an athletic union in France, and edited a magazine, the *Athletic Review*. He encountered much opposition and indifference in his efforts to popularize athletics in France. At a conference held at the Sorbonne in 1892, in connection with the jubilee of the French Athletic Union, Baron de Coubertin made an address on "Physical Exercises in Antiquity, the Middle Ages, and Modern Times," and advocated the revival of the Olympic games. With the coöperation of Professor William Milligan Sloane, then of

Princeton, and Mr. C. Herbert, secretary of the Amateur Athletic Union of England, he organized the Paris International Congress for the study and propagation of the principles of amateurism, to be held in June, 1894. The last paragraph of the circular letter announcing the Congress contained the following statement: "The revival of the Olympic games in accordance with modern life and conditions would bring together every four years representatives of the world's nations, and one is justified in the belief that these peaceful and courteous contests would constitute the best form of internationalism."

The congress voted to inaugurate the modern Olympic games in 1896 at Athens, if possible, and to hold the second Olympiad in connection with the Paris exposition of 1900. These plans were carried out successfully under the direction of an International Olympic Games Committee, with Baron de Coubertin as president. The Greeks entered into the spirit of the movement with great enthusiasm. Representatives were present from many nations to compete in the various contests in running, jumping, throwing the discus, javelin, and weights, swimming, gymnastics, wrestling, fencing, shooting, etc. The games aroused world-wide interest and resulted in a remarkable expansion of all forms of physical education in many countries, particularly in continental Europe. The Olympic games were held again in Paris, 1900, St. Louis, 1904, Athens, 1906, London, 1908, and Stockholm, 1912. The 1916 games are to be held in Berlin. The object of the founders of this great educational movement has been realized in a large measure.

G. L. M.

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**OMAR KHAYYAM**. — (Gi jāt ed-dīn, Abū'l-Fath, 'Omar ben Ibrāhīm el-C'hayjāmī), the well-known author of the Persian poem, the *Rubā'iyāt*, was better known to his own people as a writer of philosophical and mathematical works. He lived in eastern Persia in the eleventh century, and in 1074-1075 was making astronomical observations in Raj or Nishapur. He died at Nishapur about 1123-1124. Of his philosophical works, one on existence (*fī'l-wuḡūd*) is preserved in manuscript in Berlin. His algebra was published in Arabic and French by Woepeke (Paris, 1851). A work on the postulates of Euclid written by him is still extant in Leyden, and one on the mixture of metals is in Gotha, but neither has been published. A work at one time in Leyden, on difficult problems of arithmetic (*Mushkilāt et hisāb*), is apparently lost. The algebra

is one of the best works on the subject that appeared in the Arab-Persian ascendancy

D E S

**ONE SESSION OR TWO.** — See SESSIONS, LENGTH OF

**ONE-SESSION PERIOD** — See SESSIONS, LENGTH OF

**ONTARIO AGRICULTURE COLLEGE, GUELPH, CANADA** — The Ontario Agricultural College was established by the Provincial Government of Ontario in 1873. The annual grants have increased, until now about a quarter of a million dollars is spent each year on its upkeep, besides the cost of additional new buildings from time to time. The objects of the institution are to give instruction in the best methods of farming, and the best methods of housekeeping, including thorough practical instruction in cooking and sewing and laundry work for every girl, and optional courses in horticulture, poultry raising, bee keeping, and dairying.

Under these circumstances the entrance requirements have been kept very low, so far as general education is concerned. Male students may enter upon the course in agriculture without any preliminary training, except good farm practice. Most matriculants are, however, fairly well prepared in the ordinary studies of the public school. From this number, by examination each year, are selected those who will be permitted to go on with the work of the third and fourth years, and those accomplishing the term work and passing the prescribed examinations are at the end of the four years admitted to the degree of Bachelor of the Science of Agriculture from the University of Toronto (*q v*), with which institution this college is affiliated. A diploma is given at the end of the first two years for practical knowledge and scientific equipment in practical farm operations. During the winter months short courses are held in stock and seed judging, poultry raising, butter and cheese making, fruit growing, bee-keeping, and domestic science. Courses also are provided in elementary agriculture and nature study to prepare the teachers of the Province to give agricultural courses in elementary schools. Agriculture might well be taught in the public schools in rural districts. Teachers, however, were unprepared, notwithstanding that good textbooks had been written on the subject by practical men. Practical courses for teachers have recently been established lasting ten weeks in the spring and again five weeks in the summer. At the present time there are students in attendance from twenty-two different countries.

G. C. C.

**ONTARIO, EDUCATION IN.** — See CANADA, EDUCATION IN.

**ONTOGENY.** — A term used to designate the whole course of individual development. It is contrasted with philogeny, which is used to designate the course of general evolution in the species or race. A certain parallelism exists between ontogeny and philogeny. (See CULTURE EPOCHS THEORY) C. H. J.

**OPEN-AIR SCHOOLS** — The open-air school is a type of special school developed in Europe and America for the education of physically debilitated children. It is designed to make it possible for such children to continue their education and at the same time to regain their health and vitality. To attain these ends the classes are held in the open air, the children are well fed and warmly clad, and the formal work in the school subjects is reduced and modified.

The first school of this type was opened in Charlottenburg, a suburb of Berlin, in the year 1904. It was designed to meet the needs of a group of backward and physically debilitated pupils who could not carry the work in the regular schools and were not so mentally deficient as to be fit subjects for classes for subnormal pupils. The purpose of this educational innovation is reflected in the name "Open-Air Recovery School" which was used to describe it and which is still commonly employed in Europe in referring to schools of this type. The distinguishing characteristics of the régime in this pioneer open-air school included an outdoor life and abundance of good food, strict cleanliness, suitable clothing, skilled teachers, small classes, and school work modified in kind and reduced in quantity. The children who were the fortunate subjects of this first open-air experiment made wonderful progress. They increased rapidly in weight and strength, and many who had been suffering from serious ailments were entirely cured. Moreover, it was found that although these children had spent less than half as much time on school-work as their companions in the regular schools, they had not fallen back in their studies.

The reports of these combined physical and mental benefits spread throughout Germany and caused the school authorities of other cities to begin the erection of open air schools. In less than three years the movement had spread to England, and in 1907 London opened its first school. The results obtained were as remarkable as those previously reported from Germany, and again popular enthusiasm was aroused, with the result that other towns and cities throughout Great Britain began to plan for similar establishments.

Meanwhile the movement had spread to America, where the credit of starting the first open-air school must be shared by New York and Providence. In 1904 the former city loaned the services of one of its public school teachers and supplied school material for the



## OPEN-AIR SCHOOLS

children of an outdoor hospital for tuberculous children. The first American open-air school, as that term is now understood, was opened in January, 1908, in the city of Providence, R.I. The location was a room in an abandoned schoolhouse. This room was remodeled by converting the ordinary four-sided classroom into one of three sides, leaving one entire side open to the air. In this room the Providence authorities began in the dead of winter to teach a class of children variously termed anæmic and tuberculous. The children wore outdoor wraps, sat in warm sitting-out bags, and on cold days had warm soap-stones at their feet. They were well fed, and their school studies were reduced in quantity. They immediately began to improve both physically and mentally and made marked advances in their school work. Six months after Providence began work, an open-air school for tuberculous children was started in one of the parks of Boston, Mass. There were forty-one children in the school, and after the first summer's work it was found that there were twenty-three cases where the disease had either been arrested or entirely cured. Five months later, in December, 1908, a new school was opened in New York City on an abandoned ferryboat. Chicago began work in the summer of 1909 in a camp in one of the school yards and later continued the work on the roof of a building in the heart of the city.

From these early beginnings the movement for open-air schools has rapidly spread in Germany, England, and America and has made considerable progress in France. In all these countries it is recognized that the open-air school has passed the experimental stage. In Germany it has become an integral part of the elementary school system. Among the municipalities having the new schools may be mentioned Mulhausen, Munchen-Gladbach, Elberfeld, Lubeck, Berlin, Solingen, Cologne, and Aix, and there can be little doubt that within a few years the majority of the large industrial towns will have schools of this type. In general, German schools are modeled after the pioneer school at Charlottenburg. In all cases the principal characteristics are open-air treatment, plenty of good food, warm clothing, strict cleanliness, and expert medical and dental attention. The keynote of the schoolwork is constant change from work to play, reading, singing, and rest, together with constant stimulation of interest.

The record of progress in England is similar to that of Germany. Schools of the new type have been established in the suburbs of London, Manchester, Bradford, Halifax, and other industrial cities. In France open-air schools are being established in many cities, generally as developments of the "school colonies" which have for years furnished vacations in country places to city children.

## OPEN AIR SCHOOLS

Records of the actual opening of schools of the new type in other countries are as yet lacking, but preparations for establishing them have been made in Scotland, Austria, Italy, Canada, Mexico, and Japan.

The open-air schools in other countries differ from most of those established in the United States in the class of children cared for. In the United States these schools are in general designed for the care of children suffering from tuberculosis in its incipient stages. They are essentially therapeutic agencies for the care of a special class of sick children. In Europe the aim is in general distinctly broader, and the schools receive as pupils children suffering from various forms of physical debility and subnormal vitality.

Popular interest and enthusiasm have been aroused by the success of the open-air schools in America to a degree which has seldom if ever been equaled by that shown for any other educational innovation. This has been stimulated by the unbroken record of success of the early schools. No single case of failure has yet been recorded, and no city that has undertaken the work has subsequently abandoned it. The rapidity with which the movement has spread is indicated by the following figures, showing the number of cities in the United States having open-air schools in each school year from the opening of the Providence school in 1908 to January, 1912 —

SCHOOL YEAR	NUMBER OF CITIES HAVING OPEN-AIR SCHOOLS
1907-1908	3
1908-1909	7
1909-1910	15
1910-1911	32
1911-1912	44

*Daily Program* — The daily programs differ in detail only in the different countries and cities. The following time-table, showing the procedure in an open-air school in New York City, may be considered typical of these programs —

8 45 to 9 00	Arrive at school, get warm
9 00 to 9 30	Fed with egg and large glassful of milk. Rest outdoors in sleeping blankets.
9 30 to 10 30	Schoolwork
10 30 to 10 45	Short recess, feeding with milk and bread
10 45 to 11 30	Schoolwork
11 30 to 12 00	Recess, go to wash room and prepare for dinner
12 00 to 12 30	Dinner
12 30 to 2 00	Rest in bed, encouraged to sleep
2 00 to 3 00	Schoolwork
3 00 to 3 15	Short recess, feeding of milk and bread
3 15 to 4 00	Schoolwork
4 00 to 5 00	School dismissed, play an hour
5 00	Go home

*Clothing* — Experience has conclusively demonstrated that, if children are to be benefited by the open-air treatment, they must be kept warm. This can only be accomplished during cold weather by providing them with sufficient clothing of the right sort. If they do not

## OPEN-AIR SCHOOLS

possess good wool underwear and warm, well-fitting outer garments, these must be supplied directly by the school or indirectly by some charitable agency. It is absolutely essential in cold climates that each child be provided with a heavy overcoat, sitting-out bag, two blankets, a wool cap, and warm gloves. In several cities the children are provided with Eskimo suits, which are made of heavy blanketing and put on over the regular house clothes. These suits have proved most satisfactory for the purpose and are unusually attractive in appearance. Extra shoes and stockings must be available to be substituted in case of need for those worn by children who come to school with wet feet. The most satisfactory outer foot covering for this purpose is the heavy wool felt boot reaching nearly to the knee. Wooden foot boxes, measuring about two feet long by a foot and a half wide and a foot high, and lined with quilting, are useful for keeping the children's feet warm when the temperature is low. The sitting-out bags are made of heavy blanketing covered with canvas and may be purchased from dealers in sanatorium equipment. They are cut and stitched so as to conform to the shape of the chair and may be attached to it by tape at different points to prevent the child in the bag from slipping off.

*Food* — Only less important than warm clothing in securing successful results is wholesome and adequate food. In general practice does not differ widely from that developed in the original Charlottenburg school, where the daily routine is as follows. The children arrive at about a quarter before eight and receive a bowl of soup and a slice of bread and butter. Classes commence at eight with an interval of five minutes after each half hour's instruction. At ten o'clock the children receive one or two glasses of milk and another slice of bread and butter. Dinner is served at half past twelve and consists of about three ounces of meat, vegetables, and soup. After dinner the children rest or sleep for two hours. At four o'clock milk, rye bread, and jam are given. The last meal consists of soup and bread and butter and is given at a quarter before seven, after which the children return home. The expenditure for the feeding amounts to about twelve cents per day per child. Poor children are excused from paying, and the others pay in full or in part, according to the circumstances of their parents. American practice differs little from that described, except that the school day is shorter and hence the meals given are frequently reduced in number.

In addition to the meals taken at the school, the children have milk and bread, or cereal and milk, or sometimes an egg before leaving home in the morning, and again a light meal on their return home at night. This brings the total fuel value of the food eaten during

## OPEN-AIR SCHOOLS

the day up to about 3000 calories, which is probably high for a normal child, but not for these tuberculous children. The cost of feeding in America varies from about sixteen cents to about twenty-five cents per child per day.

*Administration* — In most American cities the open-air schools are administered by a partnership of responsibility. In the majority of cases the Board of Education meets the cost for teachers' salaries, school premises, and schoolroom equipment, while the expense for food and clothing is defrayed by hospitals, charitable organizations, and societies for the prevention and cure of tuberculosis. At the close of the school year 1910-1911 data as to the administration of forty-seven open-air schools in different American cities were as follows —

Board of education and tuberculosis association	20
Board of education and private association	11
Board of education only	7
Board of education and other city department	6
Tuberculosis association only	2
Board of education and private fund	1
	47

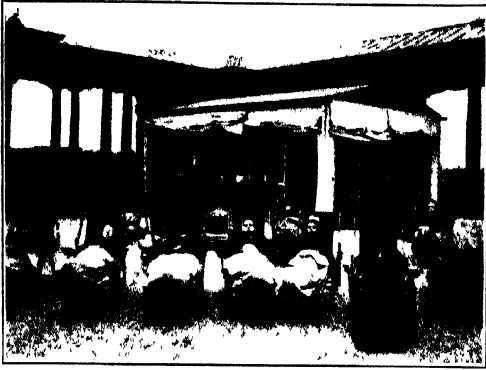
The premises occupied by the schools were as varied as the forms of administration. Among thirty-nine schools the following variations were found —

Remodeled rooms	14
Special buildings	6
Roofs	6
Regular classrooms with open windows	5
Boats	5
Tents	2
Barn	1
	39

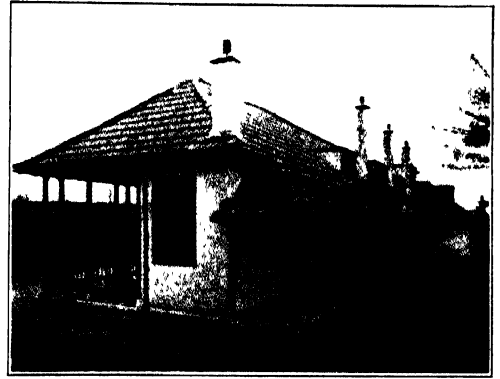
*Expense* — The expense of conducting open-air schools depends in very large degree on local conditions. The only certainty is that the cost will always be greater than that of the ordinary class. The first reason for the added cost is that there are only about half as many children per teacher, the desirable limit being about twenty. In the second place the expense for food amounts to from sixteen to twenty-five cents per child per day. In the third place there is the individual equipment of each child, which is necessarily expensive. Its items with their cost are about as follows:—

Blanket	\$ 5 00
Eskimo suit	3 50
Sitting-out bag	3 00
Cot	1 75
Felt boots	50
Mittens	40
Thermometer	25
Toothbrush	20
	\$14 60

This individual equipment is in the nature of permanent investment, and can be used with slight replacement for several years. Taking all of these different added expenses into account, it is fair to say that the education of a child in an open-air school costs nearly three times as much as does the education of the same child in the ordinary school.



An Open-air School on the Roof, Boston



Special Building for an Open-air School, England



Forest School at Charlottenburg, Germany



New York Open-air School on a Ferry Boat  
The Rest Hour



Chicago Open-air School, showing Special Clothing



An Open Window Schoolroom, Providence, R. I.

# OPEN-AIR SCHOOLS.



*The Need for Open-air Schools* There seems to be little question that the open-air recovery school is the most efficient agency yet devised for carrying on the instruction of physically debilitated children and at the same time curing them or ameliorating the ailments from which they suffer. The best available data seem to indicate that the children who are in need of such treatment as that afforded by the open-air school constitute from 3 to 5 per cent of the daily membership in the average city school system. It would probably not be far out of the way to say that of these at least one third, or from 1 to 2 per cent of all, are either definitely suffering from tuberculosis or are "pretuberculous."

*Summary* — The open-air school is a combination of sanatorium, playground, and schoolroom, in which the daily régime has been characterized as consisting of double rations of air, double rations of food, and half rations of work. There are eight requisites, of which the first three are imperatively essential: (1) abundance of pure air, (2) plenty of good food, and (3) sufficient warm clothing, (4) shelter from the wind, for experience teaches nothing more clearly than that it is wind and not low temperature that causes suffering from cold, (5) shelter or refuge where the children can be taken during very inclement weather, and where any child who gets chilly during the session may at once go to get warm; (6) provision for sleeping after the noonday meal. For this purpose short folding cots are much more satisfactory than the steamer chairs ordinarily used, (7) the services of a skillful doctor and a competent nurse. These do not, of course, have to be in attendance continuously, but should be available. Finally, it is essential to have in charge a teacher who is intelligent, able, and familiar with the methods and aims of the outdoor treatment.

L P A

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**OPENING EXERCISE** — It is usual to allot a short period of time to the formal opening of school or class work. The period allotted is from ten to twenty minutes. The exercises vary greatly in content and form, in the morning exercises of a school, announcements of general interest are made and matters of routine adjusted, readings and short addresses occupying the remainder of the time. This period is more largely in the hands of the pupils where the opening exercises are those of a single classroom. The opening exercise is important in starting the day's work with the requisite attitude. It is a valuable device in establishing and maintaining the group spirit of the class or school.

H. S.

See **BIBLE IN THE SCHOOLS, SCHOOL MANAGEMENT**

**OPERATION** — See **SYMBOLS OF OPERATION**

**OPHTHALMIA NEONATORUM** — Purulent conjunctivitis, or inflammation of the eyes of new-born babies, is a specific germ disease, caused usually by a gonorrheal infection from the tissues of the mother during birth or from the careless use of towels, etc., later. The inflammation commonly appears on the third or fourth day, may be mistaken at first for mild conjunctivitis, but rapidly develops acute symptoms. If unchecked, it often leads to incurable blindness of one or both eyes, or marked impairment of vision through corneal scars. Estimates credit this malady as the cause of 50 per cent of the blindness in nurseries for blind babies, 25 per cent of the blindness in blind schools, and 10 per cent of the blindness in the United States. It is, then, the largest single cause of blindness. New York State health officials believe that, in 1910, the inflammation appeared in about one birth in a hundred.

Ophthalmia neonatorum may be prevented by washing the infant's eyes in sterile water after the head is born and by dropping two drops of 1 to 2 per cent solution of nitrate of silver directly upon the eyeball as soon after birth as possible. Even if the inflammation does appear, proper treatment will usually avert serious consequences, but the treatment must be prompt and be supplemented by careful nursing for several weeks, preferably in a hospital.

That so many cases of blindness occur, despite the simplicity of prophylaxis, is due to the ignorance of parents, midwives, and even of some physicians, of the source, the virulence, and the danger of the infection. To combat this ignorance, the American Medical Association has long maintained a committee on prevention of blindness, while the health departments and charitable organizations of the more progressive states have instituted

vigorous "lay campaigns" of information. In New York and Massachusetts the disease is among those reportable to the health authorities.

G. M. W.

See **BLIND, EDUCATION OF THE.**

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Valuable popular literature is distributed gratis by the State School for the Blind, Columbus, Ohio, by the Massachusetts Commission for the Blind, 309 Ford Bldg., Boston, and by the Special Committee on Prevention of the New York Association for the Blind, 289 Fourth Ave., New York City.

**OPINION** — A term given to beliefs of a peculiarly personal or individual character, and to beliefs which, though generally current, lack scientific warrant, having their ground in custom rather than in evidence. (The term public opinion is used to denote the beliefs characteristic of a community in so far as these beliefs influence corporate or public action.) One of the objects of education is to produce the habit of mind which discriminates between opinion and grounded conviction, and which prevents opinions being held and asserted dogmatically. Plato among ancient educationalists and Locke among modern have especially insisted upon the harmfulness of confusing opinions and knowledge, and the importance of devising educational methods to safeguard the mind against this danger.

J. D.

See **KNOWLEDGE**

**OPTICAL ILLUSIONS** — See **ILLUSIONS**

**OPTICS** — The science of light, regarded as the medium of sight. The term is usually qualified by an adjective. *Physical* optics includes the reflection, refraction, absorption, diffraction, interference, etc., of light. *Psychological* and *physiological* optics include anatomy of the eye (gross and microscopic), dioptries of the eye, the physiology of the visual apparatus, visual sensation, visual space perception, etc. Other restrictive terms are also used, such as *geometrical*, *meteorological*.

R. P. A.

See **EYE.**

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**OPTIMISM**. — The origin of the conception of optimism throws much light upon its nature. Plato had made the Idea of the Good the central principle of his metaphysics and of his dialectic. He had, however, admitted

a passive principle in the constitution of the world sometimes called Matter, sometimes Non-being, sometimes The Other, which was capable of hindering the realization of this Good. Aristotle (*qv*) conceived of matter as the potentiality of a process through which ends as complete actualities are realized and thus did away with the Platonic dualism in that form. But in teaching that Nature always acts for the good, or for a final cause, he also admitted a principle of chance in things which was capable of preventing in particular cases the realization of the true end or Good. Aristotle's philosophy might thus be called an optimism upon the whole, tempered by the acknowledgment of unavoidable accidents in details. The Neoplatonists accounted for matter, resistance, and multiplicity by the idea of a series of emanations of which matter was the lowest. Its far remove from The One Good accounted for its appearance of evil. But even this appearance of evil was due to judging from only a partial standpoint, seen in its place in the whole, matter would be apprehended as contributing to its perfection.

St Augustine (*qv*) adapted these conceptions to the needs of Christian apologetic. The conception of God as Creator compelled him to reject the idea that there is any principle of evil in matter or in the created cosmos at any point. Things that may seem evil to our finite judgment would be seen to enhance the goodness of the whole, could we but perceive from that standpoint. Real evil exists, however, but not cosmologically or metaphysically, it is due to the will of man in disobeying the divine command and substituting his will for the divine will. Even with respect to this, however, St Augustine was so impressed with the sovereignty of the divine will and power, which must be absolutely good, that even sin was, metaphysically considered, privative rather than a positive reality. Through this influence of the great Father of the Church, optimism became an official part of Christian philosophy.

In the seventeenth century, Leibnitz in his *Théodicée* attempted, in terms of his philosophy of monads and their preestablished harmony, a purely rationalistic proof that this is the best of all possible worlds. Modern optimistic theories, outside of professedly theological circles, really date from Leibnitz. Voltaire, instigated by the destructiveness of the Lisbon earthquake, ridiculed the fashionable Leibnitzian optimism in his poem, *Candide*. However, optimism was in the air in the eighteenth century, being congenial to rationalistic deism and to the beliefs of the social reformers in the indefinite perfectibility of man (See CONDORCÉ). Even Rousseau, with his anti-rationalistic tendencies, taught the original goodness of nature and of man, attributing evil to the influence of institutions in destroying equal liberty.

A contemporary of Leibnitz, the Dutch Jew Spinoza, had dealt to the metaphysical basis of optimism the most severe blow that it could have possibly received. He taught that Nature is what it must be by an absolute logical necessity and that considerations of good and evil alike are equally foreign to its nature. They are relative only to man with his desires. Spinoza's teaching had no influence for over a century. Finally the growth of mechanical science and of dislike for the doctrine of final causes in any form in connection with nature prepared the way for a general acceptance of the essentials of Spinoza's view. This change shifted the problem from the question whether the world, or Being, metaphysically considered, is good to the question whether Life, empirically considered, is a good, or in its popular statement whether "Life is worth living." The most marked tendency of recent discussion is the development of the conception of "Meliorism," the idea that at least there is a sufficient basis of goodness in life and its conditions so that by thought and earnest effort we may constantly make better things. This conception attacks optimism on the ground that it encourages a fatalistic contentment with things as they are, what is needed is the frank recognition of evils, not for the sake of accepting them as final, but for the sake of arousing energy to remedy them. The conception of progress practically takes the place of the old notion of the metaphysical Good. J. D.

**OPTIONAL STUDIES** — See COLLEGE, AMERICAN, Section on *Administration of Curriculum*

**ORAL ARITHMETIC** — See MENTAL ARITHMETIC, PESTALOZZI

**ORAL ENGLISH** — See COMPOSITION.

**ORAL METHODS** — There are three characteristic modes by which the school can provide the child with experience and knowledge, one direct and the other two indirect. (1) The school may provide the child with direct sense impressions through objective teaching (*qr*). (2) It may convey the experiences of teachers and fellow pupils to the child through an oral presentation. (3) It may teach the child to read the recorded knowledge of the men and women with whom he has not had and cannot have personal contact. Traditionally, the second method of instruction has always held the central place in school-teaching. Even what teachers and children read, they finally convey to each other orally in the classroom. The name "recitation" applied to the class exercise implies the dominant oral nature of school methods of teaching and learning. This dominance of oral teaching still holds true. Instruction through

the use of objective teaching and other modes of giving direct sense impressions is not an old tradition in the schools. The difficulties of its use necessarily limit its employment. The still more recent movement toward teaching children how to study the written text in the independent pursuit of knowledge has not yet assumed a large place in the schools, though texts as a basis for oral discussion in class have always had a very important place.

All oral teaching has the advantage that it is rapid and subject to easy control by the teacher. Its weaknesses are that it tends to degenerate into mere verbalism and to allow the teacher's activities to dominate the teaching situation completely. Thus the teacher does most of the talking in the school, and the children are too often merely receptive. Again, children pronounce words glibly in reading without the real thought of what they read, and teachers frequently accept verbal definitions rather than actual applications of meanings. H S

See READING, TEACHING OF, LITERATURE, ENGLISH, LANGUAGE, ENGLISH, SPELLING, TEACHING OF

**ORATORY** — See ORATIONS, SCHOOL; DECLAMATION, DEBATING, and for the historical place of Oratory in Education see ROMAN EDUCATION, RENAISSANCE AND EDUCATION

#### **ORATORY, FRENCH CONGREGATION OF THE**

— An order founded in France in 1611 by Cardinal Pierre de Bérulle, in imitation of the Congregation of the Oratory founded in 1575 by St Philip Neri (1515-1595) in Italy. The Congregation consisted of priests, not monks, bound by no other vow than that of the priesthood. While not intended to undertake the education of any but priests, the French Oratorians were soon in charge of a number of colleges and seminaries not only in France, but in Spain and the Netherlands. In 1711 the education of boys was recognized as one of their special functions. Their chief colleges were at Dieppe, Mans, and Juilly, the last of which became the chief and model college. Besides colleges, including secondary departments, military schools, seminaries, and houses of study were maintained. The characteristic features of the Congregation were the absence of that militant and political spirit which marked the Jesuits, and an emphasis on liberal and Christian education. The liberal arts and humanities were not neglected, nor on the other side were the sciences despised. The close connection of many members of the Congregation with Cartesianism insured the introduction of science into the curriculum. The second superior, P de Condren, drew up a *Ratio Studiorum* (1634) which was edited by P. Morin as the *Ratio Studiorum a magistris et professoribus Congregationis Oratorii Domini*

*Jesu observanda* (1645). Later educational works were the *Entretiens sur les Sciences* (1683) of P. Lamy and *Méthodes d'étudier et d'enseigner* (1681) of P. Thomassin.

The chief educational contribution of the Oratorians, who in many respects come close to the Port Royalists, were (1) The introduction of the vernacular and the exclusion of Latin until the fourth form. (2) The teaching of history, for which there was a chair in all their schools. This subject was taught in the vernacular throughout, and French history was taken up before the classical. Geography was taught in close connection with history. (3) New methods were employed in teaching the classics, Latin receiving more attention than Greek. Grammar was taught by the aid of the vernacular and oral expression was given greater emphasis than written themes. (4) Physics and chemistry had a place in the curriculum of some schools of the Oratorians. (5) In philosophy, as has already been observed, Cartesian influences were marked. In addition to the ordinary school subjects there were taught at Juilly ornamental arts, horse riding, music, and dancing. (See ACADEMIES, COURTLY.) Discipline in the school was gentle. The same professor took a class through from the first form to the class of philosophy, a practice which largely eliminated the question of discipline. To a certain extent the Oratorians employed the monitorial system, decurions being appointed to hear lessons under the supervision of a prefect of studies. The individual abilities were considered, and a certain amount of independence and freedom in studies was permitted under direction and supervision. Among distinguished members of the Congregation may be mentioned the teachers and philosophers, Lamy and Thomassin, preachers Mascaron and Massillon; exegeses Richard Simon and Duguet, the philosopher Malebranche (*qv*), and the statesman Daunou (*qv*). The Congregation was practically dissolved during the days of the Revolution. It was reconstituted in 1852 as the Oratory of the Immaculate Conception.

In England Cardinal Newman (*qv*) founded in 1847 an Oratory of St Philip Neri, at Edgbaston since 1854. Several schools, two in Birmingham, have been established under the government of Fathers of the Congregation of the Oratory.

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**ORBIS PICTUS** — See COMENIUS, JOHN AMOS.

**ORCUTT, HIRAM** (1815-1899) — Educational writer and journalist, was graduated



from Dartmouth College in 1842. For five years he taught in the elementary schools of Vermont and for twelve years he was principal of secondary schools. He was later superintendent of the schools at Brattleboro, Vt. He was one of the organizers of the Vermont teachers' association, and for several years he edited the *Vermont School Journal*. In his later life he was associated with the *New England Journal of Education*. His published works include *Class-book of Poetry and Prose* (1847), *Teachers' Manual* (1871), *Home and School Training* (1874), *School Keeping* (1885), and *Personal Recollections* (1897). W S M

**ORDER IN THE SCHOOLROOM —**  
See SCHOOL MANAGEMENT

**ORDINANCES OF 1785 AND 1787, EDUCATIONAL INFLUENCE AND RESULTS OF —** See NATIONAL GOVERNMENT AND EDUCATION, SCHOOL FUND, PERMANENT

**OREGON AGRICULTURAL COLLEGE, CORVALLIS, ORE —** A land-grant college founded in pursuance of the Act of 1862. As there was no state institution in existence, the legislature from 1860 to 1885 made annual appropriations to Corvallis College, then under the control of the Methodist Episcopal Church, South. In 1885 the college became a state institution, the citizens of Benton County providing a central building. The college owns 360 acres of land and thirty buildings. Secondary and degree courses are offered, two years of high school work being required for entrance to the latter. Degree courses are given in the following branches: agriculture, forestry, domestic science and art, engineering, commerce, and pharmacy. Two-year secondary courses and short courses are also conducted. In 1911-1912 there was a total enrollment of 2868 students in all departments. The faculty consists of about 150 members.

**OREGON, STATE OF —** A state in the Pacific northwest, carved from the original Oregon Territory, and confirmed to the United States in 1846 by the treaty with Great Britain. In 1848 the Territory of Oregon was organized by Congress, in 1853 Washington Territory was separated from it, and in 1859 Oregon was admitted to the Union as the thirty-third state. The state has a land area of 95,607 square miles, which is about the same size as New York and Pennsylvania combined, and three-fourths the size of the state of Prussia. For administrative purposes the state is divided into thirty-four counties, and these in turn into three classes of school districts. In 1910 Oregon had a total population of 672,765, and a density of population of 7.0 persons per square mile. Omitting the city of Portland, which contains one third

of the population of the state, the average density is only 4.9 per square mile.

**Educational History —** First discovered in 1792 and first partially explored in 1805-1806; settlement did not begin until about 1835, but was relatively rapid after 1843. The first settlers were Hudson Bay Company employes, and private or mission schools supplied the needs of the few children at the trading posts. Beginning in 1834, the Methodist Episcopal Church began to found mission schools in the Territory, and they were joined by the American Board of Commissioners for Foreign Missions in 1836, by the Roman Catholics in 1841, by the Congregationalists in 1847, and by the Protestant Episcopal Church in 1869. When the first provisional government was established in 1845, it was declared that "schools and the means of education should be encouraged," but no funds to maintain a school were available, except subscriptions and mission appropriations. The first territorial legislature, in 1849, enacted the first school law for the Territory. This law appropriated the income from the school lands, together with all fines, forfeitures, and licenses, and the proceeds of a two-mill territorial tax to the support of common schools. This income was to be distributed among the school districts in existence on the basis of their school census. The law further provided for the organization of schools on the district system plan, the election annually of three directors to employ teachers, and to establish and care for the schools, the appointment of a county board of examiners of three, to examine and certificate teachers, the election of a county school commissioner in each county, to look after the interests of the schools, and for the choice by the legislature of a Territorial Superintendent of Common Schools, to supervise the educational system of the state. School directors were to hold office for one year, all other school officers for three years. In 1851, however, the state school tax was cut in half (restored to two mills in 1855), and the office of Territorial Superintendent was abolished. In 1885 the title of the county school officers was changed to county superintendent of schools, district school directors were empowered, on vote of the district school meeting, to levy a district school tax, teachers were first required to keep a school register, and to file it with the district clerk, district reports were required, and an appropriation of funds was refused, and schools receiving public funds were declared free to all children four to twenty-one years of age. For many years after this date, however, the rate bill (*qv*) was resorted to in order to prolong the term.

In 1857 a constitution was formed, and upon this the Territory entered the Union in 1859. This provided that all school-section land, the 500,000-acre grant to new states, and the

5 per cent fund (see NATIONAL GOVERNMENT AND EDUCATION) should be a sacred trust fund for common schools, that the lands given for a university should form a trust fund for that purpose, that for five years at least the Governor should act, *ex officio*, as State Superintendent of Public Instruction; that a county superintendent should be elected, for two-year terms, in each county, religious control and sectarian aid were forbidden, the legislature was directed to establish a uniform public school system and schools of higher grade, with a free school in every district for at least three months each year, the establishment of a state university with normal and agricultural departments was directed, and a Board of Commissioners, consisting of the Governor, the Secretary of State, and State Treasurer, was created to manage the school lands and school funds. In 1872, the five years having expired, the legislature elected a State Superintendent of Schools, detaching the office from that of Governor, and provided for the election of a Superintendent by the people in 1874, and every four years thereafter. This created the first unification of the schools under the new state organization, there having been practically as many school systems before as there were counties in the state. The same legislature further revised the school law and provided for a State Board of Education, to consist of the Governor, Secretary of State, and State Superintendent, this Board to have power to authorize a series of textbooks for the schools, and to adopt rules and regulations for their government. The State Board was also made, *ex officio*, a State Board of Examination, for the granting of state certificates and life diplomas. County superintendents were given enlarged functions, and the county school tax, previously authorized, was increased from two to three mills. Teachers' institutes were begun, the State Superintendent being authorized to hold one every year in each judicial district of the state. The state university was also founded in 1872 and located at Eugene, but it was not opened for instruction until 1876. At that time there were but twenty-two organized counties and but 642 school districts in the state.

The work of the State Superintendents for the next fifteen years consisted almost entirely in general supervision, in the developing and perfecting of statistical information, and in the organization of the teachers' institute work. The power given to the State Board of Education to make rules and regulations having the force of law was used to shape the slowly developing school system. Little school legislation of importance was enacted between 1872 and 1899. In 1874 a school for the blind was organized; in 1883 the normal school at Monmouth was placed under state control; and in 1885 the normal school at Weston was

similarly accepted and given a small appropriation; in 1885 a separate agricultural and mechanical college was established at Corvallis, and the Department of Public Instruction was given the power to decide appeals on school law points; in 1887 the certification law was amended and strengthened, but in 1889 further amendments somewhat weakened the law, in 1889 an Arbor Day law and a defective compulsory education law were enacted, the State Teachers' Reading Circle was organized, a textbook law was enacted, under which the county superintendents were created an advisory body to adopt a series of uniform textbooks for the state; and the Oregon State Reform School at Salem was established, and in 1893 the textbook law was amended by adding the State Board of Education and the State Board of Examiners to the county superintendents, as the adopting body.

Beginning in 1899, a series of new and important laws began to be enacted, and the educational situation has been greatly changed and improved since that time. In 1899 the certification law was revised and strengthened, training in normal schools was recognized for certification, and the granting of state diplomas on mere experience was discontinued, a State Textbook Commission was created to take the place of the large and unwieldy body for the adoption of textbooks, the private normal schools at Ashland and Drain were accepted as additional state normal schools, a state course of study for the elementary schools, and examinations for graduation from the eighth grade were formulated by the State Board of Education, and the term of county superintendents was extended to four years, and educational qualifications were set up for the office. In 1901 a new revision of the school law was made, and the county high school law was enacted. In 1903 the consolidation of schools was permitted. In 1905 the "Pierce-Eddy law" requiring the county courts in every county to levy an annual county school tax of not less than \$6 per school census child, four to twenty years of age, in place of the former five-mill tax, was passed, and this has materially aided in the development of better schools. In 1907 a revised course of study for elementary and high schools was issued; the high schools were classified, a school library law was passed, a State Library Commission was created; the compulsory education law was revised and strengthened, and provision made for truant officers; the minimum school term was raised from three to four months; an annual convention of district school officers by counties, and an annual convention of county superintendents, were provided for; the required county school tax was raised from \$6 to \$7 per capita; a school-house flag law and a union school law were enacted, and a state institution for the feeble-

unded was established. In 1909 county high school funds for tuition purposes were made possible, special certificates for high school teachers were required, the minimum school term was raised from four to six months, a new county school fund apportionment bill, providing for a minimum apportionment of \$300 to each district was enacted, trustees were permitted to let schoolhouses for neighborhood gatherings, and a State Board of Higher Curricula, to unify the work of the State University and the State Agricultural College, was created. The legislature of 1909 also withdrew all aid from all of the normal schools of the state. Later, the matter of establishing one state normal school in place of the four was referred to the people and approved, and the legislature of 1911 created such a school and located it at Monmouth. The legislature of 1911 also abolished county teachers' certificates, and provided that all teachers' certificates should in the future be issued by the State Superintendent, provided for the recognition for teachers' certificates of graduation from standard normal schools and colleges, provided for teachers' training classes in four-year high schools, provided for additional county supervision in all counties having over sixty school districts, raised the county school tax from \$7 to \$8 per capita, provided for retirement funds for teachers in cities having over 10,000 school census children, and amended the union high school, the compulsory education, and the institute laws.

**Present School System** — At the head of the school system of Oregon, as thus evolved, is a State Superintendent of Public Instruction, assisted by a number of state boards for special purposes. The Superintendent is elected by the people for four-year terms, and receives a salary of \$3000 a year with \$900 additional for traveling expenses. He is charged with the general supervision of the county and district school officers, and the general oversight of the school system of the state. He is required to visit each county annually, to attend the county institutes, and to inspect the schools. He may visit and inspect all chartered institutions. He furnishes all blanks used, collects and compiles statistics, edits the school laws, and prepares and submits a biennial report to the legislature. He holds an annual convention of the county superintendents of the state and an annual teachers' association meeting, and prepares and issues the State Teachers' Reading Circle course. He decides all appeals on school matters submitted to him, and may submit the decision to the State Board of Education if he sees fit. He issues all teachers' certificates for the state, on report of the State Board of Examiners, of which he is the official head, may issue special certificates in special subjects as he sees fit, and acts as Secretary of the State Board of

Education, of which he is a member. He is also a member of the board for the standardization of normal schools and colleges, and of the Oregon Library Commission.

Oregon has a large number of state educational boards, each looking after some part of the state's educational system. The Standardization Board consists of the State Superintendent, the presidents of the State University, the Agricultural College, and the Normal School, the city superintendent of Portland, one member selected by the Independent College Presidents' Association, and one by the Catholic Educational Association of Oregon. Its purpose is to prepare lists of colleges and normal schools to be accepted as standard institutions for teachers' certificates. On the preparation of such a list by the U. S. Bureau of Education, the functions of this Board cease. The State Superintendent appoints the State Board of Examiners. This consists of nine professional teachers, who prepare the questions used, and such a number as is necessary to grade the answer papers. These two bodies constitute the State Board of Examiners, and the term of appointment is for two years. The State Superintendent is also authorized to appoint such clerical assistance as is necessary. The State Board of Education consists of the Governor, the Secretary of State, and the Superintendent of Public Instruction. Its chief power is the ability to make rules and regulations for the maintenance and discipline of the public schools of the state. It also approves of the adoptions made by the Textbook Commission, and promulgates the same, indicates the sources from which the questions on the theory and practice of teaching, in the examination of teachers, will be made up, and prescribes the course of study for the grammar, and first two high school grades of the public schools. The State Textbook Commission, appointed by the Governor, consists of five qualified persons, appointed for four-year terms. They advertise, examine the books submitted, and meet and select textbooks, for six-year periods, and submit the result of their labors to the State Board of Education for its approval. The Oregon Library Commission consists of the Governor, the State Superintendent, the President of the State University, the Librarian of the Library Association of Portland, and one person appointed, for a five-year term, by the Governor. The work of the board is to advise schools, libraries, associations, and communities as to the formation of libraries, and the purchase of library books, to purchase and operate traveling libraries; to conduct a summer library school, to prepare annual lists of suitable books for purchase, and to make rules and regulations as to library management. The Governor, the Secretary of State, and the State Treasurer constitute the State School-

Land Board, for the care of the school and university lands, and the proper investment of the income

For each county there is a county superintendent of schools, elected by the people for four-year terms. Each must have had nine months' experience as a teacher, and must hold a first-grade teacher's certificate. The salary varies from \$400 to \$1800 a year, with \$200 for traveling expenses. Each has general supervision of the schools of his county, must visit each at least once each year, and is authorized to secure the care and protection of the school property of the county. He apportions the school funds to the districts, requires monthly reports from the teachers and an annual report from the district officers, and makes an annual report to the State Superintendent. He also hears and determines all appeals on disputed school questions, keeps a record of all contracts, consults with the district directors with reference to schoolhouse plans, and must approve all building plans for third-class districts, holds an annual county teachers' institute, and may hold an annual convention of district school officers. He grants a diploma of graduation to all who pass the state eighth-grade examination, and may appoint four others to assist him, known as a county board of examiners, in grading the answer papers. For each county there is a district boundary board, consisting of the county superintendent and the county commissioners (county court, if no commissioners exist), which meets to consider all proposed changes in district boundary lines. This board may also condemn land for schoolhouse purposes, and appoint truant officers for the second and third class school districts of the county. For each county having sixty or more school districts, districts of the first class under superintendents excepted, the county superintendent must appoint four persons, for four-year terms, who, together with the superintendent, constitute a county educational board. It is the work of this board to divide the county into supervision districts, consisting of not less than twenty nor more than fifty school districts, and to employ supervisors for each of these supervisory districts, except one, at salaries of from \$1000 to \$1200 and traveling expenses, for ten months' work. The county superintendent is designated as supervisor of one district. The county board acts as an advisory board to the county superintendent, and the district superintendents act under his direction and in his stead. Each supervisor must have had nine months' experience in teaching in the state, and must hold a state teacher's certificate.

Each county is divided by the district boundary board into a sufficient number of school districts, and these are divided into three classes. Districts having over 1000

children (cities) of school census age (four to twenty) are known as districts of the first class, and as such are given some important additional privileges, districts having from 200 to 1000 school census children (villages) are known as districts of the second class; and districts having less than 200 census children are known as districts of the third class. In second and third class districts, a district school board of three members is elected, one each year, for three-year terms, while in first-class districts, a board of five directors is elected, one each year, for five-year terms. Each board has a clerk, who exercises important functions. He is appointed by the board in first-class districts, and elected by the people in second and third class districts. The elections in all cases take place in June, and women may vote and hold office in school affairs. The annual meeting exists in second and third class districts, in a very modified form, its chief functions being the election of school officers (by ballot) and the voting of special taxes. The district clerk acts as secretary of the district boards, takes the school census, and preserves all records. He also has the custody of the district funds, and pays all orders drawn on the district, giving bonds for the safety of the funds in his charge. In first class districts he exercises very important functions. Each board employs and contracts with its teachers, and may dismiss them for cause; has control of the school in all matters, except those relating to the course of study, may admit and exclude pupils, may loan textbooks to indigents, may furnish transportation, and may close the school and contract with another district to educate the children, when authorized by the voters to do so. In first and second class districts kindergartens may be established, first-class districts appoint their own attendance officers, and second-class districts may be permitted to do so, in second class districts the clerk may be appointed by the district board, if the district so votes, and in first-class districts the board may employ a city superintendent, prescribe the course of study and all rules and regulations, choose additional textbooks, create a city board of examination, provide evening schools and instruction in the modern languages, and may lease, build, and sell school property as it deems wise, and may contract indebtedness up to \$100,000.

**School Support** — When Oregon was organized as a territory in 1848, Congress directed that section 36, in addition to the usual grant of section 16, be reserved for the aid of common schools. On entering the Union, Oregon received two sections in each township, a total of 3,329,706 acres. The 5 per cent fund, the grant of 500,000 acres of land to new states, the swamp land grants (see NATIONAL GOVERNMENT AND EDUCATION), and the ten sections of the capitol building

lands granted in 1859 were all added to the common school fund. The total fund is now nearly six millions of dollars, with 500,000 acres of land still on hand and not under lease. The income from this fund is small, and is apportioned to the counties and districts solely on the school census. No state tax is levied, the Oregon school system being financially a series of county school systems. The county court of each county must levy a county school tax equal to \$8 per census child (four to twenty) in the county, and districts must levy a special district tax of at least five mills. The state and county fund is apportioned to the districts on the combined basis of \$100 to each district as such, \$5 for each teacher in the district who attended a teachers' institute the preceding year, and the balance on school census. If this apportionment, together with the five-mill district tax, does not equal \$300, then the county must add enough from general county funds to raise it to this amount. High schools must be supported separately, unless an eight months' elementary school has first been maintained. Special county high school, high school tuition, and library taxes are levied, in addition to any needed county tax to provide \$300 per year in every school district.

**Teachers and Training** — The state employs about 4000 teachers, outside of the city of Portland, which employs about 750 more. For the training of future teachers, the state now maintains one normal school, at Monmouth. The high school training-class system has recently been introduced. All teachers' certificates are issued by the State Superintendent, and are valid anywhere in the state, except city certificates and temporary county permits. Any city of over 100,000 population (Portland) may appoint a city examining board and grant its own certificates, but state certificates must be accepted by the city, while city certificates are not valid elsewhere. Five kinds of state certificates are issued, — life, five-year state, five-year primary, one-year, and special certificates. The one-year certificates are renewable once, the others more than once. Graduates of high school training classes receive one-year certificates, and graduates of standard colleges and normal schools are granted certificates, if they have met the required conditions. All future high school teachers must be college graduates. A state teachers' reading circle, under the direction of the State Superintendent, has been organized recently, and no teacher (except in first-class districts) can have his or her certificate registered (by county superintendents) for the following year, who has not done the required reading. Any city having 10,000 school children may create a teachers' retirement fund, to which 1 per cent of the district's share of the county school tax is added annually.

**Educational Conditions** — Oregon is essentially a rural and an agricultural state. Outside of the city of Portland, which contains 30.8 per cent of the people in the state, there is but one city of any consequence, and not many large towns. Away from the few lines of railway the population is quite sparse. 54.4 per cent of the population live in rural districts. Farming, timbering, stock raising, and the fruit-growing are the chief industries. Relative to its small population, the state is quite rich. In 1910, outside of the city of Portland, only 132,108 census children were reported in the 2265 school districts then existing, or an average of 52.7 children per district, while the average daily attendance was but 31 per district. As this included all towns and cities except Portland, it will be seen that there are, and must for a long time continue to be, hundreds of small districts scattered over the state. Though transportation of pupils, or the closing of a school and contracting with another to provide education, is permitted, the consolidation of small schools naturally makes but little headway.

The schools follow the state course of study, and are graded and classified. Uniform textbooks are adopted for the state for six-year periods, and districts are forbidden to use any others. The eighth-grade examinations have helped to create uniform state standards of work. The state library law and the state traveling libraries have made real headway in supplying the rural districts with good school libraries. Each county of less than 100,000 people must levy a county library tax of ten cents a school census child, to create a general county school library fund. This is apportioned to the districts on their school census, and must be used to purchase books from lists published by the State Library Board. A fairly good compulsory education law is in force, and provisions made for truant officers. But little has been done so far in agricultural education, though the beginnings of the movement are evident. The school term required now is six months, having recently been increased from three.

**Secondary Education** — One hundred and eighteen high schools were reported in 1910, seventy-six of which were four-year schools. In 1875 there were but four. Any county may vote to create one or more county high schools; any district may create a high school, if it has sufficient funds to maintain its elementary schools eight months, and any union of districts may be formed to maintain a union high school. For county high schools, a county high school board, consisting of the county judge, two county commissioners, the county treasurer, and the county superintendent, manage the school and estimate and levy the necessary taxes. For union high school districts, boards of control are elected, with the

same powers. Any county may also vote to create a county high school fund by taxation, sufficient to pay the high school tuition of all children in the county. For the first two years all high schools must follow the uniform high school course of study, issued by the State Board of Education, and must use the textbooks adopted by it. Any district may offer, by vote of the annual meeting, instruction in one or more grades above the eighth. Nearly all of the little towns have high schools, there being at least one in every county.

**Higher and Special Education** — The State University (*qv*) at Eugene and the State Agricultural College at Corvallis stand as the culmination of the school system of the state. Until recently both of these institutions received but meager support from the state, and the state aid is still small. Considering their resources and the small population of the state, both institutions do good work. The state also has a number of small church colleges, nearly all of them old foundations, and only one of them having over \$80,000 of endowment. All of these are open to both sexes. They are —

COLLEGE	LOCATION	FOUNDED	CONTROL
Willamette University	Salem	1811	M E
Pacific University	Forest Grove	1853	Cong
McMinnville College	McMinnville	1878	Bapt
Albany College	Albany	1867	Presby
Philomath College	Philomath	1867	U B
Pacific College	Newberg	1891	Friends
Dallas College	Dallas	1900	Un Ev

The state also maintains the Oregon School for Deaf Mutes, the Oregon Institution for the Blind, and the Oregon State Reform School, all at Salem. E P C

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*Bren Repts Supt Publ Instr*, 1872-1873 to date  
*Constitution of Oregon*, 1857  
*Oregon School Laws*, 1911 ed

**OREGON, UNIVERSITY OF** — A coeducational institution established by act of the State Legislature, 1871, and located at Eugene. It is placed under the control of a Board of Regents of thirteen members, ten of whom are appointive by the Governor. The other three members are the State Board of Education, the Governor, the Secretary of State, and the Superintendent of Public Instruction.

The university includes a graduate school, a college of literature, science, and the arts, courses preparatory to journalism, to law, and to medicine, a school of commerce, a college of engineering—including civil, electrical, railway, and chemical, a school of education, a summer school, a school of music, a school of law in Portland, and a school of medicine in Portland.

The requirements for admission to the freshman class comprise the completion of

the usual four-year high school course. One hundred and twenty semester hours of college work, in addition to eight hours of physical training, are required for graduation. The work of the university is very largely elective.

The usual undergraduate degrees of A B and B S are given for four years of college work, and the graduate degrees of Engineer and of M A and M S on the completion of a year's additional graduate work.

The University of Oregon, as the State University, is an integral part of the state public school system. With the exception of the schools of medicine and law tuition is free. Support is derived almost wholly from the state. The university campus contains eighty acres of land, lying in the city limits of Eugene. Buildings are ten in number. The value of land and buildings is about \$800,000. The total enrollment of students, January, 1912, was 1554. R W P

**ORESME, NICOLE, also known as OREM, HOREM, and HOREN** (c 1323-1382) — A French priest whose achievements and scholarship entitle him to rank as one of the great educators of his time. He entered the Collège de Navarre at Paris in 1348 as a student, and in due time became a professor there, and was later placed at the head of the institution. In 1377 he became Bishop of Lisieux, and held this position until his death. He translated various works on Aristotelian philosophy from the Latin into French, and was well known for his lectures on philosophy and mathematics. His *Tractatus de latitudinibus formarum* was very influential, and after printing was invented it appeared in several editions. He also wrote a *Tractatus proportionum*, which was printed at Venice in 1505. His most important work from the standpoint of mathematics, however, was the *Algorismus proportionum*, in which it clearly appears that he was the inventor of the fractional exponent now so commonly used in algebra. D E S

**ORGANIC MEMORY** — Whenever any organic tissue functions, it tends to change its structure as a result of its activity. The nervous system exhibits in a higher degree than any other of the organic tissues this susceptibility to experience. Whenever a portion of the nervous tissue has been used in the performance of any act, the structure of that part of the nervous tissue is so modified that it is easier for the act to be repeated at a later time. The ability of tissues to retain the results of past experiences is designated "organic memory." C. H. J.

See HABIT, MEMORY

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**ORGANIC SENSATION.** — All of the internal bodily organs, especially those in the abdomen, are supplied with sensory fibers. Any change in the condition of these organs, especially if it is pathological in character, arouses sensory processes. The sensations which result from such stimulations are especially important in determining the emotional background of experience. The ancients recognized this fact in their reference of emotions to the internal organs. In popular parlance we refer to the heart and other organs as seats of the emotions. How far the relations of the emotions to these organs are due to incoming currents of sensory stimulation, and how far they are due to the motor processes in these organs, may be a matter of discussion, but it is clear that the sensory experiences that arise from the internal organs contribute the general background of all conscious experience. Various classifications have been proposed for these organic sensations. Such classifications usually distinguish between the sensations arising from the different internal organs. It is to be noted, however, that the qualitative differences are not so important in this case as in the case of sensations coming from the external world. There is a very large element of pleasure or pain in the organic sensations. This fact appears in all of the discussions of the relations between these sensations and the emotions. C H J

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**ORGANISM.** — See ENVIRONMENT AND ORGANISM.

**ORGANIZATION OF CLASS WORK** — See SCHOOL MANAGEMENT

**ORGANIZATION, SCHOOL** — Every school system mediates between social needs and conditions and the physical and mental nature of childhood. The school as an institution serves the world and the individual; its adjustments are, therefore, at once sociological and psychological. Wherever the activity of the school system is primarily an arrangement determined by social ideals, public finance, and other distinctly social factors, we have an administrative method, wherever they primarily take into account the nature of the pupil and his growth, we have an educative or teaching method. Such methods are the means of executing the purposes of an institutional education. They are in large degree flexible, but underlying them is a more or less definite and somewhat fixed structural organization. Thus, behind administrative methods are the organized units of the school system, — kindergarten, elementary schools, high schools, colleges, universities, and behind the teaching process is a more or less

definitely established course of study which is the basis of all teaching. Even the social order of a school and the discipline of its members rests upon a definite organization of rules, well-accepted customs, and habits of orderly procedure. It may be said, then, that the methods of a school may be differentiated into (1) its relatively fixed and static elements, and (2) its relatively flexible and dynamic elements. The former are included under the term "school organization", the latter under "school methods," *i.e.* methods of administration, management, teaching, discipline, etc. H S

See SCHOOL MANAGEMENT

**ORIEL COLLEGE REFORMS** — See OXFORD UNIVERSITY

**ORIENTAL STUDIES** — In Antiquity — The earliest actual impulse to the study of Oriental languages on the part of the West appears to have arisen in the natural desire for intercommunication on matters of mutual concern. From the remotest times trade and commerce had a paramount part in bringing this about, although it must also be emphasized that the factors of war and diplomacy played hardly less conspicuous rôles. As is well known, there had been business and political relations between Greece and the Orient long before the clash of arms between Hellas and Persia in the days of Darius and Xerxes, and the counter-march into the East by Alexander the Great a century and a half later was not without its commercial aspect.

International relations between Europe and Asia may be regarded as the source from which sprang the study of Oriental languages in the West. In some respects Themistocles, the political refugee from Athens to the Persian court of Artaxerxes I (460 B C), who in a year acquired sufficient fluency in Persian to be able to converse freely with the Oriental monarch without the medium of an interpreter, may be accounted a forerunner (Plutarch, *Them.*, 29), but the general attitude of the Greeks in considering everything that was not Hellenic to be "barbarian" was not favorable to the study of Eastern tongues.

On the other hand, the Orientals were far more liberal in their readiness to acquire a knowledge of foreign languages, and this position seems to have been maintained to the present day. The same freedom from a narrow linguistic point of view may have contributed materially to the readiness of Orientals to act as interpreters where other tongues are concerned. In Egypt royal encouragement was given to this attitude by Psammetichus, who recognized the practical ends in view and sent Egyptian children to a colony of Greeks and Carians in the Nile delta to learn Greek, and in this manner, according to Herodotus, arose the caste of

Egyptian interpreters whose services were employed by the Father of History himself, in his ignorance of the local tongue (*Hdt*, 2 154, 125). At a still earlier time the Median king Cyaxares is said to have sent children to live among his Scythian immigrants that they might learn the Scythian language (*ibid*, 1 73). A similar class of professional interpreters must have existed in Asia Minor, for Greek traders negotiated with Scythians on the Pontus Euxinus "through seven interpreters and seven tongues" (*ibid*, 4 24, cf. Arrian, *Anab*, 4 3 7). When the Persian royal claimant, Cyrus the Younger, communicated with the Greek mercenaries in his army, it was through an interpreter as intermediary (Xenophon, *Anab*, 1 2 17), and the same was true of Xenophon in conferring with the Pontic Mossynæci (*ibid*, 5 4 4). In India the Greek historian Onesicritus the Cynic, who accompanied Alexander the Great to the East, sought to interchange ideas with the Brahmins, though this was possible for him only through the aid of three interpreters, and as to the futility of endeavoring to expound Indian philosophy in such a manner, one of the Hindu sages justly remarked that to attempt it was to "expect water to flow pure through mud" (Strabo, p 716).

Significant in this respect, as showing in later times the Oriental facility for the acquisition of foreign tongues, is the widespread use of the common word for "interpreter" derived from the Arabic *tarjumān*, "translator," which has given rise to a whole family of words like Italian *dragomanno*, *turcimanno*, French *dragoman*, *trucheman*, English *diagon*, Old Church Slavic *tlūmačŭ*, Middle High German *tolmetsche*, New High German *Dolmetsch*, Lithuanian *tilkas*, and Dutch *tolk*, all signifying "interpreter."

With the growth of ancient civilization it was impossible for the West to rest content with a knowledge of Oriental languages merely for practical purposes, for some of these tongues possessed literatures of more or less merit, and the Greek mind craved to know what might be the contents of these "barbarian" books. We need give no special credence to an isolated Iranian tradition that one of the two original copies of the Avesta was translated into Greek at the command of Alexander the Great "as information which was connected with the ancients" (*Dinkart*, 3 5, tr. West, *Sacred Books of the East*, 37 p. xxvi; cf. *ibid*, 47 82), although the Macedonian invader and the scholars who accompanied him may actually have interested themselves in knowing something about the famous Zoroastrian scriptures. We may pass a similar judgment on the allegation that the Alexandrine Peripatetic philosopher Hermippus translated 2,000,000 "verses composed by Zoroaster" (Pliny, *Hist. Nat.*, 30 2 1), indeed, it is not impossible that these two

stories are in some way connected. At the same time, however, we must emphasize the fact that there were authentic cases of translation from Oriental languages into Greek and Latin. To the Greek group belong the translations of Berosus from the Babylonian by Philo Byblus, and Menander of Tyre from the Phœnician, and by Manetho from the Egyptian. All these works, which were historical in theme, have unfortunately vanished, except for scanty fragments, but it has recently been shown by Bezold and Boll ("Reflexe astrologischer Keilinschriften bei griechischen Schriftstellern," in *Sitzungsberichte der Heidelberger Akademie der Wissenschaften*, 1911, no. 7) that there was direct translation of extant Greek omen-literature from the Babylonian. In the Byzantine period there was considerable translating from Oriental languages (cf. Krumbacher, *Geschichte der byzantinischen Literatur*, 2d ed., Munich, 1897), and we still possess a Greek version of the *Periplus* of the Carthaginian Hanno, which has recently been rendered into English by Schoff (Philadelphia, 1912).

The more practical Romans had the work of the Carthaginian Mago on agriculture translated into Latin at the command of the Senate, and Sallust mentions among his sources on African history some versions made for him from "the Punic books said to be those of King Hiempsal" (*De Bello Jugurth.*, 17).

When the Oriental religions began to permeate the West, the new need arose of a more precise understanding of their liturgies and sacred writings, and this necessity became still more urgent in the case of the demands made by Christianity, when the Western Church grew suspicious of the Septuagint rendering of the Bible (that earliest Greek version of an Oriental sacred book), and sought for a Latin version of the Scriptures which should be based on the original tongues. This demand was recognized as early as the third century A.D., when Origen prepared his *Hexapla*, with a presentation, as far as was then possible, of the Hebrew by the side of the other texts concerned. In the latter part of the fourth and the early part of the fifth century St. Jerome undertook the task of preparing the Latin Vulgate, and, to perform the work, he devoted himself for several years to the study of Hebrew, particularly among the Jews of Bethlehem.

Nevertheless, there is no trace, throughout this entire period, of the study of Oriental languages for other than purely utilitarian or religious ends. Though many of the authors who wrote in Greek were Orientals,—for example, Ptolemy and Plotinus were Egyptians, Porphyry and Iamblichus Syrians, Dioscorides a Cilician, Galen a Mysian, Dio Chrysostom and Dio Cassius Bithynians, Lucian a Comagenian, and Strabo a Pontine, while for the Latin writers we may mention the Africans



Apuleius and St Augustine,—these scholars have given us no glimpse of their native languages. Indeed, almost the only specimens of Oriental tongues extant in classical texts are the few lines of Punic in the *Panulus* of Plautus (ll 930-949) and the line of Old Persian in the *Acharnians* (l 100) of Aristophanes, for the unintelligible jumbles on Greek magic papyri are too uncertain to be considered here. There was, however, more or less knowledge of at least scattered words, as when Plato (*Cratylus*, 410 A) alludes to the resemblance between the Greek and the Phrygian designations for “fire,” “water,” “dog,” etc.; and all this led to the compilation of glossaries, in which cognizance is taken of Oriental words, as in the one ascribed to Hesychius.

But at this very time a new force was gradually coming into being, destined to set at naught the exclusiveness of the Græco-Roman world with regard to the Orient. This force was Christianity, which sought to make the Scriptures accessible to all nations in their own languages, and for that reason missionaries were obliged to be able to expound the Bible and to preach in the vernaculars of those to whom they were sent. By the fifth century the Syrian bishop Theodoret could justly say, in his *De curandis Græcorum affectibus* (ed Migne, *Patrologia Græca*, Vol LXXXIII, p 948), that the Bible had then been translated into Egyptian, Persian, Indian (i.e. South Arabic), Scythian, and Sauromatian, and many more, these including Armenian and, before long, Georgian. Apart from the Bible and except for theological literature, however, there was little effective activity in Oriental studies, although mention may be made of a brief glossary of ninety words in Armenian and Latin, belonging to the tenth century (ed Carrière, Paris, 1886), as well as of the *Codex Cumanicus*, dating from the early fourteenth century (ed Kuun, Budapest, 1880), which contains, besides a Latin-Persian-Cumanic glossary, a number of texts in the latter language.

After centuries of practical oblivion the study of Oriental languages showed signs of revival when, in 1259, Raymundus de Pennafort urged the Dominican order to acquire Hebrew, while at the Council of Vienne (1311-1312) Clement V ordered the establishment of professorships of that language at all universities. For obvious reasons Hebrew long held the first place in Oriental studies, though Arabic, a knowledge of which was requisite for disputation with the Moors of Spain, also received attention. It was, however, Protestantism, with its insistence on the Bible only, that gave the great impetus to the study of Oriental tongues, though Protestantism had already been anticipated in a measure by the rationalism of the Renaissance, with its desire to delve deeply into all things secular. The

first non-Oriental Hebrew grammar was prepared in 1506 by the distinguished Humanist Reuchlin (*q v*), who has justly been called the father of Jewish studies among the Christians; the earliest Arabic grammar was published by Pedro de Alcalá in 1505 and ranks as one of the landmarks of Semitic philology. The first grammar of the cognate Ethiopic was issued by Marius Victorinus in 1548, and of Syriac by Johannes Albertus Wiedemanstadius in 1558, while in 1539 Theseus Ambrosius essayed comparative study in his *Introductio in Chaldaicam linguam, Syriam atque Armenicam et decem alias*.

During this period the progress of Semitic studies (see JEWISH EDUCATION) was especially noteworthy, yet even Sanskrit received some attention in the sixteenth century from the Italian Filippo Sassetti, who lived in India from 1583 to 1588, and whose *Letters* (ed Marucci, Florence, 1855) contain the earliest European information regarding this ancient language of India. It was, moreover, about the middle of this same century that the Jesuits established printing presses at Goa, and “Sanskrit, Tamil, Malayalam, and Syriac were studied by the Portuguese Jesuits residing there [at Ambalacattai] with great success” (see Burnell, “Early Printing in India,” in *Indian Antiquary*, Vol II, p 90), while the first Tamil printed text, a Tamil translation of a Portuguese *Doctrina Christam*, appeared at Cochín in 1579. The transition from the more specific study of Semitic to that of Indo-Germanic had already been made by a Norman scholar named Guilielmus Postellus, who in 1538 devoted attention to Hebrew, Syriac, Samaritan, Arabic, Ethiopic, Georgian, and Armenian, besides a number of European languages, although he, of course, shared the prevailing theory that Hebrew was the parent of all languages. In yet another Oriental-Occidental field the famous Joseph Justus Scaliger published, in 1597, our earliest list of Gypsy words, as well as a brief specimen of the later Persian tongue.

The seventeenth century still further widened the knowledge of Oriental languages, and grammars or lexicons (or both) were prepared in a succession that is historically worth recording. Malay (1603), Turkish (1612), Tagalog (1613), Persian (1614), Canarese (1616), Armenian (1624), Georgian (1629), Coptic (1643), Congoe and Konkani (1659), Chinese (1667), and Amharic (1698), while in 1664 the Lutheran missionary, Heinrich Roth, learned Sanskrit in order to be able to dispute with the Brahmans, and late in the same century the famous Leibnitz made a determined attack on the old view that Hebrew was the ancestor of all languages.

In the eighteenth century, during which the first serious study of Oriental dialects was begun by Johann Joachim Schroder in his *Thesaurus linguæ Armenicæ antiquæ et hodiernæ*

*na*, published in 1711, and when Oriental epigraphy was inaugurated in 1754 by Barthélemy in his investigation of the Palmyrene inscriptions, attention was devoted to the southern Indian dialects of Singhalese (1708) and Malayalam (1713), as well as to Tibetan (1722), Telugu (1728), the *lingua franca* of Hindustani (1741), Bengali (1743), Fanti and Akkra (1764), Chuvash (1769), Chermis and Votyak (1775), Mahratta (1778), and Kurdish (1787).

The close of the eighteenth century was destined to see a discovery, to which reference has already been made, that was to revolutionize the entire outlook of Oriental studies, and that was fated, in the following century, when combined with the decipherment of the Old Persian inscriptions, to establish on a scientific basis the vast domain of Indo-European philology, as well as to give inspiration for the comparative study of Dravidian, African, and Polynesian languages. This was the opening to scholars of the West of a general knowledge of Sanskrit. Since that time the progress of Oriental studies has been fully assured as a branch of Occidental learning when conjoined with the other departments of Western and Eastern research to which allusion has been made above.

During the past generation or two the study of Oriental languages as one of the regular forms of educational training has received a recognized place in almost all the advanced institutions of learning in the Occident; and the Eastern tongues have been given a position in the curriculum side by side with the classic languages of antiquity and the modern vernaculars of Europe. From a pedagogical standpoint the value of Eastern studies is fully acknowledged, and their worth is more and more generally granted from the practical as well as from the cultural point of view. The reason for this is twofold. In the first place, the West is deeply indebted to the East for the contributions which the latter has made to our knowledge of antiquity. In the second place, Orient and Occident are more closely united to-day than ever before in history, and a mutual understanding of each other's storied past and of each other's present conditions — best gained through such special linguistic knowledge — is a potent factor in furthering the world's aims of civilization. Striking prominence has recently been given to the weight of this consideration through the rapid strides which Asia has lately made in the line of progress.

**Oriental Studies in General** — As a science the study of Oriental languages is a relatively young development in the West, even though from the earliest times due recognition has been accorded to the practical knowledge of Eastern vernaculars. It was natural that the more special impetus to the movement should come first from a desire to study the

Scriptures in the original languages as a requisite basis for true understanding of the Bible. Although the beginnings had been made in the days of the Church Fathers, it was only after the end of the Middle Ages that Christian scholars commenced to avail themselves more and more of the linguistic attainments of Jewish rabbis, and to gain through their instruction a more technical knowledge of the text of the Old Testament. (See JEWISH EDUCATION.) The establishment of a trilingual college for Latin, Greek, and Hebrew in 1516 at Louvain, Belgium, was but one of several kindred foundations on the continent of Europe and in Great Britain that were destined later to become great centers of Oriental learning. Hebrew, followed by Arabic, thus led the way to a broader study of the cognate Semitic languages, — a field that has been developed with special success during the last half century. In the line of Indo-Germanic philology, on the other hand, the introduction of a knowledge of Sanskrit, in the eighteenth century, was the most active agency in broadening the path that had long been trodden by Greek and Latin scholars; and the thoroughly scientific methods employed in Sanskrit philology were early accepted as models to be followed in other branches of Oriental research, especially in the entire domain of Indo-Germanic linguistics.

University instruction was not the only factor that played a part in promoting Oriental studies, for the mercantile and political relations which had been gradually developing between Europe, Asia, and Africa, especially after India was incorporated in the British Empire, were a prominent feature in this respect. Governments recognized the value of giving financial aid to special seminaries which had for their object the training of young men for commercial and diplomatic service in the Orient. One of the earliest of these institutions was the *Kaiserliche-Königliche Konsular-Akademie*, founded at Vienna in 1754 by the Austrian government, and of like purpose was the establishment of the *École spéciale des langues orientales vivantes* at Paris in 1795, while mention should also be made of the still older *Reale Istituto orientale* founded at Naples in 1727. Later developments along corresponding lines are the *Lehranstalt für orientalische Sprachen*, organized at Vienna in 1851, the creation of an extensive corps of special instructors for Oriental languages in connection with the work of the University of St. Petersburg since 1854; the ministerial subsidies devoted to the *Seminar für orientalische Sprachen* at Berlin since 1887; and the establishment of the *Orientalische Handelsakademie* at Budapest in 1891. In England the University of London likewise includes a special School of Modern Oriental Languages, and Oxford and Cambridge each have chairs or lectureships for a score and

more of Oriental specialists, with kindred representatives in all the other universities of Great Britain. Throughout the continent of Europe every university is equipped proportionately, or even in much larger degree. Nor has North America been far behind since the time when the real foundation for Asiatic studies in the New World was laid, more than half a century ago, by the noted Sanskritist, William Dwight Whitney, of Yale, who died in 1894. In South America, on the other hand, the serious study of Oriental languages is still to be inaugurated.

Hand in hand with the several movements already described there has gone also the strong impulse imparted by the work of the learned societies whose special aim is devotion to various lines of Oriental research. One of the earliest of these bodies was the Asiatic Society established at Calcutta in 1784, while to-day there is a flourishing Oriental society in nearly every country of Europe, and North America can likewise claim its own Oriental Society, founded in 1842. Among the most important of the European societies are the English Royal Asiatic Society of Great Britain and Ireland (founded in 1834), with its daughter societies — the Bombay, Ceylon, China, Korea, and Straits Branches, the German *Deutsche morgenländische Gesellschaft* (1845), *Deutsche Orient-Gesellschaft* (1898), *Vorderasiatische Gesellschaft* (1895), and *Münchener orientalische Gesellschaft* (1901), the Dutch *Koninklijk Instituut voor de Taal-, Land- en Volkenkunde van Nederlandsch Indië* (1851), the French *Société asiatique* (1822), and the Italian *Società asiatica italiana* (1887). These societies all publish their own journals, and among other periodicals relating to Oriental languages may be noted the English *Journal of the African Society*, the East Indian *Indian Antiquary*, the American *Journal of Semitic Languages and Literatures*, the Belgian *Muséon*, the German *Zeitschrift für Assyriologie*, *Zeitschrift für ägyptische Sprach- und Altertumskunde*, *Zeitschrift für afrikanische, ozeanische und ostasiatische Sprachen*, *Archiv für das Studium deutscher Kolonialsprachen*, the Austrian *Wiener Zeitschrift für die Kunde des Morgenlandes*, the Swedish *Sphinx*, the French *Revue sémitique*, *Recueil de travaux relatifs à la philologie et à l'archéologie égyptienne et assyrienne*, *Revue d'assyriologie*, and *T'oung Pao*, and the Italian *Studi italiani di filologia indo-iranica, Oriens Christianus*, and *Bessarione*.

As this survey implies, the breadth and scope of the studies pursued have grown in a remarkable manner during the last fifty years. The day is past when either Sanskrit or Hebrew and Arabic, or any other single one of the two great linguistic families to which they belong, can claim the priority of attention which they once enjoyed. A place is now found beside them for the study of the Chinese classics, for

questions relating to Japanese, for Central Asian dialects, Philippine tongues, African vernaculars, and Polynesian speech forms. The East itself, which had long been obliged to cultivate European tongues for practical reasons, is now devoting serious attention to its own individual languages as a subject worthy of profound consideration. The Asiatic Society of Japan was founded at Tokio in 1872, and the Siam Society at Bangkok in 1904, though to foreign initiative are due the establishment of the *École française d'extrême orient* at Hanoi in 1898 and of the *Vostochny institut* ("Oriental Institute") at Vladivostok in 1899.

**The Practical Value of Oriental Studies** — The practical value of a training in Oriental languages will be self-evident for the claims made upon the missionary, diplomat, military officer, or merchant who is to live among the peoples speaking those tongues. Even though in many places English or French may serve as a medium of communication sufficiently well to answer ordinary requirements, nevertheless when once the Westerner leaves the beaten track, he will be practically helpless without a knowledge of the vernaculars or of the *lingua franca*, which may be Arabic, Persian, or some other Oriental language. While for the merchant or the military officer in the East it may be enough to learn merely the modern spoken languages or dialects, precisely as the ordinary man in rank and file or at the desk acquires a speaking knowledge of French, German, or Spanish, it is incumbent on the missionary and the diplomat in the Orient to know also the ancient Eastern languages and their literatures. The religious and secular life of a people can be studied accurately only in the light of a thorough knowledge of their past history and literature, and this fact equally presupposes a knowledge of their language from its earliest accessible period. No translation, however skillful, can suffice, and for the Oriental field in particular the task of the translator is beset with innumerable perils. If the trained investigator often stands perplexed before some apparently absurd, cruel, or obscene custom of the particular people with whom he is brought in contact, how much more helpless must he be who has had no real scientific training, yet who recognizes that effectively to remove the evil he must first recognize and eradicate its cause. To this lack of training on the part of those who have sought to spread the Gospel, many of the criticisms of the older school of missionaries are due, on the other hand, those missionaries who have best understood their people have almost invariably been the ones who have had the greatest success both in winning converts and in every other respect. To the theologian Oriental studies make a special appeal, for the light that is cast upon the language and the religion of the Old Testament from

the Semitic tongues, religions, literatures, and customs is incalculable. To the teacher of languages or of literatures some Oriental study is essential if he is to do his best work. Sanskrit holds in this respect the first place as the oldest member of the Indo-Germanic group of languages, and its grammar explains phenomena in other tongues that are otherwise inexplicable. In fact, it is even more essential in this respect than even Greek and Latin. If the specialist in Church history and in the history of dogma must be familiar with Oriental languages, it is none the less true that the historian of philosophy must be equally familiar with the thought of the East, and in like manner the historian not only of such sciences as mathematics, chemistry, and medicine, but also of certain periods and countries of Europe must seek Oriental sources, as for the history of the Crusades or of Spain, Greece, and Malta. Finally, no survey of literature is complete without some knowledge of the literary types found in Sanskrit and Pali, Syriac and Arabic, Chinese and Japanese, Persian and Egyptian.

**Oriental Studies and their Educational Pursuit** — The difficulties of Oriental study are exaggerated in the popular mind. This is probably due in great part to the fact that they are written in unfamiliar scripts. Yet inherently these tongues are not really hard to master, and the grammar of the Semitic and of most of the Indo-Germanic Oriental languages is comparatively easy. The only real difficulty is in the vocabulary. The teaching of Oriental languages will probably never begin before Junior year in college, although there is no real ground for making this limitation beyond the fact of the insistent demand of studies that are seemingly more urgent and the fact that Orientalism will attract only a chosen few. Grammars, lexicons, and chrestomathies exist in abundance for all the better known tongues, and only in the verb categories of Semitic will the average beginner find anything that is really unfamiliar to him. A knowledge of classics is usually possessed by those who take up Oriental studies. Although such knowledge is not an indispensable prerequisite, and although it may even occasionally be questioned whether some of the students who undertake the study may not approach it more independently without a technical familiarity with Greek and Latin, yet teachers, on the whole, have thus far in the West found their best adapted scholars among those who have previously been equipped with the essentials of one or both of the classic tongues. To the student who perseveres there is a vast field where he can scarcely fail to reap some fruit, particularly as in almost every Oriental language there are large bodies of literature as yet only inadequately known, or even entirely uninvestigated, in many cases not even edited.

The one real difficulty is that there is, under present conditions, a lack of teaching positions for Oriental languages, except perhaps in the Semitic field; and the hope is to be cherished that larger opportunities may be opened, as are due, to scholars who devote themselves to this branch of research. On the other hand, it can scarcely fail to make for mental poise and the avoidance of the peril of overspecialization if one has some Oriental subject for his diversion, if not for his domain of special study and investigation.

There is, however, a word of warning to be sounded in regard to what may be called pseudo-Orientalism. The tendency to seek for novelty and for superficial analogy has been prejudicial to the cause of true Eastern studies, especially in view of the close connection of much of Oriental literature with religion. Astro-mythological theorists, for example, and the "pan-Babylonians" have brought some branches of Semitic studies into critical discredit, while pseudo-Buddhists and other imperfectly informed followers of Oriental systems of thought have at times detracted from appreciation of the true value of Sanskrit and Pali studies. Lack of genuine knowledge has prevailed somewhat widely, it must be confessed by the competent critic, and has led too many of the weaker minds astray. There is, then, all the more reason for the sober and scientific study of Oriental languages and for the teaching of these disciplines in a manner that shall adequately set forth their true dignity and their true worth.

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**ORIENTATION OF THE SCHOOL-HOUSE.** — See ARCHITECTURE, SCHOOL.

**ORIGEN (185-254).** — The greatest of all the early Christian teachers was an Egyptian, the son of Leonides, a teacher of rhetoric, who gave him a liberal education in all the arts and sciences then known. He was a precocious scholar, a pupil of Clement of Alexandria (*q v*)

and of Ammonius Saccas, the founder of the Neo-Platonic Philosophy. He became thoroughly familiar with the teachings of Plato and all the Greek philosophers and with the Hebrew Scriptures. At the early age of eighteen he was placed at the head of the great Alexandrian School (see CATECHETICAL SCHOOLS). Here his activity as a teacher and writer was incessant, and by his untiring industry and irresistible logic he soon won the title of *Adamantius*. His fame spread far and wide, and he was consulted by scholars, statesmen, and leaders of the Church, with whom his opinions carried great weight. Under his direction the Alexandrian School became the greatest center of learning in the world.

In the persecution under Maximia, Origen was driven from Alexandria and found refuge in Cæsarea, where he established a new Catechetical School (*qv*), which soon surpassed that of Alexandria. Here he passed the rest of his life in prodigious labors. The opinion of the learned men of Palestine was voiced by Gregory of Nyssa (*qv*), who described him as "the Prince of Christian learning in the third century." Fortunately we have a contemporary record of his educational methods by Gregory Thaumaturgus (*qv*), who was his pupil for five years at Cæsarea. His *Panegyric upon Origen* is one of the classics of education and gives us a vivid picture of this great educator and his work. The system as described by him was remarkable for its breadth, thoroughness, and high moral tone. The first stage consisted of a careful training in grammar and logic, designed to teach the student the exact meaning and use of words and to enable him to investigate truth and detect false arguments. He was then introduced to the study of the physical world through the sciences of physics, astronomy and geometry. Next came the study of ethics, based upon the four Platonic virtues and including an examination of all known ethical systems, in order to incorporate everything of permanent value found in them. The object, however, was not so much to formulate a theory of ethics as to build up character. Gregory's words are significant: "Much as we learned from the words of Origen, we learned still more from his example." Evidently there was a peculiar charm about this great teacher which endeared him to his students, while his pure and noble character impressed them not less than his intellectual powers. His whole educational system culminated in the study of Holy Scripture, to the exposition of which he devoted his highest powers. His literary labors were enormous. St Jerome (*qv*) says he wrote 2000 books. In his *Hexapla* he brought together in one polyglot collection the best versions then extant of the Old Testament. His *First Principles* was the first attempt ever made to create, with the

help of philosophy, a science of Christian Doctrine and was one of the most influential books ever written, although disfigured by some extravagant speculations. His *Commentaries* and *Homilies* upon Holy Scripture, of which only a few remain, were voluminous and valuable. His apologetic work, *Contra Celsum*, his *Stromata*, in which he compares the doctrines of Christianity with the teachings of philosophy, and his *Letters* complete the list. W R

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#### ORIGINAL AND ACQUIRED CHARACTERISTICS — See ACQUIRED CHARACTERISTICS, NATIVISM

**OROSIUS, PAULUS** (fl. 415). — Historian and theologian, a native of Spain. Of his life little is known before the barbarian invasions of Spain, about 409. Soon after this he came into personal relations with St Augustine (*qv*), whom he represented rather unsuccessfully when Augustine sought to procure the condemnation of Pelagianism in Palestine. In 417-418 Orosius was back in Hippo with St Augustine. At this time he wrote his famous history, *Historiarum adversus paganos libri septem*. It was undertaken in proof of a position assumed by Augustine in his *City of God*, rather than with a purely historical purpose. Orosius aims to prove by an outline of general history that before the advent of Christianity the world suffered even more from plagues, pestilences, famines, wars, and other disasters than since that event. In this historical sketch, Orosius meets successfully the pagan charge that the introduction of Christianity and the cessation of heathen worship were the causes of the recent disasters to the Roman world. Orosius made use of the Old and New Testament, Josephus, Eusebius, and also Livy, Tacitus, Suetonius, Cæsar, Cicero, and other pagan historians. In turn the work was used by Bede and medieval writers generally. As an independent authority, Orosius is of importance only in the latter part of his work, from about A.D. 378 to the end A.D. 417. The book was translated rather freely into Anglo-Saxon by Alfred the Great, and its popularity in the Middle Ages was very great, serving as the accepted manual or textbook of general history. The other works of

Orosius are theological in character and connected with the controversies of his time

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**ORPHANS, EDUCATION OF** — The term applied to the institutions now generally termed orphan asylums, orphanages, or orphan houses or schools, was hospitals, and under the caption HOSPITAL SCHOOLS the historic development of these institutions and of this type of education has been traced. Following the Reformation such institutions, more or less independent of the Church and replacing the old ecclesiastical foundations which had the care of orphans as one of their functions, became quite numerous. Especially with the seventeenth century was there a marked development which, to the present day, has given a distinctive place to this type of educational institution. A brief historical sketch outlining the details given under HOSPITAL SCHOOLS will furnish a perspective for judging present conditions; see also PICTISM, FRANCKE, etc.

**Historical** — The earliest expression of charity in human society of which we have any record was exercised in behalf of orphan children. The Hebrew Scriptures in most emphatic terms repeatedly enjoined responsibility for the care of the widow and the orphan. "Ye shall not afflict any widow or fatherless child. If thou afflict them in any wise and they shall cry at all unto me, I will surely hear their cry, and my wrath shall wax hot and I will kill you with the sword, and your wives shall be widows and your children fatherless" (Exod xxii, 22-24). "And the Levite (because he hath no part nor inheritance with thee) and the stranger, and the fatherless, and the widow, which are within thy gates, shall come, and shall eat and be satisfied; that the Lord thy God may bless thee in all the work of thine hand which thou doest" (Deut xiv, 29).

Nearly two thousand years later a New Testament writer defined religion in terms of charitable service rendered the widow and the fatherless. "Pure religion and undefiled before God and the Father is this, to visit the fatherless and widows in their affliction and to keep himself unspotted from the world." In the Apostolic constitutions of the primitive churches bishops were commanded "to take care of the orphans, see that they want nothing" (See Chastel's *Charity of the Primitive Churches*). Throughout the Middle Ages endeavor in behalf of orphan and dependent

children was under the direction of the Church. The Emperor Constantine after his conversion from Paganism to Christianity declared himself the patron of orphans and other defenseless children.

The modern orphan asylum as a charitable institution maintained apart from church or monastery arose in the latter part of the seventeenth century. The best known of those early asylums was the one established in 1695 in Halle, Germany, by August Hermann Francke (*q v*). It was opened on the goodly capital of three and one half dollars. On finding this sum at one time in the contribution box which he had fastened up in his house, Francke exclaimed, "With this must I do a great work." With such small beginnings he began to gather in, to feed, and to instruct orphans and street beggars. Later he began to build, adding structure upon structure as the numbers increased. His establishment still remains — a quarter of a mile in length and six stories high, built around a long courtyard. Francke's orphanage and home for dependent children became the model and inspiration of many others established during the following century in Germany and other countries, including the United States. In his *Annual Report* as Secretary of the Board of Education of Massachusetts, Horace Mann (*q v*) in writing of his visit to the German States says, "Another fact which will strike the visitor to these countries (German States) with mingled sorrow and joy, is the number and populousness of their orphan establishments. In the great cities almost without exception, one or more of these is to be found." The orphan houses originally established for the care of soldiers' orphans were afterwards appropriated to orphans of other classes. Institutions established in the United States after the Civil War for soldiers' orphans have in recent years followed a similar course, in some states becoming state industrial schools for dependent and delinquent children.

In some of the orphanages of European countries the training given the children of soldiers and sailors was intended to fit the boys for the occupation of their fathers. Thus in the same *Report* quoted above the writer says "In the Royal Orphanage House at Potsdam there were a thousand boys all children of soldiers. Great attention was given to physical training. As the boys were destined for the army it was thought important to give them agility and vigor. The boys practiced gymnasium exercises, such as climbing poles, ascending ropes, flinging their bodies round and round over a bar while they held on only by the bend of the legs at the knee joints, vaulting upon the wooden horse, etc., until their physical feats reached a point of perfection which I have never seen surpassed except by professional circus riders and rope

dancers." At Brest was a similar institution for sailors' orphans which gave a special nautical and military education, including management of sails, fife, drum, rowing, swimming, whistling, gun practice, boxing, etc. (Barnard *American Journal of Education*, Vol. XXI, 378-80.) This program of training is still in vogue in similar institutions, as illustrated recently by the coronation drill exercises in honor of George V rendered by the boys of the Reedham Soldiers' Orphan Asylum, Purley, which is directly under His Majesty's patronage.

In the early period of this country orphan and dependent children were cared for in public almshouses, where they were usually housed with the adult paupers. (See POOR LAW AND EDUCATION.) Their removal from these institutions beginning about the middle of the last century has been a long and tedious process and is not yet entirely accomplished (Folks, *The Care of Destitute, Neglected, and Delinquent Children*.)

Parallel with this movement, but more rapid in progress, has been the founding of orphan asylums.

Prior to 1801 only six orphan asylums had been founded in the United States. By 1831 fifteen more had been established. After 1831, their number increased rapidly. During the twenty years following 1831 fifty-six orphanages and homes for destitute children were founded. "It is not possible to trace the establishment of children's institutions after 1850 in detail. It may be stated that everywhere they increased in numbers and in diversity of character and objects. Not including some Central and Western states from which returns have not been received, forty-seven new constitutions were organized in the fifties, seventy-nine in the sixties (notwithstanding the civil war) and twenty-one in the first half of the seventies." (Folks, *lc*.)

**Present Conditions** — The latest report of the U. S. Bureau of the Census of Institutions gives forty-four hundred as the total number of benevolent institutions in the United States. Of this number eleven hundred are orphanages and children's homes. These are broadly classified as public, private, and ecclesiastical. In round numbers there are five hundred private, an equal number of ecclesiastical, and one hundred public. The total number of children in these institutions is about one hundred thousand and the average expense of maintenance ten millions of dollars. New York ranks first among all of the states in both the number and proportion to population of children's homes having one hundred and fifty of these institutions. Of this number only five are public homes, while the remainder are divided about equally between private and ecclesiastical foundations. Twenty-six states have no public institutions for children. Whether a state has many or few orphanages does not depend upon the population or the number of

dependent children, but rather on the policy pursued in caring for them. If an institutional policy has prevailed, there will be many institutions, if a placing-out method of care, — that is, the placing of the dependent child in private homes at board, at service, or by adoption, — there will be few institutions. Thus, Iowa with a population of two and a quarter millions reports but twelve institutions, while New Jersey with a population of half a million less reports forty-six homes.

The number of orphanages and children's homes has increased rapidly for the past twenty-five years. From 1890 to 1903 the total number of new homes opened was about four hundred. Many of them, especially those established upon ecclesiastical foundations, have had their origin in religious or sentimental impulse rather than from a clear recognition of the need of such a charity. The result of this blind philanthropic endeavor has in some instances been an over-planting of institutions on the one hand and indiscriminate charitable relief on the other, as shown in the admission of many children whose separation from their homes was merely an economic convenience rather than a necessity.

**Systems of Organization** — There are two types of orphan homes — the congregate or barracks type and what is known as the cottage system. In the congregate homes the children live in one large building, which contains kitchen, dining room, dormitories, playroom and schoolrooms. In the cottage system the children of the institution are divided into small groups of from fifteen to twenty-five, each group having its own cottage home. There are several modifications of this form of housing from the completely separate and individual cottage home and school to that in which the school, kitchen and dining room are in central buildings, the separate cottages providing dormitories and perhaps sitting rooms for the various groups. Since the advantage of the cottage plan over the congregate lies in its nearer approach to the private family home, it follows that central features for a group of cottages like the kitchen or dining room, where all of the children assemble three times a day, are opposed to the chief aim sought in adopting the family-group idea. In a well-managed cottage system the kitchen and dining room in each cottage become practical training schools in which the children learn to manage a range, to cook, prepare and serve meals, with all of the innumerable accessory duties and responsibilities pertaining thereto. The cottage sitting room and library contribute in a similar way to the home life and spirit. A sense of mutual dependence and family interest pervades the cottage group. This under wise direction by the head of the cottage develops into an *esprit de corps*, which is the strongest factor in the cottage system.

In a central kitchen all of this is wanting

Since everything must be done on such a large scale, the food supplies, utensils, cookers, range fixtures, etc., are so heavy that but little opportunity is afforded for the training of children in such a kitchen. As to the food, quantity rather than quality is the factor most in evidence. Refinements of the culinary art are wanting. There is an absence of variety. There can be no catering to individual or group tastes. Such a kitchen cannot serve as a school. In the immense dining rooms of such institutions the children do not partake of their meals with refined table manners and social intercourse—they are simply fed.

**Education** — The education of orphans and dependent children in institution homes up to within very recent years has been so meager that but little can be said in its favor. Many of those established by the various religious denominations have been administered along narrow sectarian lines. Children are retained until twelve or fourteen years of age and then either returned to relatives or placed out in family homes, where they become in most instances the unpaid servant of the household.

Most of the orphanages have maintained their own schools and in these the teachers and instruction are inferior to the standards of the public elementary schools. The teachers are usually required to perform other services in the institution in addition to the work of teaching. The course of study leads nowhere and there is no higher school beyond the institution school to awaken an ambition for promotion. Rarely have the children in such homes passed beyond the elementary grades while remaining in the institution. After their release to relatives or private homes, subsequent school attendance becomes desultory or is entirely abandoned. This has been the experience of scores of thousands of orphans and dependent children. As conceived by most of the managers of homes for dependent children, charity was to go no further than was necessary to enable the child to earn his keep when placed in a family home. The uncertain and transitory period of his stay in the institution made school attendance largely a matter of marking time rather than an experience of purposeful effort. The more recent and enlightened view, however, regards makeshift school attendance and such early exploitation of child life as not only an individual but a social waste. Much more extended educational advantages are, therefore, now being provided by the more progressive institutions in this country. A few of the better class are sending their wards to the public schools, and children of educational promise are given an opportunity to pursue secondary and in some cases even higher educational courses. There has also been great progress in education along industrial lines. Some of the institutions now provide special teachers in manual training, cooking, dress-

making, etc. The institution's own needs in these fields of instruction give a much more practical turn to the work than is possible in public school instruction. Thus, in the sewing and dressmaking classes the girls repair and make garments for themselves and other children. In the manual training classes the boys repair and make new furniture, toys, play apparatus, and implements for their own use in work about the place. In the garden and poultry classes they raise vegetables and poultry for their own tables, and the cooking classes frequently prepare the regular meals of the cottages.

Since the institution furnishes not only the school, but also the child's home life and environment, it is possible through correlation to bring these two into very close touch in the classroom. The everyday interests and activities of the child may not only interpret the subject matter of the classroom, but may also furnish much of the educative material itself. The course of study may be adapted at every turn to the experience and interests of the child. Every important event or development in the life of the home, plowing, planting, cutting down trees and sawing them into lumber and cord wood, starting and running incubators and brooders, buying and selling, building and paving, incidents and accidents, — all are fraught with educative stuff.

There is another important aspect in which the institution school can adjust itself to the needs of the child and where the public school fails to meet a condition. As children move upward through the grades the subject matter of instruction grows more and more abstract, while the child in the earlier years of the adolescent period, the years of physical stress and rush, unless naturally studious or academic in his tastes, yearns for concrete experience, for action, for industrial work, economic gain, and freedom from physical restraint. In the institution he may give half of each day to industrial work and the other half to school work, thus preserving a balance that may tide the child over a restless period of a year or two and still preserve and keep alive and going those academic interests which ordinarily are lost forever to the pupil that drops out of the public school during this period.

But most of the institutions of the country have not risen to their educational opportunities. The above conception of education is realized in but few of the more progressive ones. Many of them, however, are in a state of transition. They are moving from urban to rural locations and changing from congregate to cottage systems of housing. Along with these changes improvement in educational standards and methods is keeping pace. Hitherto this progress in education has been greatly retarded by the fact that they have been regarded as homes rather than schools. Since the meaning of childhood is gradually



being interpreted more and more in terms of education, institution life is passing into a renaissance of higher training, intellectual, industrial, and social R R R

See CHILDHOOD, LEGISLATION FOR THE CONSERVATION AND PROTECTION OF, POOR LAW AND EDUCATION, CHARITY SCHOOLS, RAGGED SCHOOLS, RAUHES HAUS, etc

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**ORR, GUSTAVUS ADOLPHUS** (1819–1887) — State Superintendent of Schools, was educated in private schools, at the University of Georgia, and at Emory College, graduating at the latter in 1844. He taught in Georgia and Tennessee from 1845 to 1849, was instructor and professor in Emory College from 1849 to 1867, was president of the Southern Female Masonic College from 1867 to 1871, one year professor in Oglethorpe University, and from 1872 to his death in 1887, he was State Commissioner of the Schools of Georgia. He is called the father of the common school system of Georgia W S M

**ORTHOGRAPHY.** — See SPELLING

**ORTHOPEDIC INVESTIGATIONS AMONG SCHOOL CHILDREN** — See CRIPPLED CHILDREN, EDUCATION OF; SPINAL CURVATURE, etc

**ORTON, JAMES** (1830–1877) — Scientist and college professor; was graduated from Williams College in 1855, and from the Andover Theological Seminary in 1858, after which he traveled and studied in Europe. He was for several years pastor of a Congre-

gational church. From 1866 to 1869 he was professor of biological science in the University of Rochester, and from 1869 to the time of his death at Vassar College. He conducted several scientific expeditions to the high Andes, and met his death on such an expedition at Lake Titicaca. Besides numerous scientific works, his publications include *The Liberal Education of Women* (1873) and *Comparative Zoology* (1875) W S M

**OSORIO (DA FONSECA), JERONIMO** (1506–1580) — Bishop of Silves in Portugal, studied in the universities of Salamanca, Paris, and Bologna, and became Professor of Divinity at Coimbra (*qv*). Osorio is called the Cicero of Portugal. One of Osorio's treatises, the *De Gloria*, was thought by some of his contemporaries to have been a lost work of Cicero, found and published by Osorio. Osorio's chief educational work was the *De Regis Institutione et Disciplina, Libri VIII* (Colomae Agrippinae, 1572). It is a book of great length, praising the seven liberal arts, grammar, dialectic, and rhetoric, with arithmetic, music, geometry, and astronomy, all of which a true king will well know. But more urgently still are the moral virtues of a king extolled — prudence, wisdom, temperance, justice, magnanimity, and so on. Osorio is praised because he writes in a series of reasonings rather than grounds himself mainly on quotations, a method common in his time. Roger Ascham (*qv*) speaks in his praise (see *Scholemaster*, pp 129–131. Mayor's ed, 1863).

F. W.

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**OSWEGO MOVEMENT** — A systematic attempt, radiating from the State Normal School at Oswego, N Y, to introduce the best features of Pestalozzianism into the schools of this country. The spirit of the movement was inseparably bound up in the life of its founder, Dr Edward Austin Sheldon (*qv*). Like Pestalozzi, Dr Sheldon was first led to take an interest in education by observing the condition of the poor children of Oswego. As early as 1848 he had organized a school for them and was trying in various ways to ameliorate their condition. After this philanthropic experiment, Dr Sheldon spent nine years in public school supervision, first at Syracuse and later at Oswego. The result of his experience was a deepening conviction that not only had we failed to give universal education, but that the methods of teaching then in vogue were unscientific and the course of study was too narrow and formal. He then resolved to devote himself to the reform of education, which proved to be his lifework.

Dr Sheldon saw clearly that the first step toward bettering the schools was to secure

better-trained teachers. To this end for a time he carried on Saturday classes for teachers at Oswego and gave instruction in the principles of teaching. In order to supplement with practical work, the school board of Oswego cooperated in establishing a city training school, selecting a sufficient number of their public schools to be used as model or practice schools. In the same year (1861) Miss Margaret E. M. Jones was persuaded to come from London to teach in the new school. Miss Jones had taught for fifteen years in the Home and Colonial Training School. (See HOME AND COLONIAL SCHOOL SOCIETY.) Miss Jones remained at Oswego only one year, but that served to place upon a firm footing the essential ideas of the great Swiss reformer. The object-teaching phase of his work seems to have appealed strongly to his English followers, and as might have been expected, Miss Jones emphasized object lessons as a separate branch. But it should be noted that Dr. Sheldon had been previously much impressed with the large collection of objects in the Educational Museum of Toronto. The idea of this collection was borrowed from English reformers. The responsibility for the spread of object teaching must also be shared with N. A. Calkins, who was a pioneer in this movement.

After Miss Jones withdrew from Oswego, Dr. Sheldon had the good fortune to secure the services of Herman Krusi, Jr. (*qv*), the son of Pestalozzi's most famous assistant. His entrance into the Oswego group helped to call public attention to this new center of educational reform. Of the other teachers whose devotion helped to make the Oswego work a distinctive movement, Dr. Sheldon's daughter, Mary (the wife of Professor Earl Barnes), must be named. Her well-known methods of introducing children to the study of history by beginning with the sense phases of local history is a practical and valuable application of Pestalozzi's maxims.

The work done at the city training school at Oswego was so radically different from the general routine that it soon roused the active criticism of those who honestly investigate new movements hoping to find something good, and the hostility of those who oppose all progress. The findings of the former class were so favorable that the training school was first assisted by grants from the state, and in 1866 the school was taken over by the state and made one of the regular state normal schools of New York. For many years the school continued to send out teachers trained to put into practice more or less skillfully the maxim "that the primary concepts of all branches of knowledge come through the senses." These teachers were in demand for training schools and as supervisors of primary work throughout the country. The teachers who had grasped the meaning of their Oswego

training realized that sense-perceptions must be elaborated by other forms of mental activity, and provided for this in their teaching. On the other hand, in some cases the Oswego methods sometimes degenerated into a mere giving to children masses of unrelated facts about miscellaneous objects, which did much to discredit efforts to find any better ways of teaching children than by formal book study. In spite of these failures the Oswego movement was a powerful factor in creating a general demand for trained teachers, in enriching the content of instruction in elementary schools, in promoting more scientific methods of teaching, and in making more easy and effective later educational reform. A. B.

See BARNES, MARY SHELDON, CALKINS, NORMAN A., KRÜSI, HERMAN, JR.; OBJECT TEACHING, SHELDON, EDWARD AUSTIN

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**OTTAWA UNIVERSITY, OTTAWA, KAN** — Founded in 1886 and conducted by the Baptist denomination of that state. The institution grew out of missionary work for the Ottawa Indians, and for a time was attended by both races. Later the institution was organized for the whites only, the first college graduation being in 1886. In 1912, 440 students have been graduated, the collegiate student body numbering 165, the preparatory about 100. The physical plant consists of thirty acres of campus and four buildings. The annual budget is about \$30,000 in almost equal amounts for fees and endowment funds. The faculty consists of ten members.

**OTTAWA, UNIVERSITY OF, TORONTO, CANADA** — Founded in 1849 by the Oblate Fathers of Mary Immaculate as the College of Bytown. In 1866 it received the present title and power to confer degrees. In 1889 it was raised by the Pope to the rank of a Catholic University. The following courses are given by the university: preparatory or general (three years), commercial (two years); collegiate (college entrance), arts (four years, leading to B.A. or B.L.), law (three years, leading to LL.B.), philosophical; theological (four years). The large majority of students are enrolled for pre-college courses.

**OTTERBEIN UNIVERSITY, WESTERVILLE, OHIO** — The institution, founded in 1847, is located twelve miles from Columbus. It is nonsectarian in its teaching, but under the control of the church of the United Brethren in Christ. It is coeducational, having been one of

the first colleges in America to grant equal privileges to men and women. The University maintains a college, an academy, music and art departments. A strong summer school is conducted. There are seven buildings and forty acres of campus. The total assets (1911) were \$418,591.11. The student attendance was 486, of whom 214 were in the college department. There are seven groups of studies leading to degrees in the college. The teaching staff consists of twenty-seven professors and instructors on full time and pay.

W C C

**OUACHITA COLLEGE, ARKADELPHIA, ARK** — A coeducational institution established in 1886 under Baptist auspices. Preparatory, collegiate, business, music, and fine arts departments are maintained. The entrance requirements are fourteen units. Bachelor degrees in arts, science, literature, and music and the degree of Master of Arts are given. The faculty consists of thirty members. The enrollment in 1911-1912 was about 370 students.

**OUGHTRED, WILLIAM** (1575-1660) — Clergyman and teacher of mathematics, the son of the scrivener of Eton College, who also taught arithmetic. The boy became a King's Scholar of Eton, and in 1592 entered King's College, Cambridge, where he gave much attention to mathematics, and in his twenty-third year wrote his *Horologographia Geometrica*. Foreign mathematicians came over to England to converse with him, and English mathematicians like Seth Ward and Charles Scarborough, John Wallis and Christopher Wren, the architect, came to him as pupils, and he was in touch with the chief mathematicians of his period. Any that wrote an "ill hand," he taught writing, and himself "drew his schemes most neatly, as if they had been cut in copper." He was an astrologer, and "very lucky" in this study. Nicholas Mercator, the geographer, was one of his friends. Further, Oughtred was a "great lover of chemistry," and of heraldry. Oughtred had received a classical training and turned it to account in reading all the ancient authors in mathematics, — Euclid, Apollonius, Archimedes, Diophantus, etc., — whom he read both inquiringly and critically. At Cambridge he invented an easy method of geometrical dialing, translated from English into Latin in 1647 by Mr. (afterwards Sir) Christopher Wren. He projected a horizontal instrument for delineating dials upon any kind of plane, and for working most questions which could be performed by the globe. Oughtred's enthusiasm for the study of mathematics was equalled by his love of teaching, which is shown by the fact recorded by Aubrey. "He taught all free." His most famous book was the *Arithmetica in numeris et speciebus In-*

*stitutio: quæ tum logistica, tum analytica, atque adeo totius Mathematicæ, quasi Clavis Mathematicæ est*, London, 1631. Other editions were numerous. Oughtred also wrote on the *Delineation of Sundials by Geometry*, 1647, the *General Horological Ring and Double Horizontal Ring and Double Horizontal Dial*, 1653; on *Spherical Triangles*, 1657, and *Trigonometria*, 1657.

F. W.

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**OUTBUILDINGS.** — See **ARCHITECTURE, SCHOOL, LATRINES.**

**OUTDOOR SCHOOLS.** — See **OPEN-AIR SCHOOLS**

**OUTLINE DRAWING.** — See **DRAWING.**

**OUTLINES.** — See **TOPICAL METHOD.**

**OUTLINES, TOPICAL.** — The topical method of study finds its most intense application in the use of topical outlines by means of which a rigid control is kept over the study of pupils, as the subtopics that develop the main topics are strictly laid down. Inasmuch as the outlines usually represent a mature reflective view of the subject rather than the genetic view characteristic of the beginner's advance from ignorance to knowledge, the use of the outline tends to curtail independent thought upon the part of the child, and to encourage the memorization of facts about the various topics. Usually the child's interests are little considered in teaching from an outline and the instruction is therefore less vital. The use of the topical outline has the advantage of being definite, and eliminative of waste effort. When the topics are in the form of questions or problems arranged in real psychological sequence rather than in the form of abstract headings, teaching from a topical outline is less artificial. Such a study from outlines is less frequent now than several decades ago. It is used more particularly with grammar grade and high school students than with primary and intermediate pupils. Its successful use depends upon the maturity of the students. It is hardly used in arithmetic and the language subjects, and considerably employed in geography, science, literature, and history. It is most largely utilized in the teaching of history.

H. S.

See **HISTORY, TEACHING OF.**

**OVER-AGE.** — See **RETARDATION AND ELIMINATION**

**OVERBERG, BERNARD HEINRICH** (1754-1826). — A German ecclesiastic and edu-

cator, was born of poor parents in the Diocese of Osnabruck and was educated for the priesthood at Munster, Westphalia. Having been ordained priest in 1780, he was appointed in 1783 to direct the Munster Normal School, a summer school for Westphalian teachers. This work he continued during forty-three years. As the province had at that time no teachers' seminary, this course offered the only opportunity for the training of teachers, and Overberg's work was of great value. The *General School Regulation for the District of Munster* (*Allgemeine Schulverordnung für das Münsterland*), promulgated in 1801, regarded at that time as a model school law, was practically Overberg's work. His *Anweisung zum Schulunterricht* (*Directions for School Instruction*), first published in 1793, is still used, a new edition appearing in 1903. At the time of its first appearance the book was translated into French and commended even by Protestant educators. Among other books which he wrote for the schools may be mentioned his *Primer* (*Neues A-B-C, Buchstaben- und Lesebuch für die Schulen Münsterlands, 1788*), *Biblical History* (1799), and the *Catholic Catechisms* (1799 and 1804). F. M.

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#### OVERPRESSURE (German *Überbürdung*)

—A somewhat vague and general term for alleged overwork in the school. A great variety of opinions prevails in regard to the matter. Teachers and educators are apt to feel that there is little, if any, overpressure in the schoolroom except upon the teachers. Physicians, on the other hand, often strongly condemn the school for overworking the pupils and are ready to cite many cases of overpressure. Some thirty years ago there was a very strong protest against overpressure in the schools in Germany and several other European countries, especially in the higher schools. The complaint on this score has apparently been much less during the last one or two decades, and among educators many voices have been heard in protest against the danger of making pupils effeminate and self-conscious in regard to matters pertaining to their health by the great amount of attention given to school hygiene and the like.

Amid this confusion of opinion certain facts are significant and may be briefly enumerated. First, the length of the school period, the hours for beginning and closing school, the

time devoted to recesses, the amount of home study required, the holidays and vacations, and the kind and amount of school work demanded, vary greatly in different countries. Again, what may be a perfectly normal amount of work for ordinary healthy children may be altogether too much and a source of serious overpressure in case of the weak and defective. Investigations in many schools in many countries have now shown that, without taking account of diseases of the teeth, from 30 to 50 per cent of the children in any school are more or less handicapped by some defect or disease. Among this group of children a large number are liable to overstrain from an amount of work that is quite reasonable for the remainder of the class. It frequently happens also that the defects of these children are not known by their teachers and injustice is done to them on this account. (See MEDICAL INSPECTION IN SCHOOLS.)

Further injustice is done by the improper grading that exists in many schools. With the ordinary classification according to chronological age and scholastic attainments, many of the children in the same class may be at a lower stage of physiological and psychological development, and hence lacking in the ability to do the amount of work that may rightly be given to other children in the same class who are of the same chronological age but of greater physiological and psychological maturity. (See GRADING AND PROMOTION; GROWTH.)

Another significant fact is the varying amount of extra-scholastic occupations engaged in by the pupils,—among the boys the selling of papers, doing errands, helping in the home work and the like, among the girls the care of other children, domestic duties, and special lessons in piano playing, dancing, etc., and in case of both girls and boys the entertainments, parties, meetings, and the like, that are attended. It is often just because children come to school handicapped by the fatigue from outside duties or outside dissipation that it becomes necessary for special hygienic care in connection with the school work.

Statistics in regard to school diseases, fatigue, eye defects, etc., have often been cited to show the overpressure in the school. Few, if any, of these have given satisfactory evidence of overpressure in the school as a cause, but they do show that with so many cases of defect and disease there is likely to be overpressure, as a result, and that there is need of special care for the proper hygiene of instruction. In many cases also conscientious pupils, by the suggestion of ambitious teachers or parents, or the factitious stimulus of examinations (*qv*) and marks, not infrequently work for a cruelly long period. The older investigators found pupils in the Swedish, Danish, and German schools working ten or

twelve hours a day, and inevitably spending too little time in sleep and recreation. While statistics are inadequate and often misleading, observation shows that at the present time many individuals work for an unreasonably long period in the schools in this country. Especially is this likely to occur at the time of examination and in what are supposed to be the especially important periods of school life, the ninth grade and the last year in the High School. As Dr. Dukes, the school physician at Rugby, has pointed out, we have laws against working a child's body for long hours, but there is no law to forbid working a child's brain to the limit of endurance.

Among teachers there is undoubtedly a great amount of overpressure. The nervous strain from instruction and discipline, the time spent in keeping school records, in correcting exercises and examination papers, and in preparing for special lessons, and often in the visiting of pupils in their homes, and in many cases the worry over meeting the demands of the authorities higher up and of holding one's position, not only cause many breakdowns among the teachers themselves, but the weariness of the teacher is pretty apt to react upon the pupils and becomes an important factor in mental overpressure in the school. The most immediate remedy would seem to be less red tape, a better system of grading, and the allotment of a smaller number of pupils to each teacher.

Consideration of the facts cited shows clearly that there is often danger of serious strain in the case of individual pupils, and the points to be emphasized for the avoidance of overpressure are the following: (1) Physical and mental examination of all pupils at the entrance upon school life, and periodic tests thereafter. (2) The need of a better system of grading, based upon physiological and psychological age, rather than upon chronological age and school attainments, and upon the conditions of physiological and psychological health and ability to work. (3) A better training of teachers in school hygiene so that proper care may be given to children who suffer from physical and mental defects. (4) A better distribution of the period of study, with more time for recess, better arrangement of the work, and the like, with due regard to the teaching of modern hygiene as to fatigue, the need of alternating periods of work and rest, and economical methods of learning. (5) Care in allotting of home tasks, the explanation of lessons when assigned, the abolition of school tasks as punishment, shorter examination periods and less stress upon the results of examinations, and a general regard for the obvious teachings of mental hygiene and the hygiene of instruction. (6) A smaller number of pupils to each teacher. W H B

See COEDUCATION, EXAMINATIONS, HYGIENE OF; FATIGUE, GRADING, HYGIENE OF.

GROWTH, HOME STUDY, HYGIENE OF; MEDICAL INSPECTION, MORBIDITY IN SCHOOL CHILDREN, PHYSIOLOGICAL AGE; SCHOOL MANAGEMENT, SUICIDE AMONG SCHOOL CHILDREN

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**OVERSTUDY** — See OVERPRESSURE.

**OVERWORK** — See FATIGUE; OVERPRESSURE IN THE SCHOOLS

**OVID** — P. Ovidius Naso, the "laureate of the gay society" of the later Augustan period, has been, next to Vergil, the most widely read and most widely imitated of the Roman poets. Associating intimately, perhaps too intimately, with the decadent men and especially women who composed the circle of Augustus's profligate daughter Julia, he devoted himself almost exclusively to erotic poetry (*Amores*, *Heroides*, *As Amatoria*, *Remedium Amoris*), written in the elegiac measure, in the mastery of which he has never been surpassed. After recovering from the dismay inspired by Julia's disgrace and banishment in B.C. 2, Ovid turned his attention to story-telling, for which his gay and unstable genius was particularly well fitted. As his subject he chose the legends of the Greek pantheon and wrote fifteen books of *Transformations* (*Metamorphoses*), embodying the mythology of the ancient world from chaos to the deification of Caesar. He also composed a poem on the Roman calendar (*Fasts*), diversified by stories of early Roman legend but before he finished it he was suddenly, without warning or explanation, exiled by Augustus in A.D. 8 to Tomi, a savage place on the Black Sea, where after unavailing lamentations (*Tristia*) and letters (*Ex Ponto*), he died in A.D. 17 or 18.

The *Metamorphoses* has been the great ancient storybook for ages. While many of the stories are unsuitable for children, yet a large number are beyond criticism, and the charm of the style, the comparative ease of the narrative, and the smoothness of the meter render a selection from these tales an admirable

book with which to begin the study of Latin poetry, and thus lead up to Vergil. Consequently, where the curriculum admits of it, some selection from the *Metamorphoses* is frequently read after the first extended reading of Latin prose (usually Cæsar). When there is more time a few selections from the other poems may be added with profit.

The chief difficulty is the metrical form, the heroic hexameter, which causes such a shift in the ordinary prose order as to greatly confuse the young student. To obviate this, it would be well to rearrange the narrative in the order of prose and this is actually done in some textbooks. For the narrative, the pupil should also have access to Bulfinch's *Age of Fable*, or Gayley's *Classic Myths*. The mysteries of scansion should occupy the pupil but little at this stage, nor should much attention be paid to the influence of Ovid upon English poets. The best collection of material for the study of this influence is found in Miller's *Ovid* (American Book Co., 1910).

There has been no complete edition of *Ovid* with notes since the Variorum edition of 1827 (Oxford). The last complete text edition is by Postgate (London, 1894). Of separate poems there have been numerous modern editions, but those of the *Metamorphoses* and *Fasts* have been confined almost entirely to school books.

G L

**OVIEDO, UNIVERSITY OF, SPAIN —**  
See SPAIN, EDUCATION IN

**OWEN, ROBERT (1771-1858)** — Born in Newtown, Montgomeryshire, Wales; the son of Robert Owen, saddler, ironmonger, and postmaster of Newtown. He was the sixth of seven children and was precocious in the development of his literary and religious interests. He had an early passion for reading, and books were left to him by the clergyman and other residents in the town. He was sent to school at a very early age and began to help his schoolmaster in teaching at the age of seven. He was apprenticed in his eleventh year to a draper at Stamford. "From ten years of age I maintained myself without ever applying to my parents for any additional aid." In 1787 (during the early days of the industrial revolution) he became assistant in the shop of Satterfield, a draper in St. Ann's Square, Manchester. In 1789 he set up as a maker of spinning mules, and quickly showed great business ability.

The second period of Owen's life, 1790-1821, was that of active occupation as a large employer. In 1790 he became a cotton spinner on a small scale in Manchester, subsequently acting as manager of a large cotton mill, and, in 1794, as managing director of the Chorlton Twist Company in Manchester. In 1799 he bought for himself and partners the cotton mills at New Lanark, near Glasgow, belonging

to David Dale (*q.v.*), whose daughter, Anne Caroline, he married in the same year. In Manchester Owen had become the friend of John Dalton and Dr. Percival, and was a member of the Manchester Literary and Philosophical Society, established in 1781. From this group he gained an impulse towards the reform of the factory system and the better education and housing of apprentices and working people. He organized the rough and ignorant factory community at the New Lanark mills (about 2000 people, including 500 children sent from parish workhouses as apprentices) under paternal government, enforcing cleanliness, temperance, and religious toleration. The minimum age for employment in the mills was fixed at ten. Free education was provided for all children from five to ten years of age. The teaching and discipline in the school followed the methods of Joseph Lancaster (*q.v.*). In 1813, Jeremy Bentham and William Allen, one of the founders of the British and Foreign School Society (*q.v.*), became partners in the mill. During the years 1813-1816 Owen wrote *A New View of Society, or Essays on the Formation of Human Character*, in which he thus formulated his fundamental principle: "Any general character, from the best to the worst, from the most ignorant to the most enlightened, may be given to any community, even to the world at large, by the application of proper means, which means are to a great extent at the command and under the control of those who have influence in the affairs of men." The "plastic quality" of child nature would enable society to be "ultimately moulded into the very image of rational wishes and desires." "All poverty and crime are the effects of error in the various systems of training and government." "The end of government is to produce the greatest happiness to the greatest number." National reform was to be based, in Owen's view, on (1) restriction of the drink traffic, (2) maintenance of the national Church, but as an institution without formularies and without any declaration of religious belief, (3) reform of the Poor Law, (4) universal elementary education from infancy. "The infants of any one class in the world may be readily formed into men of any other class." "Every State to be well governed ought to direct its chief attention to the formation of character; and the best governed State will be that which shall possess the best national system of education." The national system of education was to be uniform throughout the United Kingdom, upon non-denominational lines, under the control of the central government, which should provide and support training colleges for teachers and appoint teachers to the schools; (5) "the obtaining regular and accurate information relative to the value of and demand for labour over the United Kingdom." Official

quarterly labor statistics, showing wages and unemployment in each district, were to be published with a view to greater mobility of labor; (6) provision by the Government of works of national utility (roads, canals, harbors, etc.) for employment (at wages less than the average rate of private labor in the district), of those not able to find work in competitive industry.

Owen and his work at New Lanark quickly became famous. In 1814-1815 he pressed for a new Factory Act. In 1817 Owen published a plan for the establishment of industrial communities, self-contained, educationally organized, and self-supporting, upon a cooperative basis,—a new type of social organization, which, in his belief, would gradually become universal. The plan involved a degree of governmental control which was resented by Radical individualists as likely to strengthen the authority of the existing Government. In 1818 Owen visited Switzerland and saw Oberlin, Pestalozzi, and Fellenberg (*qv*). In 1819 he estranged public sympathy by a public declaration against Christianity. In 1824 he heard of an estate on the Wabash river in the state of Indiana which belonged to a German colony which had emigrated from Wurttemberg under the guidance of a Lutheran teacher, Rapp. This society had given the name Harmony to the estate, from which they now wished to move on. In 1825 Owen bought the village, with 20,000 acres, for £30,000. Before his return to England in 1825 he had established a community of 900 people at New Harmony, to which he returned in 1826-1827 and 1827-1828. Difficulties arose in the society and the colonists gradually gave up the principles of communism upon which their brotherhood had been originally based. In 1828 Owen finally broke off his connection with New Harmony, having spent over £40,000 upon the experiment.

In 1829, after long friction with his partners, he withdrew from New Lanark. In the years 1829-1858 he was continuously engaged in propaganda on behalf of cooperation and socialism, devoting his private fortune to the diffusion of his ideas. In 1832 he opened an equitable labor exchange in the Gray's Inn Road, but the new institution survived but for a short time. His activity stimulated the growth of the cooperative movement throughout England, and he never failed to emphasize the importance of education as one factor in economic progress. In 1854-1856 Owen was converted to spiritualism by an American medium. He died at Newtown, the place of his birth, November 17, 1858. Of his three sons, Robert, Daniel, and David Dale, the two last became Professors in American Colleges.

Owen was single-minded, devoted to his fellow men, untiring, undiscriminating; the

spiritual father of a great movement, a prosy saint, successfully unsuccessful, a seer who prophesied, with fatal one-sidedness, one side of the truth of social and educational reform. He was blandly impermeable to the prick of facts, philosophically unphilosophical; scientifically unscientific. He emphasized (1) the importance of social environment in the development of character, (2) the need for an economic structure of society in conformity with a new ethical ideal, (3) the necessity for using capital in the organization of community life, and (4) the value of well-directed education from infancy. But he underestimated the power of heredity, he overlooked the bad side of human nature, he underrated the complexity of the economic structure of industrial society, he exaggerated the power of direct instruction upon character, he was oversanguine as to the practical efficiency of governmental action, and he did not clearly decide whether the ultimate basis of social control is to rest on the majority vote of adult male citizens or upon some enlightened despotism, whether individual or bureaucratic. His persevering but tedious speeches disseminated socialistic ideas, but failed to convince national opinion, which preferred a combination of individual effort and state regulation.

M E S

See NEW HARMONY MOVEMENT

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## OWEN, ROBERT DALE (1800-1877)

— Educational writer and social reformer, was the son of Robert Owen (*qv*). He was educated in Fellenberg's (*qv*) institution at Hofwyl, and was one of the active promoters of the New Harmony community. After the abandonment of the social experiment, he engaged in journalism and political life. He was a member of the Indiana legislature and the Congress of the United States. He was active in the organization of the Smithsonian Institution (*qv*), and later served as ambassador of the American government to the kingdom of Naples. His educational writings include *Outlines of the System of Education at New*

*Lanark, Scotland* (1824), *Moral Philosophy* (1831), and his autobiography, *Threading my Way* (1874). W S M.

**OWENS COLLEGE.** — See MANCHESTER UNIVERSITY.

**OXFORD CAPS** — See ACADEMIC COSTUME

**OXFORD COLLEGE FOR WOMEN, OXFORD, OHIO** — The oldest Protestant college for women conferring the B A degree in the United States. It was founded in 1830 by President Bishop and Professors Scott and McGuffey of Miami University, a neighboring institution. There have been more than 4500 students, including many women eminent in public life. The institution is one of the few women's colleges of full collegiate grade west of the Atlantic states. Fifteen units are required for entrance and 120 hours of college work for the B A degree, seventy of which are specified. The greatest stress is laid upon history, language, philosophy, and music. About 200 students are enrolled each year. The faculty consists of twenty members.

J S

**OXFORD UNIVERSITY — Origins** — The story which attributes the foundation of a university at Oxford to Alfred the Great is purely mythical and rests chiefly upon an impudent insertion in Camden's edition of Asser Menevensis. No schools of any kind or sort can be shown to have existed at Oxford till the beginning of the twelfth century. Somewhere in the decade 1110-1120 Theobaldus Stampensis (*i e* of Étampes in Normandy) became a Master at Oxford. His extant works are a short and violent attack upon the monks, (*Improperium contra monachos*), and five letters, in the earlier of which he is described as a "Doctor" or "Master" of Caen, in the later as "Master of Oxford." The *Improperium* provoked a reply in which it is stated that Theobald was teaching "sixty or a hundred scholars more or less" at Oxford (Migne, T, Vol. CLXIII, c. 759, extracts in T E. Holland, *Collectanea* (Vol II, p 156 Oxf. Hist. Soc). In 1133 we hear of a more famous Master, the theologian Robertus Pullus, as teaching in Oxford. (*Oseney Chron*, ed Luard, *Annal Monast*, Vol IV, p 19) The jurist Vacarius certainly taught Roman Law in England in 1149, and at some time or other taught in Oxford (Rob de Monte, *Chron*, ed Migne, T, Vol CLX, p 466, Gervasius, *Actus Pontificum Cant* ed Stubbs, Vol II, p 384) It may be that the Oxford teaching was as early as 1149, though there is some reason for suspecting that it was later. These are the only allusions to schools at Oxford before the year 1167. Soon after that date — but not before — we find Oxford

blossoming out into what a little later came to be known as a *Studium Generale*, *i e* a place of study which attracted students from distant regions. At about that date Henry II, then engaged in deadly conflict with his rebellious and exiled Archbishop, Thomas Becket, ordered that all clerks then resident abroad should return to England, "as they love their benefices" (*Materials for the Life of Becket*, ed Robertson, I, 53), and a contemporary tells us that "the king wills also that all scholars be compelled to return to their country or be deprived of their benefices" (*l c*. VII, 146). John of Salisbury likewise informs us of a certain old prophecy that the "Mercuriales" (*i e* scholars) should be depressed, which had now in the year 1167 been fulfilled, for the "Mercuriales have been so depressed that France, the mildest and most civil of nations, has expelled her foreign scholars" (*l c* VI, p 236). This may refer to some action on the part of the French, or it may be a rhetorical way of expressing the effect of the English king's edict. Taken together, these passages make it clear that somewhere about 1167-1168 there must have been a great exodus of English scholars from Paris, which was then the usual place of higher education for Englishmen, and others would be prevented from going to Paris for the first time or from returning after the long vacation.

It was the wont of medieval scholars, when a quarrel with the authorities or the townsmen or other untoward events prevented their continuing their studies in one place, to transfer themselves, with whatever in the way of scholastic organization they possessed, to a more hospitable city. Most of the older Universities of Europe — except the few great Mother Universities — were founded by scholastic migrations of this kind. It may be treated as certain that somewhere in England — at one place or at more than one — a *Studium Generale* would grow up in consequence of this exodus from Paris. As a matter of fact, we hear of nothing entitled to the name of a *Studium Generale* anywhere in England but at Oxford; at Oxford we do hear of such an institution within a few years after the migration of 1167-1168, but not before those years. At about this date we begin to hear of scholars coming to Oxford from distant regions, the names of "writers," parchment makers, and illuminators begin to multiply in deeds relating to Oxford property, and sermons were preached expressly for "clerks from various parts of England" (Thomas Saga Erkebyskups, ed *Materials*, II, p 99; Rashdall, *Universities of Europe in the Middle Ages*, Vol. II, p. 342 sq.) In 1184 or 1185, Giraldus Cambrensis tells us that he read his *Topographia Hibernica* to "all the Doctors of the different faculties, and such of their pupils as were of greater fame or note", and on another day to "the rest of the scholars" (ed. Brewer, Vol. I, pp. 72,



73). In 1190 a student of the low countries at about the age of twenty crosses the sea to study the liberal arts at the *commune* (i.e. *generale*) *studium litterarum* at Oxford (*Emonis Chron.*, ap Pertz, *Mon Germ Hist*, xiii, p. 467); while in the year 1209 an event occurred which reveals the existence, according to a contemporary estimate, of 3000 students at Oxford.

This was the period of the great quarrel between King John and the clergy. The realm was under an interdict, the King was excommunicated or threatened with excommunication. At such a time it went hard with clerks who quarreled with their lay neighbors. The murder of a woman by a scholar led to a violent "town and gown" riot of the kind habitual in all medieval universities, and two or three of the scholars were hanged by the townsmen with the consent of the King. Matthew Paris (*Chron Maj*, ed Luard, Vol II, pp 525-526, 569) tells us that 3000 scholars left Oxford, and resumed their studies elsewhere — some at Cambridge, others at Reading. The town remained almost destitute of scholars till 1213, when John's submission to the Pope compelled the townsmen of Oxford to humble themselves before the ecclesiastical authorities. The ordinance issued by the Papal Legate in 1214 constitutes the first official recognition of the University which has come down to us (*Munimenta Academica*, ed Anstey, pp 1-4). The actual offenders were to do penance by marching in procession, barefoot and without coats, to the grave of their victims, followed by the whole body of townsmen, and were then to escort the bodies to the cemetery for the solemn ecclesiastical burial which had apparently been denied to them. The town was for ever to pay forty-two shillings a year to be expended on a feast of bread and beer, pottage, and meat or fish to a hundred scholars. In future, a clerk arrested by the town authorities was to be surrendered on the demand of "the Bishop of Lincoln or the Archdeacon of the place or his official or the Chancellor, or whomsoever the Bishop of Lincoln shall depute to this office." This is the first mention of the Chancellor of Oxford. He is subsequently spoken of as "the Chancellor whom the Bishop of Lincoln shall set over the scholars therein." These words seem to indicate that no Chancellor had yet been appointed or at least officially recognized.

**Early Organization** — As to the organization and government of the University prior to the year 1214, we are left wholly to conjecture. It is probable that the Masters and scholars who transferred themselves from Paris to Oxford in the time of Henry II would reproduce at Oxford what organization already existed at Paris. A *consortium* or company of Masters is known to have existed in Paris at about this date (1170), and we may

therefore assume that from this time a rudimentary "University" or guild of Masters existed in Oxford, but at Paris — and, therefore, it may be presumed, at Oxford — the organization was of the most elementary description. The guild, in all probability, had no officers of its own, no written statutes, no common seal. The Masters held meetings for the purpose of admitting new members, already licensed by the Chancellor of the Cathedral, to their society by the ceremony of inception (*qv*) by which they were held to become full Masters. At Oxford there was no Cathedral or Collegiate Church from the Chancellor of which the Masters could obtain their *licentia docendi*. How the licenses were granted prior to 1214 we do not know, possibly they were granted by the Archdeacon, or the Masters may have ventured to grant licenses themselves, or to elect a Master who may have been called *Rector Scholarum* (a title said to have been borne by Robert Grosseteste (*qv*), subsequently Bishop of Lincoln, it may be before 1214, *Lincoln Reg* Sutton, f 117), or he may even have been popularly known as Chancellor. At all events, when the Chancellorship came into existence, it was clearly an attempt to reproduce the Parisian Chancellorship, in so far as it could be reproduced without a Cathedral chapter. The Chancellor was the Bishop's educational officer, he granted the license and exercised an extensive ecclesiastical jurisdiction over Masters and scholars — a jurisdiction which was constantly extended throughout the medieval period by successful charters or concessions from King, Pope, or bishop. From the first, the absence of a chapter placed him in very different relations to his scholastic subjects from those which obtained at Paris. At Paris the Chancellor was a member of a hostile corporation; his rule was violently resisted by the scholars, their guild or University grew into corporate existence very largely as a means of emancipation from his authority. At Oxford the Chancellor was — possibly from the very beginning — elected by the Masters themselves out of their own body. He was the instrument and the representative of their privileges and exemptions from ordinary jurisdiction. Under these circumstances the University required no other head. He soon became, if he was not from the first, the recognized head of the University as well as the Bishop's representative and judge. He may be described as the Parisian Chancellor and the Parisian Rector rolled into one, and something more. His authority grew as rapidly as that of his Parisian prototype diminished, and he gradually became more and more independent of the authority which he nominally represented. The necessity of the episcopal confirmation was abolished by papal authority in 1368 (Wilkins, *Concilia*, Vol III, p 75); and in 1395 he was exempted from all episcopal

and archiepiscopal authority (*Mun Acad*, p 78; Wood, *Annals*, Vol I, p 365)

The growth of the University's internal organization followed in the steps of the Parisian development — always with the enormous modifications required by the different position of the Chancellor. The University, as at Paris, was divided into the Faculties of Theology, Law (here Civil as well as Canon Law), Medicine and Arts. But the superior Faculties had little organization of their own, they never possessed Deans. The Masters of Arts were for a time divided into Nations. We first hear of the Proctors in 1248 (*Mun Acad*, p 777). At first, there is some reason to believe that there were four Nations and four Proctors (sometimes called "Rectors or Proctors"), as at Paris. But from an early period there were but two Nations, the Southern (*Australes*) and the Northern (*Boreales*), each with one Proctor. The Welsh, Irish, and continental students were included in the Southern, the Scotch in the Northern, Nation. And after a great faction fight in 1274 it was solemnly resolved that there should be only one Nation at Oxford (Doc in *Archives*, Rashdall, Vol II, p 369). There continued to be a Southern and a Northern Proctor, but the Faculty of Arts debated and voted as a single body, jointly presided over by the two Proctors. No Rector was required at Oxford, for meetings of the whole University were presided over by the Chancellor, but, just as at Paris the Rector of the Artists passed by imperceptible stages into the position of Head of the whole University, so the two Oxford Proctors — originally the representatives of the Regent Masters of Arts, became the executive, under the Chancellor, of the whole body. As at Paris, the voting in the University Congregations was "by Faculties," the Non-regent Masters of Arts here forming a separate "house" with the four Faculties, and a majority of the five bodies was ultimately considered to bind the whole University. Thus in the fully developed Oxford Constitution there were three distinct Congregations or Convocations (1) the Great Congregation (to which the name of Convocation was eventually reserved), consisting of the Regent (*i.e.* actually teaching) Masters of all Faculties, and the Non-regents, (2) the Congregation of Regents (in all Faculties) which met, from about 1327, in the Congregation-house, adjoining St Mary's Church, (3) the "lesser," "previous," or "black" Congregation, consisting of Regent Masters of Arts alone, which met in the now demolished Church of St Mildred's, summoned and presided over by the two Proctors. Permanent statutes had to be first promulgated in the Black Congregation; at one time the Artists contended that their veto was fatal to further progress, but by the fifteenth century it had been established that promulgation in the Black Congregation

was enough, even if the Regent Masters of Arts voted against the Statute. This complicated Constitution lasted throughout the Middle Ages, and, indeed, — with some small changes in the sixteenth century, — till it was superseded by the code of statutes imposed upon the University by Archbishop Laud. The Black Congregation has left behind it a curious relic in the power still legally possessed by the two Proctors, but hardly exercised except on two historic occasions in the nineteenth century, of vetoing a resolution of Convocation, thus was the Laudian substitute for their ancient power of stopping a Statute by refusing to summon the Black Congregation.

**University and Town** — It would carry us beyond our limits to attempt to trace the successive steps by which the University acquired first independence of, and then a virtual supremacy over, the town and its authorities. From the first the students were, as in northern Europe generally, treated as *ipso facto* clerks and enjoyed the usual clerical immunities from the jurisdiction of the ordinary courts. In 1231 the Chancellor was allowed to use the town prison over the North Gate — facetiously known as Bocardo, that being the technical name for a mood in the scholastic logic which it is peculiarly difficult to "reduce" or get out of — for the confinement of refractory clerks (*Letters of Henry III*, ed Shirley, Vol I, p 399). A royal charter of 1244 (Ayliffe, *Ancient and present State of the University of Oxford*, App, p vi) recognized his jurisdiction in all actions of debt or "contracts of moveables" in which one party was a clerk — a jurisdiction extended to all personal actions in 1275 (*Rot Pat*, 3 Edw I, m 6). The most famous of all "town-and-gown" riots — "the slaughter" of St Scholastica's Day, in 1354, which may be described as a pitched battle fought with swords and bows in the streets of Oxford for two days, ended in the defeat of the University and the killing of many scholars (Authorities mentioned in Rashdall, Vol. II, p 405). The University actually throve on its misfortunes, and the great charter of 1355 (*Rot Chart*, 29 Edw III, m 5) condemned the Mayors, Bailiffs, and sixty burghers of Oxford annually to appear at St Mary's Church to cause a high mass to be said for the souls of the victims, and each to offer a penny on the altar to be divided between the curate and certain poor scholars. A communion and sermon being substituted for mass at the Reformation, the observance lasted till 1825 (Cox, *Recollections*, p 112). At the same time, the Chancellor's jurisdiction was extended to all cases both civil and criminal in which one party was a scholar — except cases of treason, felony, and "mayhem". The jurisdiction of the Chancellor's court still remains unimpaired as regards civil causes, and in an attenuated form in criminal cases. Besides these privileges, the University long

retained a considerable share in the policing and general government of the town. Till 1868 the "night police" — which represented the ancient "watch" — remained under the control of the University proctors, and the University still sends representatives to the City Council.

**Secessions.** — Disputes with the City or internal feuds in Oxford as elsewhere led to secessions, sometimes of considerable duration, but none of them — after the foundation of Cambridge — leading to permanent Universities. Northampton (1228, 1263), Salisbury (1238–1278), and Stamford (1334) were the chief scenes of these secessions (Rashdall, Vol II, p 395 sq). An oath binding incepting Masters not to lecture in Stamford continued to be taken by B A's till almost within living memory.

**Halls and Colleges.** — As in other medieval Universities the usual method of living — except for the wealthy noble who resided with a numerous retinue in a house of his own, and the poor "Chamberdekyne" who lodged with a townsman — was for a party of scholars to hire a house (at Oxford usually known as a "Hall" or "Inn"), employ their own servants and divide the cost of living among themselves. One of the party, known as the Principal, gave security for the rest and presided over the establishment, but the Principal was at first — at least nominally — elected by the community which formed a self-governing society, making its own "statutes," administering its own funds, and in the last resort controlling its own discipline. But the supervision of the University gradually extended itself to the internal affairs of the Halls and rendered the authority of the Principals more and more independent of their subjects, although they continued to be nominally elected by the students even after, in the 16th century, the real nomination passed to the Chancellor. A code of statutes made by the University for the government of the Halls certainly existed by the second half of the fifteenth century, if not earlier, and in 1432 the University insisted that the Principal of a Hall should be a graduate (*Mun Acad*, p 307). The Colleges were at first simply endowed boarding houses for poor scholars. They provided only for members of the foundation, and had nothing to do with the education of these all resorted to the public schools for their lectures — lectures given by the "Regent" Doctors or Masters, and in part, especially in the higher faculties, by Bachelors who were at the same time pursuing their own studies. At Oxford the colleges were chiefly intended for Masters, or at least Bachelors, of Arts who after finishing their course in Arts required pecuniary assistance to enable them to enter upon or continue the long course in one of the "superior Faculties," especially in the unlucrative Faculty of Theology. The earliest of these foundations —

as regards the date of its founder's bequest — which came to be known as "the Great Hall of the University" or (later) University College — was a very simple affair a provision for two or more Masters of Arts studying theology, founded by William of Durham, who died in 1249. But it was not till 1280 that the Hall really came into existence, and then the endowment was only equal to the maintenance of four Masters. By this time two other colleges had come into being, viz a small foundation for Artists, supported from about 1261 by John de Balliol, Lord of Barnard Castle, as a penance for having "unjustly vexed and enormously damaged" the Church of Tynemouth and the Church of Durham (Matt Paris, *Chron Maj*, ed Luard, I, 528), — subsequently turned into a permanently endowed institution by his widow Dervorguilla (1282), — and the much more elaborate community known as Merton College, founded by Walter de Merton, Bishop of Rochester, in 1263 or 1264. The "rule of Merton," a body of Statutes given to the College in 1263 and amended in 1270, was imitated by later founders, and permanently fixed the type of the English College. The leading note of the College, as contrasted with some Continental colleges, was its complete autonomy. The only external authority which could meddle with its affairs was the Visitor — in the case of Merton, the Archbishop of Canterbury. The scholars elected their own Warden and other officers, filled up their own ranks, and controlled the management of their own property. A small body of "poor boys" — still under the instruction of the Grammar-master or in the earlier stages of their arts course — were also supported by the foundation, but took no part in its government. This distinction was followed in other colleges, and eventually the name "Fellows" (*socii*) came to be applied to the full members of the Society (usually graduates), while the term "Scholars" was in popular parlance reserved to the inferior foundationers, who began as undergraduates, though the scholarship was often retained till the degree of MA was taken. In some cases the ordinary administration of the College was in the hands of a body of senior Fellows, but in nearly all, the youngest full Fellow (after a year of "probation") voted at elections and in some of the more important affairs of the house.

In the next column is a list of the Oxford colleges with the dates of their foundation and names of their founders, the monastic colleges, suppressed at the Dissolution of Monasteries, are bracketed.

Keble College, founded in 1870 by subscription in memory of John Keble (q v), one of the leaders of the "Oxford Movement," and confined to members of the Church of England, is not technically a College of the University, but enjoys practically much the same position.

Balliol . . .	1261-1266	John de Balliol and his wife Dervorguilla (Charter, 1282)	For Artists only Theological Fellowship added by Sir Philip Somerville in 1340
Merton . . .	1263 or 1264	Walter de Merton, Bp of Rochester	
University (Gloucester)	1280	William of Durham	
(Rewley) . .	1283	John de Gifford, Lord of Brimsfield	Benedictine
(Durham)	1280	Edmund, Earl of Cornwall	A Cistercian Abbey
Exeter . . .	1314-1316	Walter de Stapeldon, Bp of Exeter	Chiefly for Benedictine monks of Durham
Oriel . . .	1324	Adam de Brome, nominally King Edward II	
Queen's	1341	Robert de Eglesfield, Chaplain of Queen Philippa	
(Canterbury)	1362	Simon Islip, Abp of Canterbury	Chiefly for Canterbury monks
St Mary College of Winchester (commonly called New College)	1379	William of Wykeham, Bp of Winchester	
Lincoln	1429	Richard Fleming, Bp of Lincoln	
(St Bernard's)	1432	Henry Chichelev, Abp of Canterbury	Cistercian
(St Mary's)	1435		For Augustinian Canons
(St George's-in-the Castle)	1435		For Augustinian Canons of Osney
All Souls	1438	Henry Chichelev, Abp of Canterbury	
Magdalen . .	1418	William of Wavynflete, Bp of Winchester	
Brasenose	1509	William Smyth, Bp of Lincoln and Sir Richard Sutton	
Corpus Christi	1516	Richard Foxe, Bp of Winchester	
Christ Church	1532	Henry VIII previously, as Cardinal College, by Cardinal Wolsey	
Trinity	1554-1555	Sir Thomas Pope	On site of Durham College
St John's	1555	Sir Thomas White, Alderman of London	On site of St Bernard's
Jesus . . .	1571	Queen Elizabeth and Dr Price	
Wadham	1612	Nicholas and Dorothy Wadham	
Pembroke	1624	Nominally James I, Richard Tescdale and Richard Wightwick, B D	
Worcester	1714	Sir Thomas Cooke, Bart	On site of Gloucester Hall
Hertford . .	1874	Thomas Baring	On the site of Magdalen Hall

teachers This defect was overcome in different parts of Europe by different means — in Italy chiefly by state subvention, in Spain and to some extent in Germany by the annexation of ecclesiastical revenues, at Paris and Oxford, so far as it was overcome at all, by the aid of the Colleges Originally the Regent-Masters derived their support entirely from the scanty fees of the students The system could hardly have lasted as long as it did but for the fact that many of the Masters held Cathedral prebends or parochial benefices But this applied chiefly to the superior Faculties, the Doctors and Bachelors of which were frequently dignified and well-beneficed ecclesiastics. In the Faculty of Arts the Masters were usually quite young men, the new Master was required to stay up and lecture for a year, and could lecture as long as he pleased afterwards. Indirectly the Colleges contributed to secure competent teachers by enabling men to take the Master's degree who could not otherwise have afforded to do so, and probably enabled many to go on lecturing for more than their "necessary regency" while beginning their studies in the higher Faculties But, at best, formal public lectures and disputations supplied very inadequate instruction for the younger students of Arts — many of them mere boys of twelve or fourteen In the Colleges a certain amount of less formal assistance was given to the younger members of the foundation by the older ones At New College the younger members were assigned to regular Tutors during the earlier portion of their course Moreover, some College Statutes provided that other members of the University might be received as paying boarders (*Commensales* or *Commoners*) When these were undergraduates, they shared in the instruction given to the younger foundationers. At Paris this system prevailed on a very large scale as early as the fourteenth century: at Oxford we hear comparatively little of it till after the Reformation; but the system of domestic instruction was no doubt more or less imitated in the Hall communities of unendowed students. And the instruction provided within the walls of Colleges and Halls was likely to be both more efficient and better adapted to the wants of young students than the formal lectures given by a young, fluctuating, and casually chosen body of Regents in the public schools For these reasons the College teaching became more and more important and the teaching of the public schools more and more perfunctory. A University Statute of 1408 allows most of the lectures required for the degree of B A to be heard in College or Hall with a "recitation duly following" (*Mun Acad*, p 241). This tendency was stimulated by the change which came over our University studies at the time of the Renaissance It was in the Colleges that that increased attention

**Instruction** — Originally, as we have seen, only an insignificant fraction of the University lived within College walls. But gradually a great change came over the relations of the Colleges to the University The fundamental defect of the earlier medieval Universities was the absence of any adequate provision for the

to the teaching of Latin Grammar and composition which was the earliest phase of the Renaissance movement began to show itself, and it was in the Colleges that Greek was first taught. The promotion of these new studies was one of the declared objects of the characteristically Renaissance College of Corpus Christi, where a public "Reader or Professor of the arts of Humanity" (*i.e.* of Latin) whose special function it was to be to "extirpate and eject barbarity from our hive," and another of Greek (for the benefit apparently of the whole University and not merely of the College), formed a part of the Founder's scheme. The lectures in the public schools adhered to the old routine: they were scholastic lectures on the Latin Aristotle, attendance at which was more and more completely dispensed with by the University. In 1449 all the Regents are allowed to lecture out of the official University Schools in School Street (north of St Mary's Church). In 1508 the Regents supplicate "not to be compelled to deliver their ordinary lectures for the greater part of an hour because none listen to their lectures" (*Causa est quod nulli audiunt eos legentes*, University Register, Rashdall, Vol II, pp 516-517). It is clear that by this time the lectures in School Street have become a farce, and all the effective instruction of the University has passed to the Colleges. Endowed professorships of divinity, civil law, medicine, Hebrew, and Greek were founded by Henry VIII in 1546, and a small number of other professorships by private benefactors in the following century. But these still left most of the instruction of the ordinary undergraduate in the hands of the College Tutors and the Principals of Halls. And of the Halls only a few survived the medieval period. Of these, all but St Edmund Hall were merged in some adjoining College by the last University Commission.

**Studies** — We must now turn from questions of organization and constitution to the studies which the organization was intended to facilitate. Law was a prominent study in almost all the medieval Universities. At Oxford, as elsewhere, a large proportion of the older, and particularly of the richer and better-born students, entered upon that faculty — usually, perhaps, after a certain amount of study in arts, not always ending in graduation. But Law was necessarily less prominent in England than elsewhere, because in England, and in England alone, a system of Law of non-Roman origin attained, early in the Middle Ages, a sufficiently scientific form to have developed a legal education of its own. Elsewhere, even when the Law was of Teutonic or non-Roman origin, its practice fell into the hands of practitioners who had studied Roman Law in the Universities, and everywhere the law of the tribunals became more or less Romanized in consequence. In Eng-

land the early growth of the Inns of Court prevented the Universities becoming in any direct and habitual manner places of education for the English bar. The Inns of Court (*q.v.*) in London were virtually a University of English Law. In the medieval Oxford the Civil Law was studied merely as a preparation for, or in conjunction with, the Canon Law, only the Advocate in the ecclesiastical Courts with a small number of practitioners in the Court of Admiralty and perhaps in the Chancery got their professional education in the Universities. After the medieval period, the study of Canon Law ceased, and any serious study of the Civil Law rapidly dwindled, though the practitioners in the ecclesiastical Courts continued perfunctorily to take the degree of Doctor as a condition of their admission to the "College of the Advocates," commonly known as "Doctors' Commons," in London.

The study of medicine was also relatively unimportant, even in the Middle Ages, though Oxford could boast a few physicians of European fame such as John of Gaddesden, author of the *Rosa Medicina*. In post-medieval times the serious study of Medicine was connected with the Hospital Schools of London and other large towns, though the higher class of physicians still took medical degrees in the Universities. This absence of professional study left a permanent mark upon the traditions and the spirit of Oxford. Down to quite recent times it was, and as regards the majority of its students it still is, the distinguishing note of the English Universities that the bulk of their students were engaged in "liberal" studies which had no relation to their future professional occupations. Continental visitors are amazed to find future barristers engaged, up to the age of twenty-three or thereabouts, in the study of philosophy and philosophy, of history or natural science, and future clergymen postponing the study of theology till they have left the University.

In the Middle Ages the fame of Oxford depended mainly upon its reputation as a studium of theology and arts — that is to say, chiefly of the scholastic philosophy. The subject matter of these studies was much the same as at Paris. (See PARIS, UNIVERSITY OF.) Details varied, but here, as everywhere, the theological textbooks were the Bible and the *Sentences* of Peter the Lombard, while Aristotle — with Porphyry's *Isagoge* and some works of Boethius — formed the principal basis of the Arts course. It is noticeable, however, that in the earlier Middle Ages, physical science was treated more seriously than at Paris. The first recorded Chancellor or "Rector of the Schools," Robert Grosseteste (*q.v.*), known to the Middle Ages as Lincolnensis, was famous for his scientific writings. Peckham (known also as John of Pisa) wrote a famous book called *Perspectiva Communis*

It was not a mere accident that Oxford produced that illustrious "anticipator" of scientific ideas and critic of scholastic methods, Roger Bacon. He tells us that *Perspective* was taught here when it was unknown at Paris. In his time (as we gather from his works) and throughout the Middle Ages there was rather more recognition of mathematics than at Paris. Six books of Euclid were "taken up for the Schools" (*Mun Acad.*, p 415). For an account of the methods of lectures and disputations, of qualifying for and taking the various degrees, the reader may be referred to the article on Universities, but it is worthy of notice that examination was rather less prominent here than at Paris. The still surviving preliminary examination, known as Responses (the candidate was said *respondere questionibus magistrorum scholarum*), can be traced from the thirteenth century, but there was no examination in the strict sense for the license or the Mastership in Arts, and it is doubtful whether there was one for the Bachelorship of Arts. To obtain the master's degree nine Masters of Arts had to "depone" to his fitness "of knowledge" (*de scientia*) and nine others "to the best of their belief" (*de credulitate*). They had to judge of the candidate's efficiency, it would appear, merely from his performances in the various disputations and his general reputation. It is a curious illustration of the continuity which characterizes Oxford history that nine Masters of Arts must still be present in the "ancient house of Congregation," for the conferment of an ordinary degree.

**Fame and Numbers** — We have seen that very early in the thirteenth century Oxford already boasted of 3000 students, according to the medieval estimate, i.e. probably in reality less than 1500. It was by this time the most famous university in Northern Europe, next to Paris. Already in 1257 Matthew Paris calls Oxford "the second school of the Church" (*Chron Maj.*, V 618). It could boast famous teachers in Robert Grosseteste, Roger Bacon, the canonized Edmund Rich, and John Peckham, Archbishops of Canterbury. But it was not till the end of the thirteenth century that Oxford produced a great schoolman who could rival the reputation of Thomas Aquinas and the other great Parisians. Paris had been the scene of the great scholastic movement which had substituted an Aristotelian for a Platonic-Augustinian Philosophy as the basis of the Church's scientific Theology. The task of refuting the unorthodox "Averroistic" interpretation of Aristotle, of Christianizing Aristotle and Aristotelianizing Christianity, had been the work of the great Dominican Doctors at Paris. The attempt, while teaching and expounding the newly recovered Aristotelian works, to remain faithful to the older Platonic tradition, was begun by the Franciscan Doctors at Paris, but attained its fullest development in the

rival and more conservative University of Oxford, where the Franciscan order possessed more influence than their rivals, the Dominicans. The Franciscan convent at Oxford — whose memory lingers in "Paradise Square" and "Friar's Street" — was the true home of that new epoch in the development of the scholastic Philosophy which culminated in "the subtle Doctor," Duns Scotus (*q.v.*), who introduced the thoroughgoing Realism of the later Middle Ages. But this return to Realism provoked a nominalistic reaction; the germs of both movements may be detected in the works of the earlier Franciscans, especially Roger Bacon (*q.v.*). William of Occam, the "invincible" Doctor, the founder of the later nominalistic school, was likewise an Oxford Franciscan. During the fourteenth century Oxford — though a smaller University and less frequented by foreign students — was the home of a far more vigorous and original scholasticism than Paris or any other continental University. It was during this century that the numbers rose to their highest. The medieval estimates of 30,000 or even 60,000 students are quite fabulous, but there may have been some 3000.

Among the schoolmen of this period may be mentioned the Franciscan, Richard of Middleton; John Dumbleton of Merton, Walter Burley, the "plain and perspicuous Doctor" of Merton, Robert Holkot, the Carmelite, John Baconthorpe, "the resolute Doctor", the "profound Doctor," Thomas Bradwardine Balliol, afterwards Archbishop of Canterbury, and John Wycliffe, for a time Master of Balliol, the "Evangelist Doctor". The list closes with Wycliffe, who was for the most of his life a resident Oxford Doctor, and was a realistic schoolman of European reputation before he developed the original views which gradually broadened out into undeniable heresy. Wycliffism was essentially an "Oxford" movement, originating there and for a time dominating the University and sending forth a constant succession of "poor priests" to preach a new evangelical and anti-monastic Christianity throughout the country. It was not till about the year 1411 that an effective attempt was made to purge the University of "Lollardy". The attempt succeeded, and with Lollardy all serious scholastic thinking was suppressed. Wycliffe ends the list of famous Oxford schoolmen. It was in part the reputation for heresy which Oxford had acquired which induced pious founders to establish new Colleges at Cambridge, and pious parents to send their sons to that University. At all events it is from about the period of Wycliffe that Cambridge began to take a place of some equality with Oxford.

**Renaissance and Reformation Period** — In Oxford more even than elsewhere the fifteenth century was a period of intellectual decline. Scholasticism was getting played out, and

vigorous minds began to look in other directions for intellectual sustenance. The first sign that can be detected of a Renaissance consists simply in an increased attention to that preliminary training in "grammar" which always formed the basis of University studies, but which had been neglected since the Aristotelian furor of the early thirteenth century had thrown all other studies into the shade. The effects of Wykeham's provision that students of his New College should stay in the Grammar School at Winchester till they were sixteen—a late age for the medieval freshman—bore fruit. The Latinity of Thomas Chandler, Warden of New College from 1454, has a classical ring about it, and to him is due the first introduction of Greek into Oxford. It was within the walls of New College that the Italian scholar, Thomas Vitelli, taught Greek from about 1475 till 1488 or 1489, and from him no doubt the first of English humanists, William Grocyn (*q.v.*), Fellow in 1467, received his initiation into Greek, which he afterwards taught at Magdalen, and after traveling in Italy, at Exeter in 1498, where he numbered More and Erasmus among his hearers. Erasmus resided at Oxford as the guest of Prior Charnock in St. Mary's College (the College of the Augustinian Canons, of which some remains are still to be seen in New Inn Hall Street) for some months in 1499, and from 1496 till 1504 John Colet was also teaching the Greek Testament in Oxford. Erasmus is full of compliments for the Oxford band of scholars. The brilliant promise of these years was hardly fulfilled. Theological controversies, revived by the Reformation movement, were too strong for much of the genuine Renaissance spirit to flourish in Oxford as yet. But still the knowledge of Greek and of classical Latinity went on growing. Aristotle began to be studied in the original Greek, and the theologians read the Schoolmen less and the Fathers more. The theological controversies were at least fought with new weapons—the weapons of classical scholarship and patristic learning, as well as the old scholastic dialectic. Henry VIII and the ecclesiasties favored by him sympathized with the positive side of the new Learning, and still more with its ferocity against the old. In 1535 a Royal Commission was appointed to visit the University. Here is a report of their proceedings at one of the Colleges: "In New College we have stablished a lecturer in Greek and another in Latin with an honest salary and stipend. We have set Dunce [*i.e.* Duns Scotus] in Bocardo [the cant name for the town prison over the Northern Gate], and have utterly banished him Oxford forever, with all his blynd glosses, and is now made a common servant to every man, fast nayled up in all common houses of easement—*id quod oculis meis vidi*." (Wood, *Annals of Oxford*, Vol. II, p. 62.)

The accession of Edward VI brought with it a new Commission. Fellows suspected of Romanizing tendencies were removed; many of them fled to the continent without waiting to be deprived. Avowed Protestants were put into their places. Peter Martyr was brought to England and made Regius Professor of Divinity. The effect of the Edwardian Reformation was almost to empty the University of unendowed students. The majority were of course anti-Protestant, much of the monastic property was gone, Oxford lost the monks and friars who had formerly taken courses in the University, and the exhibitions which wealthy Abbots had supplied to enable promising lads to study. No one knew what was to become of the Church's remaining property. The Church was no longer a safe career. The numbers of the University were reduced to about a thousand or less (Wood, *Annals*, Vol. I, p. 113). As the University filled up again in the time of Queen Mary and Elizabeth, the majority of the unendowed students became boarders in the Colleges—styled according to their rank and the payments they made "noblemen," "gentlemen-commoners," "commoners," or (if they lived after the manner of servitors) "battlers." A few Halls alone remained, in which the Principal lived entirely on the payments of the commoners, and education was organized very much on the model of the Colleges. The public schools were resorted to only for the disputations required for the various degrees or for the lectures of the few endowed professors. Each of the changes of religion brought with it a Commission, and a purgation of the Colleges by the removal of adherents of the beaten party. But few things enable one to realize better how very gradual was the real establishment of Protestantism in the University as in the country generally. It was not till after Elizabeth's excommunication and deposition by the Pope in 1570 that really effective methods were taken to get rid of Romanizers from the foundations. As we near the end of Elizabeth's reign, Puritanism—*i.e.* Calvinism in doctrine—became more and more dominant in the Universities, though less so at Oxford than at Cambridge. The most marked reaction against it came likewise from Oxford. Reason and conscience revolted against some elements of the Calvinistic creed, learning discovered that the discipline and ritual of the ancient Church, if it was not that of medieval Rome, was equally far removed from the Genevan model. The leader of the revolt at Oxford was William Laud (*q.v.*), a Fellow from 1593, and from 1611 to 1621 President, of St. John's College, which still treasures in its Library the copies which he provided for use in the College Chapel. The High-Church reaction in politics and religion had its center in Oxford. But nothing can testify more eloquently to the hold which

Calvinism in doctrine had obtained over Oxford, even among those who were strong supporters of Episcopacy and the Prayer-book as against the Presbyterian worship and discipline than the fact that even Laud himself in the height of his power (1635), while remonstrating with the Bishop of Winchester as to the condition of New College, did not venture to deny that "Calvin's *Institutions* may profitably be read" by students in the University, though he ventured to suggest that it was premature to make it the chief subject of study and examination for young scholars in their first two years after coming up.

**Laudian Statutes** — In 1630 Archbishop Laud was elected Chancellor of the University. Towards the end of the fifteenth century it became common for the University to elect as a Chancellor an Archbishop or Bishop — later on sometimes a lay noble — who was of course usually, if not always, an absentee, leaving the practical duties of the office to be discharged by a Vice Chancellor, usually the Head of a College. But the Chancellors, though nonresident, were by no means disposed to treat their office as a sinecure, their *raison d'être*, in fact, was to protect the interests of the University at Court, and at the same time to govern it in accordance with the political and religious policy of the government for the time being. Laud might be trusted to avail himself to the full of the opportunities which he enjoyed as Archbishop, as Chancellor and as Visitor of two important Colleges. Nothing was too minute for this ecclesiastical disciplinarian, whose insistence on the "four surplices at All-hallowtide" in every parish cost the Church of England so dear. As Visitor of All Souls' he required the Warden to insist that the Fellows "use not long undecent hair, nor wear large fulling bands, nor boots under their gowns, nor any other like unstatutable novelty." Preachers who attacked Pelagianism or Arminianism or ceremonialism, were imprisoned or banished the University, or at least required to read recantations on bended knees in the Convocation house. At the same time Laud was a real patron of learning, bestowed a valuable collection of Oriental and other MSS upon the great Library founded by Sir Thomas Bodley in 1602, and endowed a professorship of Arabic. But the greatest memorial of his Chancellorship is the compilation of a new code of statutes, — the first systematic codification of the University's laws and customs which had ever been undertaken.

Since the close of the medieval period the old order of the University had been more and more falling to pieces. The statutes had largely become obsolete, it was hardly known which of them had been and which had not been legally repealed, the old machinery of lectures in the schools, examinations, disputations, and other exercises for degrees, had

little relation to the real studies of the place, which for the most part went on in the Colleges over which the University had no control. The old forms were sometimes kept up, sometimes dropped. On paper, the University was still the University of the Middle Ages, teaching scholasticism in its public schools; in practice it had become an aggregate of almost autonomous Colleges, which taught no doubt with some of the old-time knowledge the learning of the Renaissance and the Reformation. It is unnecessary to trace the various attempts at reform of the University constitution which took place in the course of the sixteenth century and the first half of the seventeenth. Laud's more vigorous exertions led to the enactment in 1636, — by the combined authority of the University, the Chancellor (to whom the University had conceded special powers in the matter), and the Crown, — of the code under which (with very few alterations or additions) the University nominally lived down to the middle of the nineteenth century. Although the University still remained without any effective control over the internal affairs of those societies, the Laudian Statutes recognized the fact that the University had largely become a federation of Colleges. The "Heads of "Houses" (*i.e.* of Colleges and Halls), with the addition of the two Proctors, were now constituted into a probouleutic Council, without whose consent no permanent statute or temporary "decree" could be brought before the "Convocation" of Doctors and Masters of Arts, and the old "Black Congregation" was abolished. A small body of Heads could be more easily managed by the authorities than the democracy of young Fellows. This body held weekly meetings and acted as the supreme executive of the University, it was commonly known as the Hebdomadal Board. The Vice Chancellor was always to be the Head of a College, nominated by the Chancellor for a year at a time. In practice, he was frequently reappointed, — in modern times usually for four successive years. The Proctors were now nominated by the Colleges in turn, and in various ways the Colleges and their officers received a recognition from the University authorities, though the attempt to secure control of them by the University, *e.g.* by giving the Vice Chancellor power to remove Tutors, did not practically amount to much. The Statutes did not merely stereotype the organization of the University, they attempted to regulate its studies. The medieval disputations were retained, but a regular examination for the degrees of B.A. and M.A. was added. And the attempt was made to galvanize into life the lectures in the public schools given by the Regents elected every two years — one in each of the "three Philosophies and seven Arts" in which there was no endowed Professor. Undergraduates and Bachelors of Arts were required to attend, for different parts of their







course, the lectures of the Professors or Praelectors of logic, of moral philosophy, of geometry, of astronomy, of natural philosophy, of metaphysics, of history (a recent foundation by the antiquary Camden), of Greek and of Hebrew. This magnificent program might seem to leave little time for the lectures or private instruction in the Colleges. And yet it is certain that the most serious work of most undergraduates — even in the seventeenth, and still more in the eighteenth century — was the work which he did with his tutor in College. Even in Wood's time — *i.e.* a generation or two after the Laudian reforms, — the lectures of the Regents in the schools had acquired the name of "Wall-lectures" — which in a farcical form continued to be delivered after the beginning of the nineteenth century (Cox, *Recollections of Oxford*, p. 37 sq.)

**The Great Rebellion; Restoration.** — The Civil War produced a violent solution of continuity in Oxford history. For some time Oxford was at once a Court and a camp, the King was quartered at Christ Church, Ministers of state and courtiers were thrust into the rooms which should have been occupied by Fellows and Scholars, hundreds of scholars took arms. Even the Puritan régime, which followed, hardly got rid of all the demoralizing effects of this episode. After the triumph of the Parliament a Commission was appointed to visit the University and Colleges, and those who would not acknowledge the authority of the Visitors were "outed" (1647-1648). Men of sounder political and religious views were thrust into their places. Assuming the necessity of such a purgation, the revolution was carried out with moderation. Some of the men put into the places of deprived Heads and Professors were among the most distinguished men of their time, such as the mathematicians Wilkins, Warden of Wadham, and Wallis, Professor of Geometry, and Pococke, who became Professor of Hebrew. With the Restoration a great decline in learning set in. In part, this was no doubt due to tendencies of the time which had nothing to do with politics. The first half of the seventeenth century was the learned age of Europe. The second half was an age of scientific discovery, of popular religious and philosophical controversy, of belles lettres. These influences affected Oxford negatively by weakening zeal for the old studies, if they did not lead to much educational reform. In particular, there was a conspicuous decline in the study of Greek, and the exaction of Hebrew imposed by the Laudian Statutes on B.A. students, if it ever took effect, certainly disappeared. Anthony Wood looks back with amazement on the fact that before the Great Rebellion there were men who used to "discourse in the public schools very eloquently in the Greek tongue" (Life of Henry Stubbe in *Athenæ Oxon.*). The growth

of coffee-houses from 1650 onwards is at once an indication and a cause of the changed spirit of the place. "Why doth solid and serious learning decline and few or more follow it now in Universities?" asks the same writer in 1678 (*Life and Times*, ed. A. Clark, Vol. II, p. 429). "Answer — because of Coffey-houses where they spend all their time." Time spent in the coffee-houses was not all wasted. Here men read the *Spectator* and the newspapers, and discussed the latest book in the deistic controversy. At about the same time the Colleges began to make themselves comfortable. Fellows now lived in separate rooms, and "common-rooms" were built in which Fellows talked and boozed away most of the time after dinner, instead of retiring to their rooms and resuming their studies, as they were required to do by the College statutes. It must not be supposed that there was no learning or study in the Oxford of the Restoration and the eighteenth century. At the worst times there were always isolated Fellows who used the leisure secured to them by the College endowments for the purposes for which these were given, and there could always be discovered isolated Tutors who took their duties seriously. A little before the Revolution John Locke (*q.v.*) was a resident student and Lecturer of Christ Church. Among the professors of the eighteenth century were distinguished men, such as Halley the astronomer, Blackstone the lawyer, and Lowth, afterwards Bishop of London, whose lectures on the poetry of the Hebrews were long a classic. But the professorial lectures were for the most part on subjects unconnected with the compulsory studies of the ordinary undergraduate, or with any organized curriculum. Of the tutors, too many resembled the unfortunate man intrusted for a brief period with the education of the youthful Gibbon, who has handed him down in his *Autobiography* to the contempt of posterity, as one who "well remembered that he had a salary to receive but forgot that he had a duty to perform," and the equally unfortunate "monks of Magdalen" whose "conversation stagnated in a round of College business, Tory politics, personal anecdotes, and private scandal," and whose "dull but deep potations excused the brisk intemperance of youth."

The eighteenth century was — till towards its close — to some extent a period of academic torpor or decadence all over Europe. (See EIGHTEENTH CENTURY, etc.) But it is probable that no University ever sank quite so low or began its revival so late as the University of Oxford. That revival corresponds pretty exactly with the beginning of the nineteenth century. I propose to enumerate a few of the facts which may be regarded in part as symptoms, in part as causes, of this extraordinary decay. It will be observed that most

of them spring from defects in the Constitution of the University which date back in many cases to the early Middle Ages, and which successive Parliaments and Governments had never made the slightest attempt to correct or reform

(1) The fundamental defect in the constitution of Universities of the Parisian type was the absence of proper salaries for the teaching body. Everywhere the defect had somehow to be remedied, nowhere was it remedied so badly and so imperfectly as in the English Universities. The few professorial endowments supplied by Henry VIII or private benefactors became, with the decline in the value of money, increasingly inadequate. It became difficult to insist even on continuous residence, in some cases the lectures ceased to be given. It appears that about the year 1800 fifteen out of twenty professors offered lectures of some kind, but in some cases they had to be abandoned for want of an audience (*Vindication of Magdalen College*, 1800). The Regius Professors continued to be paid their £40 per annum till the middle of the nineteenth century. The rest of the teaching was left to the Colleges.

(2) College Tutors were chosen from Fellows of each College. But fellowships were never intended to remunerate teachers. The legal restriction in many cases to particular dioceses or counties, or a non-legal tradition of electing solely from the College, narrowed the field from which Fellows could be chosen. Consequently Tutors could not always be efficient, and the medieval restriction on marriage remained, even when there were no clerical restrictions on Fellowships, it was the tradition that Tutors should be in holy orders. The abler the man, the more certain he was after a few years of residence to go off to be Tutor to a nobleman's son or to take a benefice in the gift of the College. Teaching was chiefly in the hands of young men who did not intend to make a profession of teaching. Though, as late as the beginning of the eighteenth century, we sometimes find a systematic division of subjects and classes among College Praelectors, the tendency was more and more to leave the teaching of the undergraduate mainly in the hands of his own Tutor. Nobody could be efficient in all subjects, the result was the restriction of teaching to a few subjects — those which the average tutor knew best. By the middle of the eighteenth century little was taught but the classics and a little Logic. The average standard was low. The complaint that he had been fined twopence for not attending a lecture which was not worth a penny, was Samuel Johnson's testimony to his own Tutor's competency; and his experience was not exceptional. In reading the biographies and other records of the period, one is often astonished at the amount of learning and serious study which was to be

found in Oxford even at its worst, but it is nearly always the studies which a select few of the Fellows carried on without reference to teaching, and which a select few of the undergraduates carried on in their own rooms without any regard to the requirements of lectures or examinations.

(3) If the Tutors were inefficient, still less were the bulk of the Fellows not engaged in tuition really fit for the higher studies which they were supposed to be pursuing; and there was little inducement to become so. The part of the Laudian Statutes which related to the studies in the higher faculties, and even to those studying for B.A., soon became obsolete; and eventually a few months' residence was all that was required between B.A. and M.A. For the majority, the real education of unendowed students ended with the B.A. degree. Even in the case of Fellows, excuses for non-residence came to be more and more freely accepted. By the end of the eighteenth century it had come to be understood that, at least after taking his M.A. degree, a Fellow was allowed to be resident or non-resident as he pleased, and nothing whatever interfered with the idleness of those who chose to stay in Oxford. At some colleges — especially All Souls and New College — the practice of "corrupt resignation," — i.e. a Fellow being allowed to take a bribe from a man who wanted to succeed him — added to the abuse by closing the fellowships to poor men.

(4) The area from which students would be drawn was narrowed by the close connection of the University with the established Church. The requirement of subscription to the thirty-nine Articles by every undergraduate at the age of sixteen, was not removed when religious toleration was established in the country at large. The fact that there was more religious liberty in England than in most continental countries, and consequently more dissenters from the State Church, only increased the number of the excluded. Moreover, as the Universities practically ceased to educate for the professions of law and medicine, the class which required a university education was smaller than elsewhere. The Church (in which the profession of the higher schoolmaster was virtually included) was the only career for which the University made any attempt to educate, and the medieval tradition remained by which a course in Arts was practically the only education received by the bulk of the clergy, though a few Divinity lectures were usually given to all undergraduates in college. The expensiveness of the colleges, except for the foundationers and the despised class of servitors, and their growing reputation for idleness and inefficiency aggravated the evil. They fell into disfavor with the more strenuous and progressive classes. The number of undergraduates at Oxford at the end of the eighteenth century was

much smaller than it had been at the beginning of it. By that time the benefits of a University education were practically confined to the future clergy, the sons of the landed gentry, and a very small section of the professional class which, with or without assistance from the foundations, could afford such a luxury before beginning their training for the bar (in England a very small profession), or medicine, or the like

(5) The examinations prescribed by the Laudian Statutes had become a pure farce. The candidate was allowed to choose his own examiners; he could thus select a couple of young M A's whom he entertained at a feast the night before. The examiners were expected to ask, and did ask, traditional questions, the answers to which the undergraduates had learned by heart from "schemes" or little books provided for the purpose a few days before the examination. The disputations and other conditions required for the degrees—higher and lower—had equally degenerated into the purest formalities when they were not "dispensed" by Congregation.

**Revival in the Nineteenth Century** -- To those who look back upon the condition of the University at the end of the eighteenth century the wonder is that the dry bones should ever have lived again. It is vain to speculate on the causes of the revival which first showed itself in the first years of the century: some may suggest the French Revolution, others the indirect effects of the religious revival which dates back to Wesley, or it may be that the very extremity of the disease awakened in the minds of a few able men a sense that something must be done to cure it. Certain it is that the eighteenth century was a period of progressive decay, the nineteenth century one of reform. The era of reform must be divided into two portions. During the first half of the century the reform came wholly from within; there was a revival of learning, of education, and of religion, with little change of machinery, what changes did take place were initiated by the University itself. During the second half of the century the reforms were largely imposed upon the University from without, *i.e.* by Parliament, at the instigation and with the assistance of a reforming party within, but in ways to which the University as a whole would never have consented.

Reform began in 1800 with the "new Examination Statute" which substituted a real Examination in place of the old pretence of one. Competent examiners were appointed by the University; a certain degree of proficiency was required for what was now called a "pass degree," while a list was published of those who had taken "honors," divided into two or (from 1808) three classes, a fourth class was added in 1831. There were two lists of honors—one of those who had dis-

tinguished themselves *in litteris humanioribus* (*i.e.* classics, ancient history, ancient and modern philosophy) and one *in Disciplinis Mathematicis et Physicis*. It is not too much to say that the improvement which soon began to take place in the industry of undergraduates, in the efficiency of the teaching and in the tone of life among the seniors has been chiefly due, directly or indirectly, to the stimulus supplied by these examinations, especially by the competition for honors between Colleges and individuals. High honors soon became so much esteemed by the general public that a First-class—still more, what was then called a "double first" (*i.e.* in classics and mathematics)—was supposed to mark a man out for distinction in Church or State, and the fact that he had taken one was still remembered to his credit when he had become a Prime Minister or an Archbishop. The number of "honour men" was at first small, they have now increased till they are more numerous than the "pass men."

Owing perhaps in part to the new examinations, a few Colleges began to attend, as they had never done before, to merit in the election to fellowships and scholarships. Balliol laid the foundation of its future distinction by opening its scholarships to competition among all comers. Oriel did the same with its fellowships, and an Oriel fellowship became the blue ribbon of the University. The growth of the "first Oriel school"—a group of men of mildly rationalistic or liberal tendencies—is the first sign of reviving intellectual life. Bishop Copleston (Provost 1814–1828), Archbishop Whately, and Bishop Hampden are its best remembered representatives. They were soon succeeded by the "second Oriel school," from which sprang the religious movement in the Church of England known as the "Tractarian" or "Oxford" movement, which began about the year 1833 (See KEBLE, JOHN, NEWMAN, JOHN HENRY). Reactionary as were its intellectual tendencies, the movement did lead to a revival of serious theological study, and, if it absorbed the tutors in theological controversy too much to make for educational efficiency, it at least produced a higher standard of personal behavior and tutorial duty, while its increasingly Roman tendencies stimulated a liberal reaction which was in sympathy with the growing demand for University reform outside. When Newman joined the Roman Catholic Church in 1845, this liberal tendency was powerfully reinforced. "If any Oxford man had gone to sleep in 1840 and had woke up again in 1850," says Mark Pattison (*Memoirs*, p. 244), "he would have found himself in a totally new world. In 1840 we were in Old Tory Oxford, not somnolent because it was fiercely debating, as in the days of Henry IV, its eternal Church question. In 1850 all this was suddenly changed as if by the wand

of a magician . Very free opinions on all subjects were rife . A restless fever of change had spread through the colleges — the wonder-working phrase 'University reform' had been uttered, and that in the House of Commons . The sounds seemed to breathe new life into us . We against reform! Why, it was the very thing we had been longing for, we were ready to reform a great deal — everything — only shew us how to set about it and give us the necessary powers ."

**Reform Period — University Reform Act, 1854** — The exertions of the Reformers inside and outside the University at last led to an Act of Parliament which appointed a body of Commissioners with power to inquire and make recommendations for the reform of the University . They presented in 1852 a report which led to the University Reform Act of 1854 . The changes introduced by this measure, or by the Executive Commission appointed under the act, may be thus summarized (1) For the old "Hebdomadal Board" of Heads was substituted a "Hebdomadal Council," consisting of the Chancellor (nominally), the Vice Chancellor, the ex-Vice Chancellor, the two Proctors, and eighteen members elected by a new body called the Congregation — of whom six must be Heads of Houses, six Professors, six members of Convocation . (2) The new "Congregation" consisted of all resident Doctors and Masters, a new Statute has to be passed by this body before coming before Convocation, and the power of amendment is vested in this body alone . By (it is believed) a mere oversight the old Congregation of Regents — now known as the "ancient House of Congregation" — was not abolished, and remains the authority for the conferment of ordinary degrees and a few other formal purposes . (3) A certain number of new professorships were founded, and the endowments of old ones increased out of the revenues of certain Colleges . (4) In the Colleges most of the local restrictions for fellowships and scholarships were swept away, and it was provided that they should be filled by public competition . (5) The religious test was removed as regards undergraduates and bachelors, but it remained for the degrees which secured admission to the governing body of the university . It was not till 1871 that "tests" were abolished for all degrees except those in Divinity, for fellowships, and for all University and College offices except those confined to clergymen .

**Internal Reforms** — Reforms from within now began to follow one another with great rapidity . In 1852 the classical course was broken up into two sections . (1) An examination known as the First Public Examination, popularly known as "Moderations" because conducted by "Moderators," which was almost purely classical, taken in the course of the second year, and (2) the final examination,

to which the name of *Litteræ Humanioribus* was now confined, which was less classical and admitted a larger element of philosophy and ancient history than the old, undivided School . A similar division was effected between purely mathematical "Moderations" and a School of Mathematics and Physics . Other honor examinations or "Schools" (implying fresh courses of study) now began to be founded, their names up to the present are as follows, with dates of the first examination in each case: natural science (1853), law and modern history (1853, broken up into two separate schools in 1873), theology (1870) . Indian languages (1887), Semitic languages (1892), now united as a school of Oriental languages, English literature (1898); modern languages (1905) . Numerous changes have taken place in the Pass School, in which a large number of "options" is now allowed . The first stone of the University Museum was laid in 1855, and has been followed by a succession of buildings to meet the requirements of students in natural science and medicine .

**University Commission, 1881** — The next great legal change in the organization of the University was effected by an Act of Parliament passed in 1877, and by the Statutes of a Commission appointed under the Act, which were made in 1881 . The changes which now took place were of a more sweeping kind than in 1854 . (1) The Latin statutes (mostly medieval) of the Colleges were repealed, concise and businesslike English statutes were substituted for them, while an easy method of subsequent amendment (by Order in Council on the petition of a College) was provided . (2) The life tenure of fellowships — a feature almost peculiar to Oxford and Cambridge among medieval Universities, and the source of their worst abuses — was abolished . Elections were now to be for seven years in the case of non-resident or "Prize" fellowships, while Fellows engaged in educational work were to hold their fellowships — subject to periodical reelection — as long as they discharged the duties . Power was also given to elect to fellowships persons engaged in "research" . (3) The requirement of celibacy (which had been to some extent modified for particular Colleges by special enactments of the late Commission) was abolished, subject to provision securing the presence of a certain number of unmarried Fellows to reside in College . (4) All clerical restrictions upon the election to headships and fellowships (with the exception of Christ Church, whose Head was also Dean of the diocesan Cathedral, and one other College) were now removed, except in the case of one fellow (occasionally two or three) who were usually left for the conduct of the College services and the provision of theological instruction . (5) Further professorships were endowed, and the endowments of existing professorships increased by the

annexation of a fellowship in one of the Colleges to the respective chairs, and by the imposition of further payments upon the College revenues. (6) Other payments for University purposes were imposed upon the Colleges (when their revenues were sufficient) in proportion to their wealth. (7) The value of fellowships — hitherto very variable — was reduced to a uniform £200 or (in some cases) for fellows engaged in teaching £300 per annum.

*Other Reforms and Institutions* — The effect of these changes was to transform the University from a medieval and largely clerical institution, or group of institutions, into a modern University, and the body of College Tutors into an independent and permanent profession. But the changes which were introduced by private and extra-legal action on the part of the Colleges before and after the Commission of 1881 were quite as important as any which appear upon the face of the Statute-book. Private arrangements between a small number of Colleges for combined or intercollegiate lectures began about the year 1870, and were gradually extended until virtually all honor-lectures throughout the Colleges were open to the whole University. The College Tutors were thus relieved from the burden of too many lectures on too many subjects, which had been one main cause of tutorial inefficiency. The College Tutors were in fact transformed into a body of supplementary University teachers. The arrangement eventually obtained a semi-official recognition from the University, and a recent Statute (1911) has now definitely organized the whole body of College Tutors and Lecturers into "Faculties," who elect representatives to sit and vote with the Professors as members of Faculty Boards. As a consequence of this change and of the general widening of intellectual interests, the old style of lecture, which was mainly a construing lesson, for the most part disappeared, and what used to be called the "professional" manner of lecturing took its place. At the same time, by a spontaneous but rapid evolution, a system developed under which the College Tutor imparted instruction chiefly by hearing and discussing essays with single pupils or two or three pupils together. The practice appears to have become common somewhere in the second quarter of the nineteenth century — and was soon expected of every Tutor, it now constitutes the most characteristic feature of Oxford education.

A few other recent changes may briefly be mentioned. (1) In 1868 it was made possible for students to keep the statutable residence for degrees, and to obtain at small expense the benefits of University study without being members of a College or Hall, there are now some 250 "non-collegiate students." (2) In 1863 the University undertook, jointly with Cambridge, a system of examination for schools

(under a joint Schools Examination Board), and in 1873 a system of local examinations (senior and junior) for boys and girls, — chiefly intended for those who do not intend to proceed to the Universities, — which has had a marked effect in improving the efficiency of the secondary schools throughout the country. (See EXAMINATIONS.) (3) In 1879 women began to be admitted to College lectures and, by private arrangement with the examiners, to some of the examinations. The names of women first appeared in a supplementary official class list in 1893. Nearly all the examinations are now open to women, but Convocation has so far refused to admit them to the actual degree. Four Halls for the residence of women students have been provided: Somerville College (1879), Lady Margaret Hall (1879, Church of England), St Hugh's Hall (1886), St Hilda's Hall (1893). (See WOMEN, EDUCATION OF.) (4) A system of "University Extension" for providing lectures of a University character in towns throughout the country was instituted tentatively in 1878 and definitely in 1885, while in 1909 a system of "Tutorial Classes" for the more thorough instruction of workingmen students was established by the University in consultation with representatives of the trade-unions. (See UNIVERSITY EXTENSION.)

The growth of special studies which could not conveniently be made the subject of an Honors School has led to the organization of various courses which do not lead up to a degree. The institution of the Rhodes Scholarship by the South African millionaire, Cecil Rhodes, sometime Prime Minister of Cape Colony, which enables a large number of American, Colonial, and German students, often somewhat older than the bulk of English undergraduates, to study in Oxford, has tended in the same direction, and stimulated a demand for "postgraduate" education. (See RHODES SCHOLARSHIPS.) The presence of a small number of former students in the "tutorial classes" also constitutes a body for which the ordinary curriculum is unsuited. These new demands have in part been met by the institution of a number of diplomas accessible after a shorter course of study than is required for the Degrees. The following courses leading to Diplomas have so far been instituted: anthropology, archaeology, economics and political science, forestry, geography, rural economy, scientific engineering, and the theory, history, and practice of education.

**Present Problems** — How far the revolution of 1881 and the changes consequent upon it have done all that is required in enabling the University to meet the educational requirements of modern England is a question about which opinions are at present divided. Inside and outside Oxford there are those who would like to reduce the Colleges to mere boarding-houses, to pool their revenues, and

completely to reorganize the University on the German model. There are, of course, conservatives who would alter nothing or be content with the smallest amount of change which would avert a new Commission. There is an intermediate school — representing perhaps the largest section of the resident teachers of the University — who would retain the “tutorial system” as the most characteristic and the most successful feature of the present organization, while they recognize the necessity of considerable changes, not so much in the way of another violent revolution from without as to give the actual working part of the University the power, which it at present lacks, of reforming itself. Without attempting a discussion of proposed remedies, it may be convenient briefly to notice the features of the present system most subject to criticism.

(1) The University is governed in an extraordinary and (except at Cambridge) unparalleled manner. Through the changes in the method of taking the B A degree, nothing has been done to make the M A a reality, that degree is still accessible to the B A's of a certain standing and on the payment of fees without any examination. Even “Congregation” — composed of resident M A's — includes many casual residents in Oxford who may have taken no more than a pass degree, and have no official position in the University or any College, while the supreme governing body of the University still consists of all M A's, resident or non-resident, who qualify by the payment of a small fee. A summons from the conservative wirepullers in Oxford can always be trusted to bring up a few hundred Masters — largely country clergymen — to defeat the schemes which have commended themselves to the majority of the teaching body. The rejection of a proposal to abolish “compulsory Greek” in Responsions for students intending to graduate in mathematics or natural science is the most recent exploit of this legislative mob. (2) Although of late years an increasing number of fellowships have been bestowed upon persons engaged in educational work or “research,” a considerable number of non-resident or “idle” Fellows remain. Whereas with the reformers of 1881 one of the chief objects was to use the fellowships as a means to starting men in professions instead of providing inducement to “hang about” Oxford, it is now widely felt that this was not the purpose for which Universities and Colleges were endowed. (3) A large portion of College revenues is devoted to granting scholarships — mostly of £80 for four years — often to the sons of more or less wealthy parents. (4) The Commissioners of 1881 — elderly men educated on the old system — had little sympathy with the modern conception of a University as an institution not only for teaching, but for the promotion of research and learned work. In the subjects

largely studied by undergraduates there are some two or three Professors for twenty or thirty College teachers engaged in the same study. These men are often so hard worked that they have insufficient leisure to do anything considerable in the way of research and learned production, the chances of succeeding to a professorship, even at fifty or sixty, are small, and there is little other encouragement to such work. Further, the College Tutors begin their work too early and without adequate preparation, — often in the very year after they have finished their own B A course. (5) There are complaints of the tyranny of examinations. Some would like to supplant or supplement them by the requirement of “dissertations” and the more direct training in the methods of original research which such a requirement would stimulate, while others would prefer to provide for the encouragement of such work by postgraduate study. (6) There is a want of co-operation and co-ordination between the various University authorities concerned with finance, and between them and the Colleges. (7) There are the long-standing complaints as to the expensiveness of the Colleges, and the virtual exclusion of poor men from their advantages. Among the most advanced reformers it seems to be considered that University and College revenues should chiefly be devoted to the support and education of workingmen students.

The return to power of a Liberal Government, with an enormous majority at its back, in 1906 stimulated the outcry for University reform. The moderate reformers within the University were encouraged to make an effort for such “reform from within” as would avert the necessity for a Commission. The present Chancellor, Earl Curzon, seconded their efforts and published a book in which he made various suggestions. Reforms for legislation more or less on the lines proposed by him have been introduced by Council. Some of them have been rejected, others are still under discussion. The great obstacles to reform from within are the fact that some of the changes most generally demanded — such as a diminished expenditure on non-resident Fellows and scholars who can come to the University without assistance — require a unanimity among twenty independent governing bodies which has so far not been secured, while the cumbersomeness, ultraconservatism, and ignorance of the ultimate governing body of the University make it improbable that any considerable proposals for reform will pass into a Statute, even when they are recommended to them by a leading conservative statesman whom they have themselves elected to the headship of the University. If this article is maintained, parliamentary intervention is sooner or later inevitable. Meanwhile reformers may console themselves with the reflection that now, as in the past, some of the advances most needed



in the studies, the teaching, and the general tone of Oxford may be — and to a large extent are being — carried out by the silent development of public opinion among that much criticized body of men, the College Tutors, who are still taking the largest share in the real work of the University

There are now 57 professors of the University, over 50 university readers and lecturers (but some of these are also college tutors, etc.), nearly 200 college tutors and lecturers, and nearly 3000 undergraduate students in residence, and about 150 resident B A's still largely engaged in study. The number of women students in Oxford (unmatriculated) is 341

H R

See STUDENT LIFE, DEGREES

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## PACIFIC, COLLEGE OF THE, SAN JOSÉ,

CAL — An institution of higher learning situated in College Park, halfway between the towns of San José and Santa Clara. The institution was the pioneer Protestant college of California. The first charter was granted in 1851, and the school was opened in Santa Clara, May 21, 1851. In 1871 it was removed to its present location. The college owns a tract on the Alameda, which will be used for the erection of other college buildings. Though previous to 1911 a university in name, the institution has never attempted to do more than college work. However, in the decade of the fifties it established the first medical school in the state. This school later became incorporated as the Cooper Medical School of San Francisco, which in time was acquired by the trustees of Leland Stanford Junior University. Throughout its history the college has been under the patronage of the Methodist Episcopal Church, but is in no sense sectarian. As early as 1852 the college voted to admit women to its courses. As integral parts of the institution until June, 1911, were the preparatory and music and art departments. On the date named these departments were separately organized under the same president and trustees, and are now known as College Park Academy and Pacific Conservatory of Music and Art, respectively. The library and laboratory facilities are such as to enable students to pursue thoroughly all the regular college courses and to do the fundamental work looking toward higher special training in the professions, teaching, and engineering. Entrance and graduation requirements are equal with those of the other colleges and universities of the state. The college faculty numbers twenty-two. The enrollment in the college is 134, and in College Park Academy and Pacific Conservatory 210, making a total of 344 J. W H.

## PACIFIC UNIVERSITY, FOREST GROVE, OREGON

— Was organized in 1854 under Congregational auspices, but it is not subject to denominational control. Tulatin Academy, out of which the college developed, was granted a charter in 1849. Rev Sidney H

## PACIOLI

Marsh, D D, was its first President and remained at the head of the institution for twenty-six years. Pacific University is frankly a college and makes no university pretensions, but because of legal difficulties is still required to use the original title. It requires fifteen units for entrance, and a full four-years' course for the Baccalaureate degree. It confers the degree of M A for one year of graduate work above the A B course and the presentation of an acceptable thesis. The total value of campus and buildings is \$198,000 and the cash endowment is \$245,000. The faculty numbers twenty-seven, and there are 250 students in all departments. W W P

**PACIOLI, LUCA (also PACIUOLO)** — Mathematician, known from his birthplace as Fra Luca di Borgo San Sepolero. He was a prominent writer on mathematics about the year 1500. The name appears in one of his works as Pacioli, but the family name was Paciuolo, so that both spellings are given in the histories of mathematics. He was born at Borgo San Sepolero, in Tuscany, about 1445, and died in 1515. He was the first man in modern times to publish in printed form a noteworthy general treatise on mathematics, the *Sūma de Arithmetica Geometria Proportioni et Proportionalitate*, written in Perugia in 1487 and published at Venice in 1494, a second edition appearing posthumously in 1523. He went to Venice in 1464 and acted as a tutor in the household of a wealthy merchant, remaining there until 1471, when he went to Rome. About this time he entered the Minorite order, but continued his work as a teacher. In 1476 he wrote a work on mathematics for his pupils in Perugia, but it was never printed. In 1481, while teaching at Zara, he wrote another, but that is also lost. It is probable, however, that the essential features of both of these works appeared in his *Sūma* of 1494. From 1471 to 1476 he traveled extensively (*per diuersi paesi et conuenuto peregrinando*, as he says) and may possibly have gone to the Orient. His *Sūma* is a large treatise, containing about all that was known of algebra, geometry, and arithmetic at the time it appeared. From 1496 to 1499 he was teaching in Milan, and in 1497 he wrote his *Divina Proportione*, publishing this at Venice in 1509. He also published an edition of Euclid (Venice, 1509). Other manuscripts of his are extant, but no others have been published.

D E S

**PACKARD, FREDERICK ADOLPHUS** (1794-1867) — Founder of American Sunday School journalism; graduated from Harvard College in 1814, and engaged in journalism and public life. He was editor of the *Sunday School Magazine*, the *Sunday School Journal*, and the *Youth's Penny Gazette*. Besides numerous articles on Sun-

## PADUA

day School teaching, his publications include *Union Bible Dictionary* (1837), *The Teacher Taught* (1839), *The Teacher Teaching* (1851), *Life of Robert Owen* (1866), and *Public Schools of the United States* (1866). W S. M

See SUNDAY SCHOOLS

**PADERBORN, UNIVERSITY OF, WEST-PHALIA, PRUSSIA.** — Established by Prince-Bishop Theodore of Furstenberg in the year 1614. Like a number of other German universities, it owed its origin to a Jesuit college, such an institution having been founded in Paderborn in 1592. The university consisted only of a theological (Catholic) and a philosophical faculty, and belongs to the group of the institutions of higher learning that were disbanded in the early part of the nineteenth century, its doors being closed in 1819.

R T, JR

See JESUS, SOCIETY OF, EDUCATIONAL WORK OF

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**PADUA, UNIVERSITY OF, ITALY** — A *studium generale* was established at Padua in 1222, although it may be that law was taught there in the twelfth century. The immediate cause of the origin of Padua University was the secession of the students and professors as a result of dissensions with the city authorities. But that matters were not so satisfactory at Padua is indicated by a contract of 1228 between students and the city authorities to move to Vercelli. From this it appears that already at that date there were from 2500 to 3000 students at Padua, and this university was not affected in spite of the migration of a number to Vercelli. Between 1237 and 1260 a decline set in, and the university practically ceased to exist owing to the tyranny of the Ezzelini. A second migration from Bologna gave Padua a new start, statutes were drawn up, and a Papal Bull was granted in 1264 by Urban IV and was confirmed in 1346 by Clement IV. The municipal authorities contributed largely to the success of the university. The most important faculty was for a long time the legal, grammar, rhetoric, and medicine grew up gradually. In 1363 a theological faculty was sanctioned by Pope Urban V. Padua reached the highest point of her fame and success in the fifteenth and sixteenth centuries and even surpassed Bologna. It was an important center of the Renaissance studies and on that account attracted many foreign students, although the law students still predominated. In the eighteenth century the university declined rapidly and did not attain to any importance until the nationalization of Italy, although efforts were

made to revive it under the Austrian rule. There are at present the following faculties: law, medicine and surgery, mathematical, physical, and natural sciences, philosophy and letters. Besides these there are schools of engineering and pharmacy, and a course for training of teachers. The enrollment in 1910-11 was 1383, of whom 400 were in the faculty of law.

See ITALY, EDUCATION IN

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**PÆDAGOGIUM** — See HALL

**PAGE, DAVID PERKINS** (1810-1848) — Leader in the normal school movement and author of the most popular educational book published in the United States, born in Epping, N. H., the 4th of July, 1810. He got his schooling in the district schools of New Hampshire and at the Hampton Academy. At nineteen years of age he began his career as teacher at Newbury, Mass., and three years later he was elected vice-principal of the high school at Newburyport. His address on "Duties of Parents and Teachers," read before the American Institute of Instruction in August, 1838, Horace Mann declared the finest educational paper that had been read before that association during its eight years of existence. During the next six years Page contributed regularly to the *Common School Journal* edited by Horace Mann, and took an active part in the various educational meetings organized by Mr. Mann in Massachusetts and Henry Barnard in Connecticut.

With the opening of the normal school at Albany (the first in New York) in 1844, Page was selected as principal upon the hearty recommendation of Mann and Barnard. But the new institution met with a storm of opposition. "The newspapers ridiculed and denounced it. They invented all kinds of falsehoods about Mr. Page, and in many ways misrepresented the school and its work. The politicians were against it, and the teachers of the state had no love for the school or its Massachusetts principal." With each session of the state assembly the politicians endeavored to abolish the school; but Mr. Page visited all the chief cities of the state and explained the purpose of the normal school. "His presence carried conviction and won allegiance. His speeches turned the tide, and public sentiment favored the school." But he exhausted his physical powers in his efforts to save the school, and he died in his thirty-eighth year on the 1st of January, 1848.

Mr. Page took an active part in institutes

and other educational gatherings in New York State as he had previously done in Massachusetts. Horace Mann remarks concerning his public lecturing, "He possessed that rare quality, so indispensable to an orator, the power to think standing on his feet and before folks."

Besides the essay on "Duties of Parents and Teachers," 6000 copies of which Horace Mann had printed and distributed to the teachers of Massachusetts, Mr. Page's only published writing is his *Theory and Practice of Teaching*, published in 1847. "No other book on the subject of education," writes Albert E. Winship, "has been read by so many American teachers through so many years." At the time of the expiration of the copyright (1889) more than 100,000 copies of the book had been sold, and with the expiration of the copyright three new American editions appeared. Probably no other American book on education has so much claim to be considered a classic.

W. S. M.

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**PAGE, EDUCATION OF THE** — See CHIVALRIC EDUCATION, GENTRY AND NOBLES, EDUCATION OF

**PAIDODOGY** — See CHILD STUDY

**PAIN** — This is now regarded as the sensation that arises on stimulation of a particular point or nerve end on the skin. It was earlier thought to arise from overstimulation of any sense organ. According to von Frey there are on the average from 100 to 200 pain spots to the square centimeter. They are about ten times as numerous as the pressure spots, and are about 1000 times as difficult to excite. That pain spots are distinct has been shown, not merely by mapping the spots, but also from the fact that there are certain tissues (the conjunctiva and cornea) where there are pain spots but no pressure spots, and others (the inside of the cheek) where there are pressure spots but no pain spots. Von Frey conjectures that the free nerve endings are the sense organs of pain.

W. B. P.

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**PAIN AND PLEASURE** — See EPICUREANISM, HEDONISM

**PAINTING** — See ART, STUDY OF.

**PALACE SCHOOLS** — That type of schools which in imitation of the Palace Schools

## PALÆSTRA

of Charles the Great were frequently attached formally or informally to the courts of kings or the households of nobles See **ALCUIN**, **CHARLEMAGNE** AND **EDUCATION**, **GENTRY** AND **NOBLES**, **EDUCATION** OF, **GUARINO**, **DEI GUARINI**; **RENAISSANCE** AND **EDUCATION**, **VITTORINO DA FELTRE**

**PALÆSTRA** (παλαίστρα) — A school intended for the physical training of boys, over the age of seven, which played an important part in Greek education (*qv*)

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**PALEOBOTANY**. — See **BOTANY**

**PALEOGRAPHY**. — See **TEXTUAL CRITICISM**, also **LIBRARY SERVICE**, **TRAINING** FOR

**PALEONTOLOGY** — The scientific study of the phenomena of life of past geological ages See **GEOLOGY**

**PALERMO, ROYAL UNIVERSITY OF** — See **ITALY**, **EDUCATION** IN

**PALMER, ALICE FREEMAN** (1855-1902) — President of Wellesley College; born at Colesville, N Y, the 21st of February, 1855. She entered the Windsor Academy in 1865 and graduated in 1872. That year she entered the University of Michigan, where she graduated in 1876. Miss Freeman was called to Wellesley College as professor of history in 1879, two years later she was elected vice president of the college, and in 1882 she was chosen president. This position she held until her marriage with Professor George H. Palmer of Harvard University in 1887. From 1892 to 1894 she was dean of the women's department of the University of Chicago.

Mrs Palmer held numerous incidental educational posts during her brief but brilliant career. From 1889 to the time of her death she was a member of the State Board of Education of Massachusetts and gave considerable time to the reorganization of the state normal schools. She was active in the councils of the Collegiate Alumnae Association. From 1888 to the time of her death she was one of the trustees of Wellesley College. She was one of the directors of the Columbian Exposition at Chicago in 1893. She was president of the Woman's Home Missionary Association, and a member of the board of trustees of the International Institute for Girls in Spain.

W S M

See **WELLESLEY COLLEGE**

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## PANAMA CANAL ZONE

**PALMIERI, MATTEO**. — See **RENAISSANCE** AND **EDUCATION**

**PALSgrave, JOHN** (d. 1554). — English divine, who enjoyed the favor of Henry VIII and was appointed by him tutor to Princess Mary (the king's sister) and later to Henry Fitzroy, Duke of Richmond (the king's natural son). Palsgrave had studied at Cambridge, Paris, Louvain, and Oxford. He was the author of the earliest work giving the rules for the pronunciation and grammar of the French language and a French-English and English-French dictionary. The title of the work, which appeared in 1530, and was printed by Richard Pynson, was *Lesclaircissement de la Langue Francoyse, compose par maistre Jehan Palsgrave, Angloys, natyf de Londres et gradue du Paris*. The work is still of value as a storehouse of obsolete English words and phrases. Another pioneer work of Palsgrave was the translation for school use of a Latin play into English. This was the *Acolastus* of G. Fullonius, published under the title *Joannis Palsgrave, Londoniensis, Ecphrasis Anglica in comœdiam Acolasti. The Comedy of Acolastus translated into our English tongue after such manner as children are taught in grammar school, first word for word, as the Latin lieth, and afterwards according to the sense and meaning of the Latin sentences*, etc. In the dedication (to Henry VIII) Palsgrave attacks the prevailing method of translating good Latin into bad and barbarous Latin, "instead of pure English words and phrases." He wishes to see "such an established marriage between the two tongues as may be an incredible furtherance to attain the pure Latinity by."

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**PAMPHLETS** — See **TRACTS**, **EDUCATIONAL**

**PANAMA CANAL ZONE** — Little or no facilities were provided for education in the Canal Zone before the work was taken over by the United States. Spanish schools had existed at Panama and Colon, and under the French a few colored teachers had been imported to look after the children of the laborers, but as the French had no right of government in the district, little progress was made. With the arrival of Americans, however, the demand for school facilities soon made itself felt, but little progress could be made before more pressing needs such as buildings for dwelling houses were satisfied. By 1907 there were twenty-five school buildings (eleven for white and fourteen for colored children) in nine-

## PANAMA CANAL ZONE

teen towns, with twenty-one white and eighteen colored teachers. By 1909 the number of schools had increased to twenty-nine in twenty-one towns (twelve schools for 675 white children, and seventeen schools for 1417 colored children). There were in 1909 thirty-five white teachers, all with two or more years of successful experience in the United States or the Canal Zone beyond the four years of high school and two of normal school. The teachers are divided into four classes, receiving respectively \$50, \$60, \$90, and \$100 salary per month. In the colored schools teachers are almost all obtained from Jamaica and belong to the third and fourth classes. The schools are under the control of the Division of Schools which appoints a superintendent. Two supervisors, one for primary grades and one for grammar grades and high schools, are charged with the duty of unifying the work in all the schools and keeping up a uniform standard. The school term is nine months, from October 1 to June 30, with the usual intermissions. In 1909 medical inspection was introduced for white children. The government supplies free textbooks and stationery. School libraries were first established in 1907 from the proceeds of school entertainments. The curriculum in the grades consists of reading, English, spelling, arithmetic, geography, history, music, calisthenics, and Spanish (from the fifth grade up). In 1908 school gardens were introduced, and it is proposed to add agriculture and horticulture to the curriculum. The chief problems in the Canal Zone are the difficulty of maintaining uniform standards where the schools are so small and scattered. When the schools were first established, instruction was practically individual, since that time graded classes are found generally. Transportation and consolidation have been introduced both for elementary and high school pupils, *e g* at Ancon and Colon.

## PANAMA CANAL ZONE

A uniform course of study, which required careful consideration in order to meet the local situation, is also in use. Another difficulty is the grading of pupils who are drawn from every state in the Union and to secure the cooperation of parents who bring so many different ideals with them. Irregularity of attendance was also one of the large problems, the parents were frequently moved about along the zone and in many instances climatic conditions prevented regularity, while among the colored and native peoples it was no easy task to secure regularity without compulsory attendance laws.

In 1907 there were five high school pupils and in 1908 this number rose to twenty, when two schools were established, at Culebra and Cristobal, another was added later at Gatun. In 1909 the three schools together had an enrollment of only forty-three. The curriculum includes algebra, geometry, physical geography, general history, botany, English, German, French, Spanish, and Latin. Four subjects are normally carried by each pupil. But the defects and drawbacks incident to small schools are obvious and the proposal to centralize the schools and transport the pupils was carried through in 1910, in this way one larger main school, employing more teachers and approaching the standard of an ordinary country high school of the States, has been established at Gatun, with a branch or subsidiary school at Ancon, giving first and second year work. The first high school commencement was held at Gatun on June 24, 1911, and there were two graduates.

The growth of the Canal Zone system is illustrated in the following statement (from *Hearings concerning Estimates for the Construction of the Isthmian Canal for the Fiscal Year 1913*, conducted on the Canal Zone by the Committee on Appropriations, House of Representatives, Sixty second Congress —

[Figures for 1911 show net enrollment of pupils, for previous years, gross enrollment]

	PUPILS			TEACHERS			BUILDINGS		
	White	Colored	Total	White	Colored	Total	White	Colored	Total
October —									
1906			1,840			121			118
1907	176	1,565	1,741			130			130
1908	721	2,146	2,867	23	20	43	11	11	25
1909	745	1,067	1,812	37	21	58	11	66	27
1910	931	906	1,837	210	225	435	9	15	24
1911	1,076	903	1,979	115	27	142	11	15	26

<sup>1</sup> Approximate — no annual report

<sup>2</sup> Number authorized Oct. 31, 1901. During that month there were, respectively, thirty-seven and twenty-four teachers employed.

<sup>3</sup> Number of teachers authorized Oct. 31, 1910. During the month there were, respectively, forty-three and twenty-four teachers employed.

<sup>4</sup> Includes new four-room colored school building being erected at Ancon.

## PANSOPHISM

**PANSOPHISM** -- See ENCYCLOPÆDISM.

**PANPSYCHISM** -- See MONISM

**PANTÆNUS** -- See CATECHETICAL SCHOOLS, CLEMENT OF ALEXANDRIA

**PANTHEISM** -- The philosophic or theological theory, according to which God and the Universe are identical. It has both a mystic and a rationalistic form. Spinoza is generally regarded as the typical classic example of a pantheistic philosopher. In the development of modern idealism (*qv*) in its absolute form, thought or will or sentiency has often been taken to be the single ultimate reality manifested in both the physical world and the finite centers of consciousness that know and feel this world. These forms of absolute idealism have generally been criticized as pantheistic by their opponents. This claim has been denied by the absolutists on the ground that instead of merging individual selves as unreal in one absolute, they have held that a kingdom of selves is necessary to the reality of the ultimate thought or will. Fichte (*qv*), however, was not averse to the epithet ethical pantheism, provided it was understood to stand for the unity of will from which all diversity of individual moral striving took its departure and in which it found its goal. J D

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**PAPE-CARPENTIER, MME MARIE** (1815-1878) -- French educator. Although having enjoyed only a common school education, and only just passed twenty years of age, she was offered the direction of the *Salle d'asile* (to a certain extent the precursor of the present *école maternelle*, or kindergarten) at La Flèche (1835). While in a similar position at Le Mans, she published her *Conseils sur la direction des salles d'asile* (1845), which led to her appointment (1848) as head of the newly founded *École normale maternelle* in Paris, which was intended to supply trained teachers for kindergartens. This position she held for twenty-six years. Mme Pape-Carpentier was one of the first to appreciate that the *salles d'asile* should be something more than mere nurseries, that they had certain educational possibilities, and their subsequent development was due in no small measure to her personal efforts, as well as to her writings. Among her more important works are *Conseils sur la direction des salles d'asile* (1845), crowned by the Academy, *Enseignement pratique dans les écoles maternelles* (1848), *Conférences pédagogiques faites*

## PARALLELISM

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**PAPER** -- See READING, HYGIENE OF

**PAPER CUTTING AND FOLDING.** -- See KINDERGARTEN, MANUAL TRAINING.

**PAPPUS, or PAPPUS** -- One of the prominent writers on geometry among the later Greek scholars. Little is known of him save that he lived in the fourth century of our era. His greatest work was his *Mathematical Collections* (*Μαθηματικῶν συναγωγῶν βιβλία*), a treatise that seems to have been in eight books, but of which only six are extant. The first Latin edition appeared in 1588, and with changed title pages in 1589 and 1602. There was a second edition published at Bologna in 1660. Pappus treats, in this work, of various geometric problems, including the duplication of the cube, measurements of solids, the sphere, geometric analysis, and mechanics.

D E S

**PARABLE** -- See NEW TESTAMENT, PEDAGOGY OF, SYMBOLISM IN EDUCATION

### PARALLELISM, PSYCHOPHYSICAL --

A general doctrine employed both in philosophy and psychology in the discussion of the relation between mind and matter. In philosophy, this doctrine was fully developed by Spinoza. He taught that all reality has two phases or aspects, one being the psychical or mental, the other the material. He uses the figure of the two sides of any flat or curved surface, and holds that there is a mental aspect corresponding to the upper surface of the body and a physical aspect corresponding to the lower surface. The two series of facts are parallel or complementary to each other at every point.

In psychological writing, the doctrine differs from the philosophical doctrine of Spinoza above described. The psychological use of this doctrine can be understood only by referring to the difficulties which arise from the effort to show any causal relation between physical facts and mental facts. The physicist holds that there is no loss of energy in the world through changes in the distribution of energy of motion. When, therefore, light arouses a sensation, the physicist cannot accept any doctrine which would hold that physical energy has been transformed into psychical energy,

since such a transformation would tend to reduce the amount of physical energy in the world. In view of the attitude of the physicists in this matter, psychologists have found some difficulty in accounting for the relation between mental processes and physical facts. They have, therefore, been content to recognize that there is a parallelism between the two groups of phenomena and have been willing to postpone or leave as entirely insoluble the determination of the exact nature of this relationship. In this form, the doctrine of psychophysical parallelism simply evades the difficulties above referred to. Mental facts and physical facts can now be discussed under this general doctrine without going into the metaphysical problem of the ultimate relation between the two sets of facts.

Several questions might arise at this point. Is every physical fact always paralleled by some mental fact? Those who answer this question in the affirmative and hold that there is a complete parallelism between the two sets of facts are sometimes called "panpsychists." On the other hand, most psychologists are satisfied to limit the assumption of parallelism to those cases in which there is some obvious psychological advantage in the study of this parallelism. Sensation processes and thought processes, which depend upon cerebral activity, are evidently included under such cases. Whether the vibrations of the molecules in a stone are accompanied by conscious processes is a purely speculative problem which has no significance for the psychologist.

Certain writers have confused the metaphysical and the psychological interpretation of this doctrine, and have attempted to make it appear that the psychologists who wish to avoid by the adoption of this doctrine all metaphysical discussions are in reality denying certain metaphysical relations such as relation of causation. Such a contention is, however, wholly unjustified, as will be found by a reference to the writings of Wundt who is one of the foremost defenders of this doctrine in psychology. (See his *Outlines of Psychology*, p. 360) C. H. J.

See **PSYCHOLOGY**

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**PARALYSIS** — The lack of the ability to move one or more parts of the body. These paralyzes are of single muscles, of groups of muscles, or of small or large segments of the body. The paralysis may be the result of injuries to or destruction of very different parts of the nervous system. There are those

which result from the injury or destruction of the peripheral nerves, those which result from the section or disease of the anterior roots of the spinal cord, those due to disease or injury to the spinal cord itself, and those which are due to the destruction of parts of the brain.

The paralyzes are of great interest on the educational side, since they limit the activity and, consequently, mental capacity of the child. The paralyzes of infantile type (those which are due to injury of the nerves in the arm or legs produced at the time of birth) may not be discovered for some time, until all power or possibility of regeneration of the nerves has passed away. Besides these, however, the paralyzes in childhood are mostly curable, since they are due most often to injuries of the external part of the brain, and of the peripheral nerves, many of which may be treated with good effect by surgical means. The education of the paralyzed must be carried on in quite a different way from that of normal individuals, the means must be adapted to the individual equipment. The child with right arm monoplegia or with an hemiplegia cannot, under any conditions, be taught to write with the right hand, although some gross movements of that side may be possible. Insistence on a special form of enunciation is also out of the question with certain kinds of facial paralysis. Each case, however, must be considered in itself, and it is impossible to lay down any special rules to apply to every type of paralysis.

Very often anesthesia (*q v*) gives much the same result as the paralysis itself, because of the lack of the sensory stimulation, parts may not be moved, they become paretic and sometimes immovable. It is for this reason that abnormal individuals of this class should be given a careful medical examination, and the teacher should have all of the facts, medical as well as educational, upon which to base her training methods.

Paralysis is sometimes used as the equivalent of general paralysis of the insane, or paresis (*q v*), but is not correctly used in this sense. The term palsy is often used as the equivalent of paralysis, especially when the nerves are involved. S. I. F.

See **INFANTILE PARALYSIS**

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 OPPENHEIM, *Textbook of Nervous Diseases* (translated by Bruce) 1911 Vol. I, pp. 423-528, 667-697  
 Reference *Handbook of the Medical Sciences* 1903 Vol. VI, p. 484

**PARANOIA** — A mental disease characterized by systematized delusions and, except in this particular, exhibiting no mental degener-

## PARAPHASIA

**ation** A number of years ago the major part of those admitted to hospitals for the insane were diagnosed paranoiacs, but most of these were undoubtedly suffering from other diseases in which similar symptoms are found. The paranoid (or paranoia-like) complex consists of the systematized delusion (*qv*), and this is present in many cases of dementia praecox, or alcoholism, of manic-depressive insanity, and even of paresis. The distinguishing characteristics of paranoia are the chronicity and the lack of mental deterioration, and these conditions are found in only a few cases showing the paranoid complex. Since the term paranoid has not been discussed in the article dealing with dementia praecox (*qv*), and on account of its widespread use, it needs further consideration.

As in most of the psychoses, there is at first a period of depression, nervousness, and vague feelings of discomfort. This stage is followed by self-introspection, and by endeavors to bring the actions of others into line with these feelings. This leads to the reference of one's feelings, actions, and thoughts to others. Many paranoiacs do not passively undergo the believed persecutions, but appeal to the neighbors, to the police, etc.; they go to law; they commit crimes and breaches of the peace. Throughout most of this period there are hallucinations of hearing, voices often tell the patient what to do, what power and position he has, etc.

In the usual paranoid state the systematization is less complete. True paranoia begins early and is progressive. Paranoid states may occur at any time, and may disappear when the occasion for the beliefs disappears. It is now believed by some that the paranoid state, in all forms, depends upon peculiar characteristics of the individual reaction, viz the introspective, shut-in characteristics, and that these give a cue for the understanding of the abnormality. Whether or not this be the true explanation of all cases, it undoubtedly plays a part in many, and the conception is helpful in directing attention to the relatively frequent child who may need more of the teacher's effort in a social way. Such children should be encouraged in every way to come out of themselves, and to become a part of the community, they should be encouraged to take part in mass plays and in games in which they may act successively as leader and subordinate, and then attention should be attracted largely to things outside of themselves. S I F

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**PARAPHASIA** — A special form of aphasia (*qv*) in which the patient uses wrong words to express ideas. S I F

## PARENTHOOD

**PARASITIC DISEASES.** — See INFECTIOUS DISEASES.

**PARENTAL SCHOOL** — See REFORMATORY EDUCATION AND SCHOOLS.

**PARENTHOOD** — See PARENTHOOD, EDUCATION FOR

### PARENTHOOD, EDUCATION FOR —

During the early stages of the child-study movement, there was much debate regarding the needs of parents for the proper upbringing of their children. Considerable literature appeared on the general topic, "Child study for parents," in which the view was presented that the parent's relation to his children must be *naïve* for the most part. The terms "instinctive," "spontaneous," and "common sense" appear very frequently in this literature. Nevertheless it was recognized that it would be of advantage to parents if they could be made familiar with the more important requirements for the healthful physical development of children, and for their moral training. At the same time, many persons who were not in sympathy with the new movement declared that any deliberate study of his child would be a handicap rather than a help to a parent, since it would make him more of an observer and a student than an affectionate guide and counselor. From 1890 to 1895 a number of prominent educational men denounced the efforts being made to induce parents to form child-study societies with a view to acquiring what was known regarding the nature of the child and his needs for sound development. Many maintained that parents would derive greatest help from the pursuit of such "cultural" subjects as history, literature, and art, which would enable them in their association with their children to give them the inspiration which was said to emanate only from these sources. On the other hand, the men and women who had inaugurated the child-study movement were, and still are, most diligent in their attempts to encourage parents as well as teachers to study the child in some such way as they would investigate any object with a view to determining its nature and the best methods of dealing with it. As a consequence of these efforts, there is to-day a widespread belief in this country, and also in England, and to a lesser extent in Germany, France, and Italy, that all who deal with children would be aided in their work if they could be made familiar with what is established respecting the native tendencies of the young, and their physical, intellectual, and social needs. This interest, as it is related to education for parenthood, is expressed in a variety of institutions and organizations.

**Institutional Education** — In our own country and in England there has been a considerable demand from various parents' organizations



during the last decade that studies dealing with requirements for efficient parenthood should be offered in high schools, normal schools, colleges, and universities. There are as yet, however, no courses in any of the groups of institutions mentioned which aim directly at training for parenthood. An examination of the curricula of many high schools in all sections of the country, and an inquiry made of a large number of the principals of these schools, indicate that pupils therein have manifested no interest in courses for parenthood, and would probably not pursue them if they were offered. In a very few instances, where high schools attempt to train teachers, certain topics relating to the nature of the child are discussed in the courses in psychology. But it is probable that the students in these classes acquire little, if anything, which relates specifically to the problems of parenthood.

An examination of the curricula of the normal schools throughout the country shows that no attention is given to effective education in the home. The psychology presented in these schools is for the most part analytic, adult psychology. In eighteen normal schools, courses are described which deal with the development of the child mind, as distinguished from the functioning of the adult mind. But this instruction refers particularly to the needs of the teacher rather than to those of the parent. And as in the high school, so here the instruction given in methods of teaching is not at all suited to the conditions, opportunities, and needs in the home.

One might expect that some attention would be given to the study of parenthood in women's colleges, but with two exceptions, possibly, there is no work whatever offered in these colleges bearing directly on any of the problems of parenthood.

The Mississippi State Industrial College (for women) at Columbus has begun to reorganize its curriculum and its work with a view to training girls specifically for home responsibilities. A plan has been projected in which every girl will be required to pursue courses pertaining to the nature of children, their physical care and intellectual development, and their ethical and moral training. The plan provides for cottage life for the students, so organized that each girl before she graduates will be required to manage a cottage in all details as a typical home, including the care and culture of childhood. This work will be required before a degree will be given.

While no work in the universities anywhere is designed mainly as a training for parenthood, there are still courses which relate to the nature and education of the child, in the home as well as in the school. Seventy-one important colleges and universities at present offer well-organized courses under such titles as "child study," "genetic psychology,"

"psychology of the child," "mental development," and "adolescence." In several universities a study of the child from birth onward is included in the general subject of "principles of education." Although the emphasis in these courses is not laid upon the parent's rôle in the education of the child, nevertheless much of what is presented relates quite directly to parental problems. It should be added that a large proportion of the colleges and some of the older universities offer no work relating to child nature. Even in the courses in psychology, no reference is made to child psychology.

An inquiry made concerning the interests of the students who elect such subjects as "child study," "mental development," and the like, shows that these courses are not chosen primarily as a preparation for parenthood. They are conducted, with but rare exceptions, in the department of education, and are pursued by students who are candidates for teachers' positions. It is worthy of remark that in the domestic science departments of the agricultural colleges, in which much attention is given to the making of a home in respect to the purchase and preparation of food, the sanitation and decoration of the home, and so on, little if anything is said regarding the traits and education of children. Such questions, however, are frequently considered when these agricultural colleges hold conventions of women who live on the farm.

In all the kindergarten training colleges courses are conducted which pertain to the nature of the young child, and the method of his instruction and entertainment. For the most part these courses are presented in the spirit of Froebelian philosophy and in metaphysical terminology. It is probable that on the theoretical side they do not deal very closely with the actual manifestations of child life in the home, but on the practical side they appear to present helpful methods in directing the child's activities. In this way they may be of substantial aid to a parent in the training of his child. In the Chicago Kindergarten College a definite course for parents has been organized for the purpose of discussing matters pertaining to the spiritual and physical nurture of children, such as the direction of the child's activities in the home, children's failures and how to utilize them, the treatment of the child's questions, the meaning of imitation in the child, and so on. Practical lessons are given on the value of stories, games, and handwork in the development of the child. Lectures are also given on eugenics, including heredity, sex development, infant mortality, and kindred matters. These courses are offered to mothers and students free of charge. Two hundred students were enrolled in these courses in 1911-1912. This work has attracted attention, not alone in Chicago, but in other cities also, and there is

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an indication that similar courses will soon be instituted elsewhere.

The Stout Institute at Menomonee, Wis., now a state institution, offers similar work. So far as can be ascertained, the Institute is exceptional in respect to the attention which is given to studies pertaining directly to parenthood.

It is of special importance to note that in several of the Chicago elementary schools "Little Mothers' Classes" are being conducted on Friday afternoons. The girls are taught the duties of motherhood, and, wherever possible, babies are used by nurses to exemplify the work. This work is done by the nurses who regularly visit the schools.

No courses are offered in educational institutions in any foreign country aiming directly at preparation for parenthood. Much is being accomplished in the study of child life in Germany, and to a less extent in France, England, and Italy, but most of what has been established has not yet reached parents at all. At the present moment, though, there is lively activity, in Germany and England especially, in the formation of societies and congresses for the dissemination of knowledge pertaining to the child.

*The National Congress of Mothers* — Undoubtedly the most effective organization in the world to-day for the development of interest in the rational care and culture of the child in the home is the National Congress of Mothers, established in the United States in 1897. At the present time, this Congress has in the neighborhood of 75,000 members, distributed throughout the country, and the list is increasing rapidly. Nearly all the states have congresses affiliated with the National Congress. There has been organized under the Congress a National Parent-Teacher Association, and an International Congress on the Welfare of the Child. The latter Congress meets every third year, and it is designed as a medium for the dissemination throughout the world of the ideals for which the Congress of Mothers is working. The Parent-Teacher Association has become an integral part of the National Congress. In the original statement of the purpose of the Congress, emphasis was laid upon the aim of educating parents so that they might intelligently care for their children physically, and direct their spiritual development. Cooperation of the home with the school was also made prominent in the work of the Congress. Further, it was the purpose to promote the establishment of kindergartens, and to secure legislation which would adequately care for neglected and dependent children. It was stated that the Congress would seek to secure proper training of young people for the opportunities and duties of parenthood.

During its fourteen years of existence the

## PARENTHOOD

Congress has worked effectively towards the accomplishment of these aims. As it has developed, it has broadened its original purpose, and it now gives attention to such matters as the establishment of juvenile courts (*qv*) and probation associations, the development of schools for teaching the deaf, the education of parents in respect to the evils resulting from child labor, propaganda with regard to the use of the schoolhouse as a social center, the establishment of public playgrounds, the introduction of manual training and domestic science into the school curriculum, co-operation with farmers' institutes for the betterment of children in the country, and the like. The Congress has also been active in the formation of parents' clubs and societies in foreign countries. In 1906 it established the *Child Welfare Magazine*, in which a prominent place was at first given to scientific literature dealing with child nature and the training of children. Latterly, however, there have appeared in the magazine articles of a more practical character, written usually by parents who have become distinguished for their helpful suggestions relating to the training of the young.

The affiliation of Parent-Teacher Associations with the Congress of Mothers has changed somewhat the original character of the latter, the tendency now being to give attention quite largely to questions pertaining to child welfare in its legal and social aspects, as well as to the care and training of the child in the home.

It is apparent that the National Congress of Mothers, through its great number of affiliated state congresses, local mothers' circles, parent-teacher associations, and its International Congresses on the Welfare of the Child will exert an increasing influence throughout the world for the betterment of child life, not only in the home, but also in the school and in the community. The chief problems presented to the Congress now seem to have reference to the scientific character of its work. It is seeking to make a scientific treatment of parental problems attractive to persons who are untrained in scientific methods and ways of thinking, and those who are directing its work appear to have the situation thoroughly in hand.

*The Parents' National Educational Union* — This organization, modeled in considerable part upon the National Congress of Mothers, is an English society. The Union seeks to treat the development of the child and his training from the physical, mental, moral, and spiritual standpoint. It aims to reach fathers as well as mothers, and its efforts are not limited to the people of any class. It endeavors to collect and disseminate the best available information relating to the training of children and to bring about the co-operation of parents in any community for the interchange of their views and experiences. There

are many branches of the central Union, and while they are designed particularly for parents, still any person who declares his interest in education may enroll as a member. The organ of the Union is *The Parents' Review*. The Union has also established a library for the purpose of lending books and articles pertaining to home education to parents and any others who may be interested. Finally, it conducts a Mothers' Educational Course which is designed to be a reading course relating (1) to the methods of religious education, (2) the care and development of children in sickness and health, (3) the study of the principles and methods of education, and (4) particularly to the development in children of an interest in nature. The course is designed to be systematic, and to be completed by an examination.

Another English association similar in aim to the Parents' Union, but not so comprehensive in scope, is the Child Study Society, London, which concerns itself with the "scientific study of the mental and physical conditions of children, and also of educational methods." Its organ is *Child Study*.

*International Congress on Home Education* — In 1905 an International Congress on Home Education was instituted in Belgium under the direction of the Belgian government. At this first meeting twenty-four different governments were represented, and 1200 delegates were in attendance. About 250 specialists in the countries represented contributed papers pertaining to childhood and child welfare, and these were published in seven volumes. Although not circulated extensively in English-speaking countries, they have played a considerable rôle in developing in continental Europe an interest in the psychology, pedagogy, sociology, and biology of child life. Since the first International Congress, which was held at Liège, there have been two others, — one at Milan in 1906 under the patronage of the king of Italy, and the other at Brussels in 1910 in connection with the Universal Exhibition. It has just been decided to hold the fourth International Congress at Philadelphia, in 1914. The Congress consists of five sections. (1) The study of childhood, (2) the education of children, (3) abnormal children, (4) various subjects relating to children, and (5) literature.

*International Congress on Pedology* — As some of the members of the International Congress on Home Education believed that its scope was too comprehensive, there was established in 1911 at Brussels an international congress for the purpose of bringing together persons interested in the scientific study of child development. It is composed largely of psychologists, psychiatrists, educationists, and persons of kindred interests.

It is not at all improbable that during the

next few years most of the national and international congresses which are now being formed will become merged into two or three general organizations, which will centralize all the activities relating to the study of childhood.

*Child Welfare Exhibits* — During the winter of 1910 an exhibit was held in New York for the purpose of showing in as concrete a way as possible by means of photographs, symbolic representations, lectures, and living demonstrations the actual conditions of child life, and practical methods of conserving the health and improving the morals of the young. The exhibit proved to be so successful that it was transported to Chicago, where it was enlarged and presented during the month of May, 1911. As a result of the success of these two exhibits, plans are in preparation for similar exhibits in a number of cities of the country. So far as can be ascertained, no vital criticism has been passed on the usefulness of such exhibits. It seems apparent that the general plan of exhibiting the facts of child life in a concrete, dynamic way will meet with increasing favor, and be adopted by communities in every part of the country.

These exhibits present pictorially and in living demonstrations facts pertaining to child life in the home, on the street, in the school, in the church, in the theater, in the public library, in clubs, in associations, on the playground, and in amusement halls. Lectures are also given by competent persons upon every phase of child life treated in the exhibit.

*Educational Departments of Women's Clubs*. — Visitors to America from foreign countries generally express surprise at the thoroughgoing way in which the women here are organized for educational purposes. In most communities there is at least one woman's club, the purpose of which is to enable its members to participate in the intellectual, social, educational, and philanthropic activities of the community. Originally the women's clubs gave their attention largely to literary and artistic pursuits, but latterly they have undertaken to study in a careful way the life of the communities in which they are situated, with a view to suggesting improvements therein. These clubs are usually conducted under various departments, one of which is concerned with education. A program is prepared by the educational department at the beginning of the year which relates either to the training of children in the home, or to the improvement of educational conditions in the school and of child life in the community. In some instances the members pursue courses of reading in connection with the various topics discussed.

It seems evident that the influence of women's clubs is becoming constantly more potent for good in the betterment of conditions for the child in the home, in the school and in

society. There is a developing conviction among the members of these clubs that the chief work of women should relate to child welfare. In some cities, only those departments of the women's clubs that are concerned with one or another phase of civic activity arouse much enthusiasm in the members. These clubs have already in many places secured important reforms in respect to the curriculum and the physical conditions of the schools, and the life of children in the community. They have secured public playgrounds, gymnasiums for the public schools, and similar reforms.

#### *Parents' Meetings in Public Schools —*

During the past decade, teachers in the public schools in every section of our country have been active in attempts to interest the parents of their pupils in the work of the schools, and in matters pertaining to the proper care of children. It is the practice in most places to give exhibitions or receptions to which parents are invited, and as a part of the program educational topics are discussed. From reports received, it is evident that the meetings have been successful in informing parents regarding new developments in school work, and in securing support from the community in regard to the extension of educational advantages, such as the establishment of gymnasiums, the improvement of the hygiene of public schools, the securing of playgrounds for school children, and the like. In this work it has been necessary everywhere for teachers to take the initiative, and so far as it has been possible to secure data for this article, it is apparent that the success of parents' meetings has been dependent almost entirely upon the efforts of teachers. However, responses received to a questionnaire regarding the value of parents' meetings in the public schools indicate that in communities in which these meetings have been held for several years parents are taking a more intelligent interest in the work of their children in school than they did formerly. Reports have come from a number of communities saying that as a result of the meetings parents now frequently visit the public schools, and cooperate with the teachers in securing needed improvements which require financial support from the community.

*Eugenics Clubs —* There is beginning to be manifested in some communities a lively interest in the subject of eugenics (*qv*). In some cases the women's clubs have taken up a discussion of this topic. Eugenics clubs have been formed for the purpose of considering the requirements for the improvement of the race through the betterment of the conditions of childhood, both before and after birth. An examination of the programs of some of these clubs shows that the topics considered relate directly to problems of parenthood. In at least one state, Iowa, the Federation of Women's Clubs and the Mothers' Congress

have taken definite steps to make a careful study of the subject of eugenics. A woman physician has been sent abroad to find out what progress has been made there in the study of the subject. It is proposed to develop a method of "scientific scoring" of children in some such a way as horses, cattle, and corn are now scored in agricultural colleges. The physicians of the state worked out a standard which was applied to a large number of babies, and included items pertaining to height, weight, measurement, condition of teeth, of eyes, of nerves, and so on. Apparently the exhibit at the Iowa state fair attracted favorable attention, for it has been repeated in one form or another in a number of communities in the state. M V O'S

See CHILD LABOR, CHILD PSYCHOLOGY; CHILDHOOD, LEGISLATION FOR THE CONSERVATION AND PROTECTION OF, EUGENICS, FAMILY EDUCATION, HYGIENE, TEACHING OF, INFANT EDUCATION; MORAL INSTRUCTION, PHYSIOLOGY, TEACHING OF

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## PARENTS AND SCHOOLS

**PARENTS AND SCHOOLS, LEGAL ASPECT OF** — See FAMILY EDUCATION, PUPILS' RIGHTS, DUTIES, AND OBLIGATIONS, PARENTHOOD, EDUCATION FOR

**PARENTS' MEETINGS** — See PARENTHOOD, EDUCATION FOR

**PARENTS' NATIONAL EDUCATION UNION** — See PARENTHOOD, EDUCATION FOR

**PARENT-TEACHER ASSOCIATION** — See PARENTHOOD, EDUCATION FOR

**PARESIS** — In a general sense a muscular weakness. It is also a name of a special neuro-mental disease which is popularly spoken of as "softening of the brain," and in a scientific way as "dementia paralytica" or "general paralysis of the insane."

The use of the term in its general sense indicating muscular weakness is that which is most general in neurological writings. The weakness may result from a variety of physiological and anatomical conditions. Those which are of most common occurrence, and which, consequently, are best known, are the pareses from disuse. When an individual does not utilize certain muscles, these muscles decrease in strength and also in coordination ability. Certain muscles of the body are commonly parietic, and practically paralyzed. The muscles moving the scalp and the ears are examples. They are seldom utilized, and when one endeavors to move the ears, for example, it is found that the movement is slight and of little force. The paresis due to disuse may be ameliorated by training, and a few attempts at moving the scalp and the ears will show how soon these muscles may be trained and how readily they acquire a considerable degree of force, because of the exercise.

A paresis may result from disease of the nervous system, especially from certain cerebellar affections. It is sometimes found in neurasthenia (*qv*), in psychasthenia (*qv*), and in hysteria (*qv*).

Although one of the principal methods of treatment of muscular weakness is educational, the presence of the condition is of much greater pedagogic interest. Exaggerated or premature feelings of fatigue, accompanied by an apparent muscular weakness, is evidence of one of the many diseases of the nervous system, and in this state no child is fit to carry on the ordinary school work. It is criminal to attempt to stimulate the child under these conditions, he should be treated as one who is ill and who needs rest and care more than the mental and physical exercise of the school day. Paresis in the sense of dementia paralytica is a disease appearing between the third and fifth decades. The disease is one in which the dementia becomes profound very rapidly, and death usually ensues within two years after the onset of the symptoms. S I F

## PARISH AND PARISH SCHOOLS

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For references to Paresis in the sense of muscular weakness, consult those under PARALYSIS

**PARESTHESIA** — An hallucination in the fields of the skin, muscle, joint, or organic senses, but commonly of a qualitatively different character from the normal perception of stimuli to these sense organs. Most of the paresthesias have not been analyzed psychologically, although they have a decided importance on account of their relation to the poorly understood organic sensations. A common paresthetic experience is that of the foot or leg "going to sleep." This is caused by pressure on the nerve trunks in the upper part of the leg or at the angle of the knee, and the sensation or perception is referred to the lower part of the leg. The feeling of the presence of an amputated limb is another similar paresthetic condition, due to some irritation in the nerve fibers which formerly supplied the limb that was amputated. The most common paresthesias are as follows: feelings of weakness, of debility, of faintness, of oppression, of weight or constriction, of tightness in the chest and inability to breathe, of heart constriction, of heart throbbing, of sinking, of flying, the bearing down feelings, formication (feeling of crawling ants), itching, tickling, (at times), furry feelings, numbness, tingling, some burnings, chilliness, the feeling of a part of the body "falling asleep," and the so-called girdle sensations. Many of these paresthesias are found in normal people, and cannot be considered to be distinctly pathological, although they reach then height and intensity in pathological conditions of the nervous system. The analyses of the paresthesias that are made indicate clearly the artificial division between the normal perceptions (*qv*), illusions (*qv*), and hallucinations (*qv*). S I F.

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**PARIS, INTERNATIONAL EDUCATION AND CONGRESSES OF 1867, 1878, 1900** — See INTERNATIONAL CONGRESSES OF EDUCATION

**PARIS, SCHOOLS OF** — See FRANCE

**PARIS, UNIVERSITY OF.** — For the historical account see UNIVERSITIES. For present status see FRANCE, EDUCATION IN.

**PARISH AND PARISH SCHOOLS.** — See PAROCHIAL SCHOOL SYSTEM AND PARISH SCHOOLS

## PARISH, ELIJAH

**PARISH, ELIJAH** (1762-1825) — Author of geography texts, graduated from Dartmouth College in 1785, and engaged in the ministry of the Congregational church. He published *New System of Modern Geography*, *Sacred Geography*, and with Jedediah Morse (*qv*) *Gazetteer of the Eastern and Western Continents* (1802) W S M

### PARISH SCHOOLS AND PAROCHIAL SCHOOL SYSTEMS

-- The schools under the control of the church, and attached in some manner to the local system of parish churches. The historical position and character of these schools is discussed under a number of topics. The most important of these are CHURCH SCHOOLS, BISHOPS' SCHOOLS, CANON LAW AND EDUCATION, MIDDLE AGES, EDUCATION IN, and the REFORMATION AND EDUCATION. Previous to the Reformation the parish school was the most important and in many places, if not entire countries, practically the only elementary school. After the Reformation, the elementary school continued to be a parish school in most countries until the nineteenth century. In England it was a parish school in fact as in name, in that it was essentially a church-controlled institution. In other countries the school retained the name, the church retained much of its influence, but the authorized or legal control lay in the state. The development of these schools into state systems is treated in the important sections in the articles on the various national systems. See especially the articles on ENGLAND, EDUCATION IN, SCOTLAND, EDUCATION IN, GERMANY, EDUCATION IN. At the present time the parochial school, supported in whole or in part by the state, and controlled in whole or in part by the church, exists in many countries, especially those of dominantly Roman Catholic affiliation.

The parochial school becomes a problem especially in those governments which, like the United States and France, have severed completely the relation between Church and State and have removed substantially all state contribution to church educational efforts. Even in these countries the severance of these ties has not settled the problem connected with the question of church schools. For the recent experience and present status in France, see the article on FRANCE, EDUCATION IN. For the United States, the experience and present status on the legal side is discussed under BIBLE IN THE PUBLIC SCHOOLS. The pedagogical aspect is dealt with more directly in the articles on MORAL EDUCATION and RELIGIOUS EDUCATION. There have, however, grown up actual parochial school systems of great extent entirely independent of the public school system. While the chief of these is that of the Roman Catholic Church, several of the Protestant denominations support elementary schools, and one, at least, —

## PARKER, FRANCIS WAYLAND

the Lutheran, — has developed an extensive system. This is given in outline in the article on LUTHERAN CHURCH AND EDUCATION. The administrative aspects of the parochial school system of the Catholic church and the general position of that church regarding the relations of the public schools and the parochial school systems is given under the caption, ROMAN CATHOLIC CHURCH and the PUBLIC AND PAROCHIAL SCHOOL SYSTEMS.

The term "parish" is also used in the state of Louisiana for what is elsewhere in the United States termed "county," and is thus used in connection with educational administration. (See LOUISIANA, EDUCATION IN.)

### PARK COLLEGE, PARKVILLE, MO —

A coeducational institution founded in 1875. Academic, collegiate, and music departments are maintained. The entrance requirements are fifteen units of high school work. The degrees of B A and M A are conferred in course. The enrollment of collegiate students in 1911-1912 was 227. The faculty consists of twenty-four members.

### PARKER, FRANCIS WAYLAND (1831-

1902) — American educational reformer, born at Bedford (now Manchester), N H, Oct 9, 1837. He received the rudiments of his education in the district schools and at a county academy. Later in life (1872-1875) he spent three years in study at the University of Berlin, Germany. From his sixteenth to his twenty-first year he taught in the district schools of New Hampshire. In 1858 he became principal of schools at Carrolton, Ill. With the outbreak of the Civil War he entered the service of the federal army, and before the close of the war had risen to the rank of colonel. From 1865 to 1868 he was principal of a grammar school at Manchester, N H, and the next four years he taught in the normal school at Dayton, Ohio. Upon his return from Germany in 1875 he was elected superintendent of the schools at Quincy, Mass., which position he held for five years. For an account of his labors during this period, see under QUINCY MOVEMENT. From 1880 to 1883 Colonel Parker was one of the supervisors (assistant superintendents) of the schools of Boston. From 1883 to 1899 he was principal of the Cook County (Chicago) Normal School. In 1899 he accepted the principalship of the Chicago Institute, a pedagogic institution founded by Mrs. Emmons Blaine for the scientific training of teachers. One year before his death, this institution became the School of Education of the University of Chicago.

No American educator in modern times has done so much to modify and enrich the course of study in elementary schools. He was a lover of childhood and he had the insight to see educational problems from the standpoint of the child. He possessed extraordinary

personal powers, and his own enthusiasm and earnestness were always contagious. These qualities enormously increased the attendance at the Cook County Normal School. Students flocked hither from all parts of the country, and particularly from the Middle West, and the enthusiastic and scientific teachers that he trained have done much to bring about the educational uplift of our own day. His success was due to his zeal and fondness for children, and open-mindedness to whatever came to him from the world outside.

His educational publications include *Talks to Teachers*, *How to Study Geography*, *Course in Arithmetic*, *Talks on Pedagogics*, and a series of geographic readers entitled *Uncle Robert's Geographies*. For one year (1883-1884) he edited a monthly educational journal, *The Practical Teacher*. This journal contained essays by himself and his colleagues in the Cook County Normal School on the various aspects of elementary education. W. S. M.

See QUINCY MOVEMENT

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**PARKER, RICHARD GREENE** (1798-1869) — Textbook author, graduated from Harvard College in 1817 and taught for many years in elementary schools. His publications include *History of the Grammar School in the East Parish, Roxbury* (1826), *Aids to English Composition* (1832), *Natural Philosophy* (1837), and with James M. Watson the National Series of school readers and the National spellers (completed in 1858). W. S. M.

**PARKS** — See PLAYGROUNDS

**PARLEY, PETER** — See GOODRICH, SAMUEL GRISWOLD.

**PARLIAMENTARY EDUCATION COMMISSIONS, ENGLAND** — The intervention of the English Parliament in national education through the agency of Royal Commissions forms a very important side of the history of English education. The earliest education commission was a body appointed to carry out the suppression of monasteries (See REFORMATION AND EDUCATION). The second commission was that appointed under the statute for the abolition of chantries in 1547 (1 Edw. VI. 14) (See CHANTRY SCHOOLS.) The chantry commissioners missed a superb opportunity to reconstruct a system of education from the medieval material that was in their hands, though some of the old

schools were refounded (see the *Yorkshire Chantry Survey*, Suites Society, 1892, by William Page). The third commission was appointed under Statutes 39 Eliz. 6 and 43 Eliz. 4 and 9 whereby commissioners for charitable uses were appointed to deal with the misemployment of charitable gifts. This body proved very ineffective in consequence of there being a statutory right of appeal from its decisions, but it in fact reformed thirty-three important schools between 1601 and the beginning of the nineteenth century. The commission was abolished by statute in 1888 (See CHANCERY, COURT OF.) In 1649 the Commonwealth Parliament appointed a large commission to deal with education in Wales and Monmouthshire. The commissioners were intended to exercise both ecclesiastical and civil powers over schoolmasters (See COMMONWEALTH IN ENGLAND AND EDUCATION). We may note in passing that in 1687 a high commission was appointed by the Crown to deal with the obstinate refusal of the Universities of Oxford and Cambridge to admit Roman Catholics to University privileges, while in October of the same year a special commission was appointed to exercise visitatorial jurisdiction over Magdalen College, Oxford, and secure Roman Catholic predominance in the College. In 1695 the Greenwich Hospital Naval School was founded by a Royal Commission aided by the Register Act of 1696 (7 and 8 Will. III. c. 21). In 1788 the Irish Parliament passed an Act providing for the appointment of a Commission to consider the state of Education in Ireland (25 Geo. III. c. 15). In 1806 the Imperial Parliament passed an Act (46 Geo. III. c. 122) to inquire into "the general funds and revenues granted for the purposes of education, and into the state and conditions of all schools in Ireland." The first chairman of this commission (which presented fourteen Reports between 1806 and 1813) was the sixth Duke of Bedford, the father of the famous educational statesman Lord John Russell (*qv*). In 1824 another Irish commission was appointed that presented nine Reports. In 1831 a Permanent Irish commission on education was appointed and this commission received royal charters in 1845 and 1861 (See IRELAND, EDUCATION IN).

In England a select parliamentary committee was appointed in 1816 to "enquire into the Education of the Lower Orders" which issued a report dealing with London in the same year. It was reappointed in 1818 and reported on the whole kingdom and declared that "the anxiety of the poor for education was daily increasing" in town and country alike despite the "neglect and abuse" of educational foundations and the fact that the education societies almost wholly confined their efforts to the great towns. The Committee also dwelt on the growing religious tolerance in the schools. The conscience

clause (*qv*) was in fact already in operation. The committee advocated different methods for town and country, in towns a system of aiding schools by building grants (the system adopted in 1833) and in helpless country districts a system of practically rate supported free parochial schools (the system adopted in 1870). The report is a document of the first importance in the history of English education. This committee succeeded in passing an act in 1818 (58 Geo III c 91) appointing commissioners to inquire into educational charities, who were appointed and reappointed until 1837. This commission dealt with endowments of the total value of £1,209,395. In 1835 a select committee recommended a permanent board of charity commissioners. In the same year the Poor Law Commissioners appointed under the Poor Law Act 1834 regulated the education of the pauper children (See POOR LAW EDUCATION). On August 17, 1833, the first parliamentary grant for education was voted. On June 4, 1834, a select committee of the House of Commons on education was appointed and a report consisting of evidence was issued on August 7. On March 3, 1835, a further select committee on education was appointed which reported with evidence only on August 3. On July 14, 1835, a select committee was appointed "to inquire into the best means of extending a knowledge of the Fine Arts and of the principles of Design among the people — especially the manufacturing population of the Country." The report of this committee (and of another formed in 1849) led to the formation of the Science and Art Department, which was brought under the Education Department in 1856. A third select committee on education was appointed on Nov. 30, 1837. It reported on July 13, 1838, and pointed out that voluntary effort alone was giving anything "worthy the name of Education" in large towns. The condition of the children in these towns was very serious, as they began work at the age of nine years. The position demanded, in the view of the committee, "some strenuous and persevering efforts to be made on the part of the Government if the greatest evils were not to follow." The committee insisted that daily educational provision must be made for at least *one eighth* part of the population, that special provisions must be made in poor districts, that the Treasury Grant System must be extended. On April 10, 1839, a permanent committee of the Privy Council was appointed to deal with National Education. This body by an Order in Council of February 25, 1856, became the Education Department, and this Department by an Act of 1899 became the present board of Education. In 1849 another Royal Commission on Charities was appointed under Lord Chichester which reported that "the evils and abuses are still in existence to a very wide extent, and no sufficient remedy has yet

been provided for this correction" and again recommended a permanent body of Charity Commissioners. These commissioners were appointed by the Charitable Trusts Act of 1853, and their powers have since been completely regulated by Parliament. By the Education Act, 1899, the powers of the commissioners over educational endowments were transferred to the Board of Education.

In February, 1858, on the motion of Sir John Pakington, a Royal Commission, the Newcastle Commission, was demanded by Parliament "to inquire into the present state of popular education in England, and to consider and report what measures, if any, are required for the extension of good and cheap elementary instruction to all classes of the people." The commission was gazetted on June 22, 1858, and reported (under the presidency of the Duke of Newcastle) on March 18, 1861 with no less than fifty-one recommendations. It recommended that schools should be jointly supported by state grants and rate grants depending on the degree of knowledge attained by the children during the year preceding the payment of the grant. The schools would have to show eight square feet of superficial area for each child in average daily attendance. Special state grants were to be offered to schools with less than sixty pupils. The combined grants were not to exceed the fees and voluntary subscriptions combined, with an additional grant to stimulate regular attendance. The system was to be carried out by partly elected and partly co-opted County and Borough Boards of Education. Ministers of religion were also to sit on these bodies. The proposals of the commissioners were totally inadequate to meet the educational position, which was attacked in a different way, first by the Revised Code introduced by Mr. Lowe (*qv*) in 1861, next by Select Committees in 1865 and 1866, and finally by the statutory system of compulsory school attendance introduced in 1870 and 1876. In 1886 a Royal Commission, the Cross Commission, was appointed to inquire into the working of the Elementary Education Acts. It reported at great length in 1888 with a minority report by eight out of the twenty-three commissioners. Its recommendations as to raising school age, the development of evening schools, special help for rural schools, and the creation of undenominational training colleges have been largely carried out.

In 1861 a Royal Commission, the Public Schools, or Clarendon Commission, was appointed to inquire into the nine leading public schools of the country (Eton, Winchester, Westminster, Charterhouse, Harrow, Rugby, Shrewsbury, — all boarding schools, St. Paul's and Merchant Taylors, day schools) which were then educating 2696 boys. The commissioners also dealt with Marlborough, Cheltenham, Wellington (boarding schools)



and the City of London and King's College Schools, London, (day schools.) The commissioners reported in 1864, and in 1868 the Public Schools Act was passed. In 1864 another Commission, Schools Inquiry or Taunton Commission, dealt with the endowed schools and problems in secondary education not considered by the Duke of Newcastle's Commission of 1858 and the Clarendon Commission of 1861. The Schools Inquiry Commission included Frederick Temple, William E. Forster, Dean Hooke, and Sir Stafford Northcote, assisted by James Bryce, Matthew Arnold, and Joshua Fitch. Its report, issued in 1867, is of the greatest value in the history of English secondary education and contained a number of important suggestions for the improvement of the educational and administrative systems which were not adopted until the end of the century. This commission reported and stated that there were 572 endowed grammar schools at work with a net income of £183,016 and exhibitions to the annual value of £13,897. It was for this Endowed Schools Commission that Matthew Arnold reported in France, Germany, Switzerland, and Italy and advised the country to "organize your secondary and your superior instruction." The commission specially dealt with secondary education for girls. Their report led to the passing of the Endowed Schools Act, 1869 (*q v*), and the rapid multiplication of secondary schools for girls as well as boys created out of the old endowments. Under this Act, Endowment Schools Commissioners were appointed who before their powers passed to the Charity Commissioners in 1874 reformed and gave schemes to no less than 235 schools. The working of the Endowed Schools Acts was subjected to Parliamentary inquiry from 1884 onwards. In 1881 a Committee of the Education Department was appointed by the Government to inquire into the conditions of intermediate and higher education in Wales. This led to the Welsh Intermediate Act of 1889 and finally to the creation of a Welsh Department working in connection with, but independent of, the English Board of Education. In 1894 a Royal Commission, the Bryce Commission, was appointed "to consider what are the best methods of establishing a well-organized system of secondary education in England, taking into account existing deficiencies, and having regard to such local sources of revenue from endowment or otherwise as are available or may be made available for this purpose." The Rt Hon J. Bryce was chairman, and three of the seventeen commissioners were ladies. The Report in nine volumes, presented in August, 1895, recommended the appointment of a general Education Department under a Minister of Education and a Consultative Education Committee (one third appointed by the Crown, one third by the Universities, and one third co-opted), which should absorb the Charity

Commissioners (as regards education), the Science and Art Department, and the Education Department. The creation of the Board of Education by an Act of 1899 in part carried these proposals into effect, while the Education Act, 1902, provided for the local organization of education to some extent on the lines suggested by the Royal Commission.

In 1901 an interdepartmental committee of the Board of Education and the Local Government Board reported on the whole question of the employment of children out of school hours. The practice was not altogether condemned. Legislation has followed. (See CHILDHOOD, LEGISLATION FOR THE CONSERVATION AND PROTECTION OF, CHILD LABOR.)

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**PARMA, ROYAL UNIVERSITY OF** — See ITALY, EDUCATION IN

**PAROCHIAL SCHOOLS.** — See PARISH SCHOOLS

**PAROXYSM** — A sudden attack and sometimes only an exacerbation of certain diseases. The term is also commonly used to indicate a spasm effect, *e g*, paroxysms of fear. See EPILEPSY, SPASM. S I F

**PARSONS COLLEGE, FAIRFIELD, IA** — A coeducational institution founded by Lewis B. Parsons of Buffalo, N. Y., who, in 1855, bequeathed the residue of his estate, amounting to \$37,000, for the purpose of "endowing an institution of learning in the State of Iowa." In 1874 the citizens of Fairfield, cooperating with the Presbyterian Synod of Iowa, organized to secure the bequest, donating \$30,000. The charter was received Feb. 24, 1875. Newly elected trustees are subject to confirmation by the Synod of Iowa. Sixteen members of the board and the president of the institution must be members of the Presbyterian church.

Buildings and equipment are valued at \$220,000. The productive endowment is \$229,000. The annual income from tuition and invested funds is \$20,000. There are sixteen members of the teaching staff, eight of whom are professors. There are about 100 students in the College proper. The Academy maintains a four-year course under a separate teaching staff. The B. A., B. Ph., and B. S. degrees are granted. Advanced degrees are not granted. H. M. G.

**PART-TIME ATTENDANCE AT SCHOOL** — **England and Wales** — The system of part-time attendance or the half-time system has

## PART-TIME ATTENDANCE

been particularly prevalent in England and Wales. A half-timer or partial exemption scholar is defined by the Board of Education as one "who is certified by or on behalf of the Local Education Authority to be qualified by age and attainments or previous attendance for employment in conformity with the by-laws." The problem of the half-timer is thus part of the greater problem of child labor (*qv*) which includes not only street trading and casual employment, but also the regular employment of school children out of school hours.

The half-time system arose with the factory and educational legislation which followed the industrial revolution. Its beginnings are found in the educational clauses of the Factory Acts of 1833 and 1844, which required children employed in factories to attend school half the day or so many days per week, but it was the Education Act of 1870 that firmly established the system. Under this Act was granted partial relief from compulsory attendance at school to children between the ages of ten and thirteen who had reached a certain standard of education. Although subsequent Education Acts (1876, 1880, 1893, 1899) have modified the conditions for exemption, the system of to-day is practically the same as that of 1870. Exemption may still be obtained by passing a "labor examination" varying in difficulty from that of Grade III to that of Grade VI, while since 1899, 300 attendances (morning or afternoon sessions) for each of five preceding years, not necessarily consecutive, have also sufficed. The qualification is, in many cases, absurdly low and is further complicated by the fact of local option. A city or county council may or may not pass by-laws permitting half time within its jurisdiction. Some cities, *e.g.* London, Birmingham, Plymouth, and Newcastle, have no half-timers, other towns, especially the textile towns of the North, have large numbers consequent upon low standards for exemption. Four half-timers out of every five are found in the factory districts of Lancashire and Yorkshire.

The following table shows the development of the half-time system. The figures, however, must be interpreted cautiously, because they represent the total numbers in any given year. The actual number at any given moment was, of course, much smaller. Thus in 1906-1907 the average number of half-timers was only 47,360, although the total for the year was 82,493.

YEAR	NO OF HALF-TIMERS
1875-1876	201,284
1890-1891	173,040
1895-1896	119,747
1900-1901	74,468
1905-1906	81,981
1909-1910	75,758
1910-1911	71,475

The lowest number, previous to 1910-1911, was reached in 1900-1901. The upward turn

## PART-TIME ATTENDANCE

taken at this time was due to the Act of 1899, which introduced the principle of exemption for attendance only.

The half-timer introduces many problems into school organization and administration. He is difficult to fit in with other children because he receives only one half the lessons. Lessons must either be duplicated for him, thus causing his classmates to mark time, or he must be neglected and allowed to fall hopelessly behind them. Attempts to segregate him have also proved futile. There are also certain moral and physical dangers connected with his employment. He learns "mannish" ways without developing manly control, with the result that he tends to become a nuisance in the home, the school, and the street. The strenuousness of modern industrial life also leaves its mark upon him, all the physical measurements that have been made show him to be the inferior of his school fellows in height and weight.

Yet many arguments are given in support of the system. It is said that the half-timer receives a good technical training in the workshop, that the requisite dexterity of fingers can only be gained at the early age of twelve or thirteen, that it is good to develop a spirit of independence, and so forth. On the other hand, it is pointed out that instruction is given in a haphazard fashion by any operative who happens to be his master or mistress for the time being, that the finger dexterity can be acquired equally well at fifteen or sixteen, that the wages earned (\$30 to \$1 a week) are seldom of absolute necessity to a family, and that the employment kills off any desire on the part of the half-timer to continue his education at evening or technical classes. It must be acknowledged, however, that the system is extremely popular with the half-timers themselves. They, as wage earners, enjoy more independence and liberty at home, and they have a certain amount of pocket money to spend.

The system, which is opposed by the best elements in English life, is continued mainly by the inertia of custom, but is also fostered by the greed of non-thinking parents. An Interdepartmental Committee formed to inquire into the question of Partial Exemption from School Attendance reported, in 1909, in favor of its abolition. Although the government has never taken upon itself to end the system, it supported the bill of Mr. Walter Rea, February, 1912, which proposed to raise the age of exemption from twelve to thirteen and to refuse exemption to all children who are not beneficially employed. The bill has passed its second reading by a large majority (April, 1912) and, if facilities are given by the government, it should become law on Jan. 1, 1913.

P. S.

In the United States the part-time system exists only in a few cities, and there as

## PARTRIDGE

a result of inadequate seating facilities. As these conditions are merely exigencies of rapidly growing communities, the system of part-time attendance has no significance. See **NEW YORK CITY**.

See **ENGLAND, EDUCATION IN, INDUSTRIAL EDUCATION**.

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**PARTIALITY** — See **SCHOOL MANAGEMENT**.

**PARTRIDGE, ALDEN** (1785–1854) — Founder of military schools in the United States, graduated from the United States Military Academy in 1806, and for twelve years an instructor in that institution. For two years he had charge of the exploration of the northwestern boundary of the United States. He organized several secondary schools upon military principles, after the pattern of West Point, for boys not amenable to the milder discipline of the ordinary schools. One of the most important of the military schools that he organized was that at Norwich, Conn. (1820), which was incorporated as Norwich University in 1834. His publications include *Lectures on Education* (1825) and many papers on military subjects. W. S. M.

See **MILITARY EDUCATION**.

**PASCAL, BALISE** — See **PORT ROYALISTS**.

**PASCAL, JACQUELINE** (1625–1661) — French educator, younger sister of Blaise Pascal. While still in her early twenties, she tried in vain to persuade her father to allow her to enter a convent. After his death (1651), she became a nun, and was made submistress (1655) of the novices at Port-Royal (*q. v.*). In this capacity she was directly in charge of the education of the younger children, where she followed the method of training for which her brother was responsible, and she is deserving of no small portion of the credit for the success attained in this work with the younger classes. She stoutly resisted giving her assent to the Papal Bull against Jansenism, but in the end she was forced to yield and died of grief a few months later. Her most important writing was *Règlement pour les Enfants de Port-Royal* (1665). F. E. F.

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## PASSOW

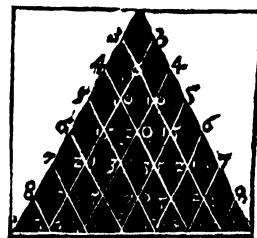
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**PASCAL'S TRIANGLE** — A triangular array of numbers known long before the time of Pascal (*q. v.*), but so extensively studied by him as to be called by his name. The numbers are written in this form —

```

      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1
 1 5 10 10 5 1
    
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and so on. Each number is derived by adding the number just above to the number at the left of the latter. The successive lines are evidently the coefficients of the various powers of a binomial, and the device has, therefore, considerable interest in the teaching of the binomial theorem. The triangle, or its substantial equivalent, first appeared in print on the title-page of a work by Apianus (or Bienewitz, 1495–1552), which appeared in 1527. The following is a facsimile of this first printed form.



D. E. S.

**PASSION** — This term is used to designate strong or uncontrolled emotional states. From the point of view of education such uncontrolled states of emotion are significant as indicating a lack of training on the part of the individual. Children, especially those who are more or less abnormal, are likely to exhibit fits of passion such as anger or rage. The corrective for such uncontrolled expressions of emotion is very commonly some general treatment of the whole physical system. A sharp distinction should be drawn between such emotional states and voluntary activity. The whole matter may be referred to the general discussions of emotions. C. H. J.

**PASSOW, FRANZ** (1786–1833) — German philologist, was born at Ludwigslust, Mecklenburg, and studied at the University of Leipzig under Gottfried Hermann. In 1807, although not quite twenty-one years old, he was appointed professor of Greek literature at the gymnasium of Weimar. He owed this appointment to Goethe, who had met the young man and had been very favorably impressed

by his enthusiasm for literature and classical antiquity. In 1810 he was called to direct the *Conradinum*, an educational institution in Jenkau, near Danzig. In 1815 he became professor of philology and archaeology at the University of Breslau, where he remained until his death. In 1818 he became involved in the controversy which raged around the instruction in gymnastics introduced by Harnisch (*q v*). Passow, who was fond of physical exercise, strongly supported Harnisch, and published in his defense a book called *Turnziel (Aim of Gymnastics)*, which nearly cost him his position. Attempts were made to remove him from Breslau, but his reputation as a scholar and teacher was too great. His chief work is his great lexicon of the Greek language (*Handwörterbuch der griechischen Sprache*), first published in 1819, a recent edition appeared in 1901. F M

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**PASTORET, MME DE** — See INFANT SCHOOLS

**PATHOLOGICAL PSYCHOLOGY** — See ABNORMAL, DERANGEMENT, INSANITY, PSYCHIATRY, PSYCHOPATHOLOGY

**PATHOLOGY** — See MEDICAL EDUCATION, also HYGIENE

**PATON, JOHN BROWN, D D** (1830-1911) — Was born at Galston in Ayrshire. After attending the parish school he acted as usher in a private school in Gloucester, entered Springhill Congregational College with R. W. Dale, took his M.A. at London University with Gold Medal for Philosophy, became minister of the Wicker Church, Sheffield. In 1863 he was appointed first principal of the Congregational Institute at Nottingham, founded to provide training for pastors and evangelists of country churches. He felt the social influence of the church and throughout his life advocated the cooperation of all Christian churches in the "Inner Mission" for the healing of social evils and preached redemptive service. In 1870 and the following years he stood out against the policy of secularism in the public elementary schools under the new Act. He cooperated with Professor James Stuart in the early years of the University Extension Movement (*q v*), and the University Lectures at Nottingham led to the foundation of the University College (1881). Seeing the need of public education between the ages of thirteen and seventeen and the inadequacy of the old night school to supply the need, he started classes under the Nottingham School Board which combined recreative subjects with

musical drill, stereopticon lectures, and practical handwork of all kinds. This led to the foundation of the Recreative Evening School Association (1885), which largely increased the numbers in continuation schools and paved the way for a new development of evening classes leading to higher technical and artistic education. Taking a hint from the Chautauqua Association (*q v*), he founded the National Home Reading Union (*q v*) (1889), which gives guidance and help for reading, private and associative. In connection with the Home Reading Union the first summer meeting in England was held at Blackpool, leading to the regular extension meetings at Oxford and Cambridge. He founded the Cooperative Holidays Association (*q v*) to provide cheap holidays in which working folk should have the companionship of university men and women. He founded at Longfield a Colony of Mercy (1895) on the model of Bodelschwing's Colony at Bielefeld for the practical training of unemployed and the educational care of epileptic and feeble-minded children, hitherto herded together with the imbeciles in the workhouses. He founded the Social Institute Union (1886) with a view to providing, for the most part in the Board School buildings, counter-attractions to the public house. He founded the Boys' Life Brigade, with objects and methods similar to the Boys' Brigade, but dispensing with all use of guns, and laying stress on ambulance work, fire drill, and all training for the saving of life. He also founded the Girls' Life Brigade and the Brigades of Service for young men and women. He was one of the moving spirits in the formation of the British Institute for Social Service (1904), the Christian Union for Social Service (1894), and the Scottish Christian Social Union (1901). He was chairman of a Vagrant Children's Protection Committee. He was much interested in the reestablishment of the yeomanry on the land and founded a Cooperative Small Holders' Association and a Cooperative Banks Association. He was instrumental in adapting the Elberfeld systems of poor relief to English conditions and in the establishment of Civic Guilds of Help in large towns of England. He was joint editor of the *Eclectic Review* (1858 to 1861) and of the *Contemporary Review* (1882 to 1888).

In addition to numerous pamphlets he wrote *A Review of Renan's Life of Christ*, *The Origin of the Priesthood*, *The Twofold Alternative, Materialism or Religion and the Church*, *a Priesthood or a Brotherhood*; *The Inner Mission of the Church*, two volumes of Collected Essays, *Church Questions of To-day* and the *Apostolic Faith and its Records*. J L. P.

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**PATRICK, ST** — See IRELAND, EDUCATION IN

**PATRIOTISM** -- The feeling which moves the individual to identify with his own the interests of the social group to which he belongs, and to speak and act accordingly

**Origin and Development of Patriotism** — Sociology ascribes the origin of patriotism to the family life, the family being the earliest of the social groups. In primitive life support, protection, and authority were chiefly represented by the father, hence loyalty to the father was both natural and necessary. Fatherism was therefore the earliest form of patriotism. With the enlargement of the family into the clan, gens, and tribe, the interests of particular families were merged in the interests of the group of which they were component elements, and loyalty to the family passed over into clanishness or tribalism. With the amalgamation of tribes into states and nations patriotism enlarged into love of country, its most conspicuous form to-day.

Patriotism, then, originates in association, and association is the condition of its development. From this fact we may infer that, if political and social organization and amalgamation continue, patriotism will undergo a consequent transformation. A "Parliament of man and Federation of the world" would as certainly conduce to cosmopolitanism or political humanism as tribal association has produced tribalism, and the consolidation of states into nations has produced modern patriotism. Love of country would naturally give place to love of kind.

**Instinctive Patriotism** -- Patriotism, as here defined, is primarily a sentiment or feeling. This feeling is instinctive. Patriotism in which feeling is the predominant element may thus be called instinctive patriotism. Now it is characteristic of an instinct that it acts without reflection. Though originally purposive in action, and serving as an element in individual or group preservation, instinct takes no consideration of objective circumstances. It is blind impulse. When the stimulus is provided, it operates, and its operation has often led in the course of biological and social evolution to the destruction both of individuals and of groups. Patriotism, therefore, so far as it is merely instinctive, is impulsive, blind, unreasoning, and irreflective. It thrills, it hurrahs, it boasts, it fights and dies without calmly considering either occasion or consequence. It resents a fancied national insult without stopping to ascertain whether it is real. It flies to the defense of the supposed interests of its group without inquiring whether the danger is actual. It is blind patriotism and springs from the emotional side of the mind. It differs in no essential respect from the instinct of the tiger to defend its

young, or from that of the wild cattle of the prairie to defend the herd. It is easily aroused and easily stampeded. It is a feeling for one's country uncontrolled by intelligence, zeal without knowledge. Under its promptings the patriotic is sometimes the idiotic. The utterances and actions sometimes evoked by it show that a man may be a patriot and still be a fool.

Obviously great national and social dangers may arise from manifestations of instinctive patriotism. As antipathy toward other nations, and consequent irreflective action, it provokes suspicion, jealousy, hatred, and unnecessary war. It inspires irresponsible and mischievous declarations with respect to other people, and sneering comments upon their customs and peculiarities, which tend to provoke hatred and hostility. As Chauvinism and Jingoism it prevents that national receptiveness which is so essential to progress. It is not eager to learn from other nations for the very simple reason that it thinks they have nothing superior to teach. To the instinctive patriot nothing in foreign nations is worthy of emulation or adoption. He speaks without the slightest reverence of "Japs" and "Chinks" and "Dagoes", of "Wild Irishmen" and "Flatheaded Dutchmen". Such a "patriot" may be a gentleman so far as his more intimate personal relationships are concerned, but as a national representative he is often a braggart or a bully. No matter, then, how patriotic one may be, if one's patriotism is merely instinctive it is irrational and irresponsible, and consequently a danger to one's country.

In spite of the dangers of instinctive patriotism, however, it must be recognized that, like other instincts, it has served, and may again serve, a very useful purpose. Indeed, in the absence of social intelligence, it has been essential to the preservation of social groups. When, for instance, the life of a nation is in danger its citizens must rise instantly to its defense. There is no time for serious reflection. To deliberate is to be lost. Hence the social impulse of resentment and the disposition to spring to arms is an element of national survival; for it leads the citizens to act in concert and so more effectively. Without instinctive patriotism no group in a hostile environment could have survived. On the whole, those groups in which it was most highly developed are the ones which have persisted. Instinctive patriotism, then, has unquestionably been an element in social survival as well as in social danger and destruction. But, however serviceable it may have been in the past, or however necessary now in a critical national exigency, it is not the kind of patriotism which is most needed to-day. It involves governments in needless strife, and it renders citizens easily susceptible to the pernicious influence

of kings, diplomats, and unscrupulous politicians. It should, therefore, be supplanted as rapidly as possible by the patriotism of intelligence.

**Intelligent Patriotism** — It is the function and power of the intellect to inhibit, sometimes to eliminate, an instinct. Even the instinct of self-preservation, strong as it is, has sometimes been wholly inhibited by a duly informed and reflective mind. The proper intelligence may therefore modify, even reverse, the actions springing from instinctive feeling. Patriotic sentiment may be held subject to a thorough knowledge of political and social conditions and a sense of justice. When so held it becomes intelligent patriotism. Intelligent patriotism, then, is patriotic feeling, instinctive patriotism, under the control and guidance of knowledge and reflection. It is love of country and the disposition to serve it, coupled with a knowledge of how to serve it well. It does not yield to impulse, but controls it. It looks before and after. It restrains a nation from fighting when there are no real interests at stake. The difference between the two kinds of patriotism is practically the difference between impulsive action and reasoned action.

**The Teaching of Patriotism** — With this distinction between the two kinds of patriotism it ought to be clear that in the effort to develop patriotism by means of education, emphasis should be laid not upon stimulating patriotic emotion, but upon increasing the factor of intelligence. As a rule, we may safely rely on the existence of patriotic feeling and devote attention almost, if not quite, exclusively to the promotion of knowledge appropriate to its control. Saluting the flag, the singing of patriotic songs, Fourth of July celebrations as usually conducted, to say nothing of the patriotic appeals from pulpit and rostrum, are directed primarily to stimulating the patriotic instinct. Emotional effects are thereby easily produced. Those who practice these methods really believe that they are developing patriotism, but they are merely meeting patriotic emotion without giving it the proper means of guidance. The really needed and difficult thing is to form the instinct of patriotism so that it will operate, even under trying circumstances, to the real advantage and safety of the nation. Education should result in imparting such knowledge of social history, civics, and ethics as will result in arousing a sympathetic interest in the merits and worthy achievements of all nations and races, a just pride in our own, and in the development of such habits of thought as will make patriotism, love of country, identical with loyalty and devotion to liberty, justice, and truth.

I W H

See CITIZENSHIP, EDUCATION FOR; also, CHARACTER EDUCATION.

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**PATRIZZI, FRANCESCO** — See RENAISSANCE AND EDUCATION

**PAULSEN, FRIEDRICH** — Born July 16, 1846, in Langenhorn, Holstein, and died in Steglitz, near Berlin, August 14, 1908. He attended the *Volksschule* of his native village, and was prepared by Pastor Thomsen for the gymnasium at Altona, a higher class of which he entered in 1863. After receiving the *Reifezeugnis* in 1866 he began the study of theology at the University of Erlangen in accordance with the wishes of his mother, but he was unable to throw himself into the work with any enthusiasm, and therefore changed to philosophy, taking also classical philology and history, with a view to the possibility of becoming a gymnasial teacher. From 1867 to 1870 he was a student at Berlin (under Tiendelenburg, Harms, and Bonitz), and also at Bonn and Kiel. After receiving his degree in 1870, Paulsen spent the next five years at the University of Berlin, partly in rounding out his knowledge, devoting himself particularly to the study of experimental physics, chemistry, anthropology, economics, jurisprudence, and politics, partly in composing his *Habilitationsschrift, Versuch einer Entwicklungsgeschichte der Kantischen Erkenntnistheorie*. From 1875 to 1878 he served as a private docent at Berlin, from 1878 to 1894 as extraordinary professor, and from 1894 to his death as ordinary professor of philosophy and pedagogy. It was his aim, as he himself declared, to bring philosophy into vital relation with the general culture of the day, regarding it as an indispensable element of our social life. He did not care to make converts to a system, he was opposed to all partisanship and faction. The mission of philosophy was according to him not to coerce men's thought but to set it free, to train them in independent thinking, not to make them passive recipients of philosophies. Towards the close of his life he appealed to larger circles of the German public through the spoken and written word; "whenever a question became a burning issue," as Professor Kaftan said, "a word was expected from him to help clear the air."

In the movement for the reformation of secondary education in Prussia, Paulsen took a leading part. He was opposed to the Order of Studies, dating back to Johannes Schulze, which made the classical gymnasium the normal and only type of secondary schools and the

sole entrance gate to the various departments of the university, and insisted that the gymnasium, the realgymnasium, and the oberrealschule be placed on an equal footing. His recommendations, which had been ignored at the celebrated December Conference of 1890, were followed at the June Conference of 1900, the monopoly of the classical gymnasium was abolished. Paulsen also advocated freer methods of instruction in the upper forms, methods that would give greater scope to voluntary and spontaneous activity. "What Germany wants," he held, "is the Anglo-American college, which forms a very valuable transition stage between school discipline and the full freedom of German university life." Among his many valuable contributions to the literature of education, we mention the following books: *Geschichte des Gelehrtenunterrichts auf den deutschen Schulen und Universitäten* (2 vols., 1885 and 1896), *Das Realgymnasium und die humanistische Bildung* (1889), *Die deutschen Universitäten und das Universitätsstudium* (1902, trans. by Thilly and Elwang), *Das deutsche Bildungswesen* (1906, trans. by Lorenz), *Moderne Erziehung und geschlechtliche Sittlichkeit* (1908), *Richtlinien der jüngsten Bewegung im höheren Schulwesen Deutschlands* (1908), *Padagogik* (ed. by Kabitz, 1911).

Paulsen's metaphysics, which shows the influence of Spinoza, Fichte, Lotze, Schopenhauer, and Kantian criticism, is a system of idealistic monism, panpsychism, and pantheism, the physical processes and the psychical processes are one and the same reality, perceived in different ways, the former through the mediation of the senses, the latter directly, as they are in themselves, in consciousness. In the physical sphere everything is mechanically conditioned, as natural science teaches, but the mental realm, which is the true reality, is a world of purposive activity. The material world is the outward expression of a universal consciousness, to which the individual consciousness, stands in the same relation as the particular human body to the universal system of bodies. This conception of the universe is set forth in the *Einleitung in die Philosophie* (1892, trans. by Thilly), a book which has passed through twenty-three editions. Paulsen's moral philosophy, as presented in his *System der Ethik mit einem Umriss der Staats- und Gesellschaftslehre* (1889, eighth ed., 1906, trans. by Thilly), has been characterized by him as teleological energism to distinguish it (1) from Kantian intuitionism and (2) from English utilitarianism. The end of the will is not feeling but action, the highest good is an objective content of life, consisting in the perfect exercise of all human mental powers, in which pleasure forms a part. The end or purpose realized by morality is grounded in the human will, is something toward which the will is essentially directed. In a later

account, *Kultur der Gegenwart. Systematische Philosophie* (pp. 289 ff.), what was formerly called the individual's basal will is spoken of as the objective will, the system of objective morality is regarded as the product and function of a universal reason immanent in the social forms of historical life. He also wrote *Immanuel Kant Sein Leben und seine Lehre* (1898, trans. by Creighton and Lefevre), and collected many essays in *Gesammelte Vorträge und Aufsätze* (2 vols., 1906) F. T.

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PAVIA, UNIVERSITY OF — See ITALY, EDUCATION IN

**PAYMENT BY RESULTS** — A system of apportioning public money for education based on the results of examinations. Payment by results was introduced into England by the Revised Code, issued May 9, 1862, and continued with modifications until 1897. Robert Lowe (*q v*) was responsible for its introduction. As originally introduced the grants were payable upon the results of individual examinations of pupils in Standards I to VI, in the three R's, and plain needlework for girls. Certain other conditions were also imposed, e.g. number of attendances, adequacy of buildings, qualifications of teachers, etc. The grants were paid to the managers of schools and not directly to the teachers. The curriculum thus depended on the distribution of grants, and subjects were added or removed according to their grant-earning capacity. At first everything beyond the three R's was discouraged. In 1867 grants were given for geography, grammar, and history as "specific subjects." In 1871 there were added as "specific subjects" algebra, geometry, natural philosophy, physical geography, natural science, political economy, and languages (English literature, and elements of Latin, French, and German). Vocal music was encouraged in a similar way a year or two later. In 1878 geography, history, grammar, and plain needlework became class subjects, and grants were given on class, not individual, examinations. The "specific subjects" in this year were mathematics (algebra, Euclid, and mensuration), Latin, French, German, mechanics, animal physiology, physical geography, botany, domestic economy (for girls). In 1882 the

Seventh Standard was recognized for purposes of the examination, and English literature and grammar, physical geography, and elementary science and history for the three highest standards became class subjects. Practical training for girls was also encouraged. In 1890 history was extended to all classes, drawing was made compulsory for boys, manual training and housewifery were counted as attendance subjects, shorthand became a "specific subject," and laundry work a "special." In 1891 navigation, in 1892 horticulture, in 1893 dairy making, in 1894 domestic economy and hygiene, became "specific subjects." In 1895 payment by results in elementary subjects was abolished for older schools, and in 1897 payment for "specific subjects" also disappeared.

Payment by results perhaps more than any other cause retarded the development of elementary education in England. Its only merits were that it established standards at a time when all teachers were not trained, artificially affected the curriculum, and was cheap. It was also a step in advance in so far as teachers were compelled to pay as much attention to lower classes as to higher, and to backward as well as to bright pupils. The latter, however, too often were reduced to the level of their inferiors. But while it introduced uniformity, there followed dull, mechanical methods and all other abuses connected with an exaggerated system of examinations. The recovery from the system is slow but certain, initiative and adaptation to local needs are being more and more encouraged, and mass education is being replaced by individual care and attention.

The system of payment by results is still employed by the Intermediate Board in making appropriations for secondary education in Ireland. The system is, however, being gradually modified by the introduction of inspection, and the imposition of certain conditions relative to the school buildings. (See IRELAND, EDUCATION IN.) In the Province of Victoria, Australia, the system was abolished as recently as 1906.

See APPORTIONMENT OF SCHOOL FUNDS, ENGLAND, EDUCATION IN, EXAMINATIONS, LOWE, ROBERT

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**PAYMENT OF TEACHERS** — See TEACHERS' SALARIES.

**PAYNE, JOSEPH** (1808-1876) — English educator, born at Bury St Edmund's

His education was but scanty, and he only attended school for a short time when near the age of fourteen. Although compelled to earn a livelihood at an early age, he applied himself with great industry to the study of the classical and English literature. In 1828 he became assistant in a London school and about this time came across Jacotot's (*qv*) work. His pamphlet, *A Compendium Exposition of Professor Jacotot's celebrated System of Education* (1830), brought him to the notice of Mrs. David Fletcher, who made him tutor to her children. By associating other children with them Payne was soon able to open the Denmark Hill Grammar School. In 1837 he married Miss Dyer, who herself kept and continued to keep a girls' school. In 1845 he moved to Leatherhead and opened the Mansion House School, one of the best private schools of the time. Retiring from this work in 1863, Payne devoted himself to the advancement of the cause of education. He supported the Women's Education Union and the Girls' Public Day School Company (*qv*), which sprang from it. He took a keen interest in the Froebelian theories and the kindergarten movement, and studied the work of Pestalozzi and of Jacotot. Of the last named he was the chief exponent in England. He was intimately associated with the College of Preceptors (*qv*), before which he frequently lectured on educational subjects. When in 1872 the College established a chair in the Science and Art of Education, then the first in England, Payne was appointed to it. In 1874 he made a tour for the purpose of investigating educational institutions in North Germany. Not only did Payne devote himself to the cause of education, he was a keen student of philology and wrote a paper on the *Norman Element in the Spoken and Written English of the Twelfth, Thirteenth, and Fourteenth Centuries* for the Philological Society, of whose council he was chairman in 1873-1874. (See EDUCATION, ACADEMIC STUDY OF.)

While he made no original contributions to educational thought, Payne was a pioneer in introducing and familiarizing English educators with the best theory and practice of his day. If he exaggerated the value of Jacotot's methods, it was done largely in a spirit of reaction against the mechanical work of the schools. Through his connection with the College of Preceptors, which introduced the first examinations for teachers in England at the suggestion of Payne and C. H. Lake, he was able to inspire a number of teachers with his own enthusiasm for educational study and progress. His chief educational writings have been edited first by R. H. Quick in one volume, and reedited, with the addition of a second volume, by his son, Dr. J. F. Payne. Volume I (1883) contains *Lectures on the Science and Art of Education*, and Volume II (1892), *Lectures on the History of Education, with a Visit*



to *German Schools*. The first volume includes a list of Payne's published works

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**PAYNE, WILLIAM HAROLD** (1836-1907) — University professor of education, born at Farmington, N Y, the 12th of May, 1836. He was educated in the common schools and at the New York Conference Seminary. He began his teaching career in the public schools of New York. He was principal of schools at Three Rivers, Mich (1858-1864), superintendent of schools at Niles, Mich (1864-1866), principal of a seminary at Ypsilanti, Mich (1866-1869), and superintendent of schools at Adrian, Mich (1869-1879). His work as a school superintendent was distinguished by his untiring efforts to supplement the pedagogic training of the teachers under his charge. In 1879 he was called to the newly organized chair of the science and art of teaching at the University of Michigan, one of the earliest permanent university professorships of education. From 1888 to 1901 he was president of the University of Nashville, but upon the death of Professor B A Hinsdale he returned to his old post in the University of Michigan. His writings include *Chapters on School Supervision*, *Outlines of Educational Doctrine*, and *Contributions to the Science of Education*. Professor Payne was much interested in French educational thought, and he made excellent translations of some of the writings of Gabriel Compayré, including *The History of Pedagogy*, *Lectures on Pedagogy*, *Elements of Psychology*, and *Applied Psychology*. He also translated and edited Rousseau's *Émile*. For four years he was editor of the *Michigan Schoolmaster* (1866-1870). W S M.

See EDUCATION, ACADEMIC STUDY OF

**PEABODY, ANDREW PRESTON** (1811-1893) — College professor, graduated at Harvard in 1826, after which he studied theology at the Cambridge Divinity School. He taught school for three years, was three years tutor at Harvard, and for twenty-seven years was engaged in the ministry. He was professor of Christian morals at Harvard from 1860 to 1881, and acting president of the college in 1862 and again in 1868-1869. His publications include *Sermons for Children* (1866), *Manual of Moral Philosophy* (1874), and *Harvard Reminiscences* (1888). He also published a Sunday School hymn book. W S M.

**PEABODY EDUCATION FUND** — One of the great educational foundations which have contributed to the remaking of Southern education. In 1867 George Peabody (*qv*) gave \$3,000,000 in trust for the promotion of education in the South. Through various

causes this sum shrank for a time to \$2,000,000. Peabody is said to have relied largely on the advice of Robert C Winthrop in the disposal of the fund and in the arrangements for carrying out its purposes. The conditions of the trust were so liberal and elastic that the trustees have been able to employ the fund in such a way as to educate the people of the South to certain needs, which when realized they must themselves satisfy. Thus the fund has established standards along different lines. The money has been used for the following purposes: (1) Aiding and establishing public schools in the large towns and cities, and thus practically beginning and supporting systems of public education until taken over by the local authorities. (2) Similarly assisting the rise of state systems, a task almost completed by 1875. (3) Encouraging the professional training of teachers by the establishment of a normal school at Nashville (Peabody Normal College, 1875) and granting scholarships to students of ability. This led to the general establishment of normal schools and by 1903 the trustees were again free to dispose of their fund in another direction. (4) Establishing an institution for the higher professional education of teachers. This decision was prompted by a movement begun in 1902 by President Porter of the Normal College, the faculty and alumni, and the citizens of Nashville. The Peabody Board recognized the value of the plan in 1903 and decided upon its adoption. The result is the George Peabody College for Teachers, which has received an endowment of \$1,000,000 from the fund, land and buildings, valued at not over \$250,000, from the University of Nashville, with which it was associated for thirty-six years, and grants from the State of Tennessee (\$250,000), the county of Davidson (\$100,000), and the city of Nashville (\$200,000). The Trustees of the Fund have also offered to set aside \$500,000 additional for the endowment of the College, provided a further sum of \$1,000,000 is raised before Nov 1, 1913. The College, to be opened in 1913, promises to be of the highest service to the educational Renaissance of the South. The new president is Dr Bruce R Payne. (5) Promoting rural consolidation of schools and the advancement of rural education by making grants towards the salaries of supervisors in many of the states of the South.

The Board of Trustees consists of sixteen members, who have always been men of the highest distinction in all walks of life. The most active associates in the early days were Hon R C Winthrop, Hon Hamilton Fish, Bishop MacIlvaine, Dr Barnas Sears, the first agent, Dr J L M Curry, the second agent, Dr Eben Stearns, first president of the Peabody Normal College, and Dr W H Payne, his successor. At the present time Mr J Pierpont Morgan, Hon Joseph H

Choate, and Hon Theodore Roosevelt are members of the Board of Trustees Professor Wickliffe Rose is the general agent

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**PEABODY, ELIZABETH PALMER** (1804-1894) — American apostle of Froebel and organizer of the first kindergartens (*qv*) in the United States, was born at Billerica, Mass. the 26th of May, 1804. Her mother, a gifted woman, conducted a private school, at which Elizabeth and her sisters Sophia (afterwards Mrs Nathaniel Hawthorne) and Mary (afterwards Mrs Horace Mann) were educated. At the age of eighteen years Miss Peabody began her career as a teacher in Boston. Later she was associated with A Bronson Alcott (*qv*) in the famous Temple School. In connection with her teaching she contributed to many literary and educational journals, including the *Dial*, the *Christian Examiner*, the *Democratic Review*, and Barnard's *American Journal of Education*.

In 1859 she became acquainted with the educational ideas of Froebel, and the next year she opened a kindergarten in Boston — the first in America. In 1867 she went to Europe to study kindergarten principles and practices at first hand, and through her influence Emma Marwedel (*qv*) and several other experienced German kindergartners were induced to come to America. The normal classes which she conducted in Boston trained most of the early prominent American kindergartners (including Miss Lucy Wheelock). From 1873 to 1877 Miss Peabody edited the *Kindergarten Messenger*, and in 1877 the American Froebel Union, of which she was the first president, was formed.

Her publications include *Hebrew History*, *Grecian History*, *First Steps in History*, *Chronological History of the United States*, *Record of a School* (an account of Mr Alcott's Temple School), *The Kindergarten, Education in the Home, the Kindergarten, and the Primary School*, *Guide to the Kindergarten and Moral Culture of Infancy* (with her sister Mrs Horace Mann), *Lectures in the Training Schools for Kindergartners*, *Kindergartens in Italy*, and a translation of *De Gerando's Moral Self-Education*. She also contributed several papers to Henry Barnard's comprehensive volume *Kindergarten and Child Culture*. Miss Peabody was interested not only in the kindergarten, but in all phases of educational work, including the education of the American Indian. She died at Boston the 5th of January, 1894. W S M

See KINDERGARTEN

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**PEABODY, GEORGE** (1795-1869). — Benefactor of education and founder of the Peabody (Educational) Fund (*qv*), was educated in the common schools of Danvers (now Peabody), Mass. He engaged in business and made a fortune which he gave to various educational institutions and agencies. He founded the Peabody Institutes at Danvers, Salem, and Baltimore, and made large bequests to Harvard, Yale, and Kenyon Colleges. One of his largest bequests was to the Peabody Fund (*qv*) in 1867, "for the encouragement and promotion of intellectual, moral, and industrial education among the young of the more destitute portions of the Southern and Western states of the Union." One of his biographers says of him, "In the greatness of his benevolence George Peabody stands alone in history." W S M.

See PEABODY FUND

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**PEABODY, SELIM HOBART** (1829-1903) — University president, was educated at the universities of Vermont and Iowa. He was principal of high schools at Burlington, Vt., Fond-du-lac, Wis., and Chicago, superintendent of schools at Racine, Wis., professor in polytechnic colleges in Pennsylvania and Illinois, and president of the University of Illinois from 1880 to 1891. He was director of the educational exhibits at the World's Columbian Exposition at Chicago in 1893. His publications include *Astronomy* (1869), *Juvenile Natural History* (1869), *New Practical Arithmetic* (1872), and numerous articles in educational journals and the proceedings of educational associations. W S M

**PEACE, EDUCATIONAL ASPECTS OF INTERNATIONAL** — The peace movement is a part of the educational progress of the world. Whether in respect to its intellectual, economic, or moral phases, changes in opinion and practice have been effected by the educative process. Among the champions of the peace movement were Hugo Grotius, Jean Jacques Rousseau, and Immanuel Kant, and later, Noah Worcester, Elhu Burritt, Horace Mann, Professor Amasa Walker, and Edward Everett Hale, all of whom appreciated the necessity of educational propaganda.

The unification and direction of the intellectual life of the world through universities, colleges, and schools, has helped to prepare the way for international good will. The ease and rapidity of travel and communication by means of steam and electricity have helped to the

same end. The ever advancing tide of civilization with its various humanitarian movement has tended to sweep away many of the barriers which kept nations apart from each other. The grouping of men in international societies working in the fields of science, industry, and social reform, has led to a unification of the higher life and has promoted friendship among the leaders of progress. The labor organizations of the world have been active in promoting peace propaganda, and in national and international assemblies have declared themselves as opposed to proscription and in favor of arbitration. The process of persuading the nations to abandon the archaic method of settling difficulties by force and to adopt the modern method of the court of justice is now carried on not merely by pacifists, but by the clergy, the press, law associations, women's clubs, and even by bodies engaged in promoting the economic welfare of the community. A concrete example of this is seen in the *Report* (1910) of the Massachusetts Commission on the Cost of Living, which after a careful investigation finds that the great increase of expenditures for armament is the cause of enormous waste, affecting the common welfare of the people.

Among the organizations engaged in developing and organizing world sentiment for peace are six hundred and more peace societies, the oldest of which is the American Peace Society, whose Secretary is Dr. Benjamin F. Trueblood, the Interparliamentary Union, composed of representatives from the parliaments and congresses of the world, holding biennial meetings, the International Peace Congress, the eighteenth session of which was held in Stockholm in 1910, the national peace congresses, of which three have been held in the United States, namely, in New York in 1907, said to be the largest peace assembly ever convened, in Chicago in 1909, and in Baltimore in 1911, the Bureau of International Peace at Berne, Switzerland, which undertakes to gather and distribute information and act as a clearing house for all propagandist work, the Mohonk Arbitration Conference, which has been held for the past seventeen years under the patronage and hospitality of Mr. Albert K. Smiley, and like all the other organizations mentioned has been highly educative in its plan of work and successful in interesting the leading merchants, bankers, lawyers, clergymen, and publicists in the moral, social, and economic importance of the peace movement. Of the organizations which are intended to influence students in schools, colleges, and universities, there is the World Peace Foundation, for the support of which Mr. Edwin Ginn has set aside \$1,000,000, the income of which is to be applied in the publication of books and tracts on the history and progress of peace and in general propaganda work of an educative character. Closely affili-

ated with this Foundation is the American School Peace League, the object of which is to organize the teachers of the public schools in behalf of such teaching of history and other subjects and in such international exchange of teachers and correspondence as shall promote friendship among the youth of different lands. Through its influence the 18th of May, the anniversary of the calling of the first Hague Conference, is now celebrated largely throughout the United States as Peace Day. The Intercollegiate Peace Association has already organized oratorical contests in the colleges of several states. The Cosmopolitan Clubs, now forming a national association, afford meeting grounds in universities for men of different nations. Of the Harvard Cosmopolitan Club President Eliot has declared that it is the most interesting in the university. The Corda Fraternitas, an international federation of students which has more than 15,000 members in European universities and has recently added 40,000 French secondary students, has as its principal object the promotion of the idea of solidarity and fraternity among students. The World Student Christian Federation, which includes five intercollegiate associations of America, Great Britain, Germany, and Scandinavia, with a membership of 138,000 students and professors, is increasingly influential as a factor for peace. The annual interchange of professorships initiated by the universities of Berlin, Harvard, and Columbia, and now extending to many other institutions, as well as the interchange of students, will tend to produce common interests in the field of scholarship and sound learning. The American Conciliation Society, under the chairmanship of Dr. Nicholas Murray Butler, publishes each month the best information available, using a mailing list of 70,000 names. The recent gift of eleven and a half million dollars from Mr. Andrew Carnegie is a crowning event in a remarkable series. The trustees of this endowment have already shown their purpose to make it serve educational ends by announcing that work is to be undertaken in three departments, namely, (1) international law, (2) economic aspects of peace, and (3) education and intercourse. The men already appointed to be at the head of the first two departments are distinguished as educators, and without doubt the remaining appointee will be of the same class. S T D.

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 Also *Reports* of the various peace societies and congresses mentioned in the text

**PEACHAM, HENRY** (? 1576-1643) — English author, born at Northmimms, Hertfordshire, the son of a country rector. He was educated at schools near St Alban's and in London, and proceeding to Trinity College, Cambridge, graduated B A in 1594-1595 and M A in 1598. After teaching for a time at Wymondham in Norfolk he took up the literary profession, for which he was well enough equipped by a knowledge, in addition to letters, of botany, music, heraldry, mathematics, drawing, and painting. His first work was the *Graphice or the most auncient and excellent Art of Drawing with the Pen and Limning in Water Colours* (London, 1606) which passed through many editions as *The Gentleman's Exercise*. In 1613-1614 Peacham made excellent use of an opportunity to travel in France, Italy, and Holland as tutor to the sons of Thomas Howard, Earl of Arundel. It was during a stay at the country home of M. Ligny, a French scholar and soldier, that Peacham was struck by the limitations in the training of English gentlemen and was inspired to write the work by which he is best known, the *Compleat Gentleman* (1622). This work was addressed to William Howard, the eight-year-old son of Earl Arundel. The *Compleat Gentleman* is in the main a plea for the better education of the upper classes. The rest of the work is a series of chapters on the different studies, each of which gives an epitome of their content. Under the title, "Of Stile in speaking and writing, and of History," Peacham gives a list of authors to be read in Latin and Greek. The chapter on Poetry is of considerable interest, for Shakespeare, Ben Jonson, and others are omitted from the number of Elizabethan poets. One of the newer studies which was being introduced into England at this time is "Antiquities," including statues, inscriptions, and coins. In the chapter on "Drawing, Limning, and Painting" Peacham gives directions on color mixing and an account of the lives of eminent painters. Of special value in the education of a gentleman is the study of blazons, armor, arms, and the dignity of heralds. Under "exercise of the body" Peacham includes horsemanship, running, leaping, swimming, and shooting. Under the title of "Reputation and Carriage" are given the special qualities desirable in a gentleman — temperance, moderation, frugality, thrift, and affable discourse to be cultivated with the help of anagrams, epigrams, and impressas. Of the function of travel in the education of a gentleman Peacham says, "In my opinion nothing rectifieth and confirmeth

more the judgment of a gentleman in forraine affaires, teacheth him knowledge of himselfe, and setleth his affection more sure to his owne Country, than travaile doth." In deciding whether travel should be for pleasure or profit, Peacham pronounces emphatically for the latter, and he strongly recommends a sojourn in France for giving point to the accomplishments of the gentleman. The education of the gentleman is completed by a study of "Military observation," which deals with the different military ranks and gives a list of military commands. In a "much enlarged" edition, published in 1627, a chapter is added on fishing, "the honest and patient man's Recreation, or a Pastime for all men to Recreate themselves at vacant houres." Here an account is given of the Angle rod, lines, flats, baits, flies, and different kinds of fish. While the *Compleat Gentleman* nowhere gives a detailed description of the gentleman, it is a valuable contribution to our knowledge of what in theory at any rate was considered of value in his make-up. (See also GENTRY AND NOBLES, EDUCATION OF, MANNERS AND MORALS, EDUCATION IN.)

Peacham was unfortunately reduced to poverty in his old age and turned his pen to writing political and social pamphlets, of which the most interesting are *The Art of Living in London, or a Caution how Gentlemen, Countrymen and Strangers, drawn by occasion of Businesse, should dispose of themselves in the Thriftest Way, not onely in the City, but in all other Populous Places* (1742), and *The Worth of a Penny, or a Caution to keep Money, with the Causes of the Scarcity and Misery of the Want thereof in these Hard and Merclesse Times* (1641), a discussion of the economic condition of the country. Peacham is also said during this period to have written children's books at a penny each.

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**PEARSON, ELIPHALET** (1752-1828) — First preceptor of Phillips Academy at Andover, graduated at Harvard College in 1773 and taught for five years at Andover. He was principal of the Phillips Academy at Andover from 1778 to 1786 and professor in Harvard College from 1786 to 1826, and acting president from 1804 to 1806. He was one of the founders of the American Education Society (*qv*) and was active in the American Academy of Science and Arts. He was the author of a Hebrew grammar and several papers on religious education. W. S. M.

**PÉCAUT, FÉLIX** (1828-1898) — French clergyman, author, and educator. He completed his studies at the Faculty of Protestant Theology at Montauban, and received an

appointment in his native city when only twenty-one years of age. Less than two years later he gave up his clerical calling on account of his heterodox views. These are set forth in his *Le Christ et la conscience* (1859). In the meantime he had moved to Paris, where he established a private school in conjunction with his friend Gauffrès. His ideas on national education evolved during the years immediately following the disaster of 1870 appeared in a series of letters to the *Temps*, *Lettres de province*, and in *Études au jour le jour sur l'éducation nationale* (1871-1879). Jules Ferry (*qv*), then minister of public instruction, and M. Buisson, director of primary education, were responsible for appointing Pécaut to the staff of general inspectors. With the great increase in the number of departmental normal schools, it became more than ever necessary to provide for the recruitment of the teaching force for these training schools. Pécaut was selected to direct the girls' higher primary normal school at Fontenay-aux-Roses. He devoted himself heart and soul to the undertaking, and spent nearly all his remaining days in this, the most important work of his life, retiring in 1896. The school still reflects much of his spirit and devotion. See his *Deux mois de mission en Italie* (1880), *L'esprit de Fontenay* (1895), *Adieux à l'école* (1896), *L'éducation et la vie nationale* (1897), *Quinze ans d'éducation*, a posthumous publication of writings collected by his sons. F E F.

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#### PECK, WILLIAM GUY (1820-1892) —

Author of mathematical textbooks, graduated from the United States Military Academy at West Point in 1844. He was professor at West Point (1846-1855), at the University of Michigan (1855-1857), and at Columbia University. His publications include *Elementary Mechanics* (1859), *Natural Philosophy* (1860), *Popular Astronomy* (1882), and many school and college textbooks on mathematics. He was joint author with his father-in-law, Charles Davies, (*qv*) of the *Dictionary and Cyclopædia of Mathematical Science* (1855).

W S M

**PEDAGOGICAL JOURNALS** — See JOURNALISM, EDUCATIONAL

**PEDAGOGICAL LITERATURE** — See BIBLIOGRAPHY OF EDUCATION, JOURNALS, EDUCATIONAL, and the reference list at the close of each topic in this work

**PEDAGOGICAL SEMINARY.** — See JOURNALISM, EDUCATIONAL.

**PEDAGOGY** — Pedagogy is commonly understood to mean the science and art of teaching. The word is derived from the Greeks, among whom a pedagogue was the person, usually, if not always, a slave, who attended the young boy, going with him to and from school, carrying his materials for study, looking out for his wants and exercising authority over him. It is supposed that the pedagogues were often such slaves as would be useless for other tasks, and that they were not held in much respect even by the children who were placed in their charge. The name thus acquired in ancient times a connotation of lack of esteem, if not of contempt, which it has not entirely shaken off in modern usage.

A somewhat similar meaning became attached to the derived term, "pedagogy." Since the Renaissance educational reformers have drawn more and more attention to the significance of the process of education as contrasted with that of the subject matter taught. The study of this process has been for several centuries referred to as pedagogy. The philosopher Kant (*qv*) denominated his lectures on education as *Ueber Pädagogik*. They dealt especially with the formation of habit, and moral training and instruction. Thus defined, pedagogy concerned that aspect of education commonly held to be most childish and least interesting, a phase of life relegated to nurses, mothers, and pedagogues, and felt to have little in it to command the thoughtful attention of the strong in mind or will. In fact, the management and instruction of children was from the fathers' or schoolmasters' point of view thought to resolve itself into an authoritative display of superior power. Learning was treated as a matter of application on the part of the pupil. Application was regarded as a question of will, and will as to be governed by commands. But to command children was held, on account of their weakness and lack of resources, not to require great strength or to merit much thought or esteem.

But while, on account of its derivation from the word pedagogue and its application to an art held in little honor, the term pedagogy at first failed to carry the implication of a profound science, nevertheless the existence of the ideal of such a study and its resolute pursuit by a few reformers eventually gained for it a richer content and a higher standing. In the beginning its practical influence was felt especially in the elementary schools. The nineteenth century brought with it in the more advanced nations of the world an extraordinary expansion of the facilities for elementary education. The preparation of teachers for this work came to be in the hands of normal and training schools. These institutions devoted themselves largely to the pedagogy of the subjects taught in the common schools and to the problems of school management.

It came to be an accepted principle that elementary teachers should know not only the subjects they were to teach, but also the art of their craft

Eventually the idea that the scientific study of education should not be confined to the problems of the elementary school led to the establishment of departments of pedagogy in colleges and universities. The University of the City of New York (now New York University) offered such courses in 1832. The same institution established a School of Pedagogy in 1890 and offered the degree of Master and Doctor of Pedagogy. The New York State Normal College at Albany gives the degree of Bachelor of Pedagogy. Many universities, especially in the western part of the United States created professorships in pedagogy in the last two decades of the nineteenth century. See EDUCATION, ACADEMIC STUDY OF.

The introduction of the study into higher education led to new difficulties in regard to the term pedagogy. It was felt to be essentially a normal school subject, concerned especially with the problems of the elementary school and "rule-of-thumb" methods of teaching the subjects of its curriculum. The specialists of the universities were prone to regard the power to teach as due primarily to knowledge of subject matter. In addition to this they admitted the importance of natural aptitude and of experience, but rejected the efficacy of methods. Many ridiculed outright the pretensions of "pedagogy," and resented its injection into the curriculum of higher education. Some even went so far as to criticize the entire influence of pedagogy on elementary education, on the ground that in its emphasis on interest it had demoralized the work of the school, giving us "soft" pedagogy.

Much of this criticism of pedagogy as a university subject had, doubtless, validity, and in consequence it was necessary to modify and expand its content in order to secure for it a permanent foothold and equality of rank. To mark the change there grew up a tendency to substitute the word *education* for *pedagogy* as a title for the department and for professorships. Thus the term "pedagogy" has to a considerable extent passed out of vogue. The newer "education" differs from the older "pedagogy" in two respects. First, it includes far more than method in teaching and school management, second, it is more scientific. Taking up the first point, we note that all the educational functions and agencies of society are considered, the history and administration of education are taken into account, the care of the body is brought before the attention as well as the care of the mind, and the education of defectives as well as of the normal child, the educational ideals and the curriculum are treated both in general and in detail and the relation of education to general

welfare is investigated. A good illustration of the expansion of the field is seen in the transition from the history of pedagogy such as we find in Compayré's volume with that title, to present-day history of education. Then the subject confined itself for the most part to the ideals and methods that have prevailed in the schools, together with some account of the conceptions and work of educational reformers. Now the historian of education tries to relate the processes and agencies of education to the institutional, economic, social, and cultural movements of history.

The second change that has come about with the transition from pedagogy to education lies in the more thoroughgoing and scientific methods employed to-day. On the one hand, a far wider range of underlying sciences is brought into requisition in the treatment of educational problems. Thus not only psychology and philosophy, but also biology, physiology, sociology, and economics are brought to bear on the work. On the other hand, the propagation of opinions, "arm-chair" pedagogy, has been replaced by resolute search for facts through historical research, through comparative study, through the use of experiment and statistical methods. The department of education brings to scientific research a set of interesting practical problems and to the schoolmaster a mass of incontrovertible facts and conclusions that cannot fail to prove of practical use.

It is interesting to note that the term pedagogy bids fair to be revived in the title "experimental pedagogy." This science springs not so much from the desire of the schoolmaster or the educational reformer to establish teaching on an unshakable basis, as from the tendency on the part of experimental psychology to reach out into new fields, especially those where its methods and principles can be made to bear on the practical world. But, although somewhat different in its origin from genetic and educational psychology, which began as attempts to get a scientific basis for teaching rather than new problems for science, experimental pedagogy naturally tends to include both these forerunners. E N H

See EDUCATION, ACADEMIC STUDY OF, EXPERIMENTAL EDUCATION, PSYCHOLOGY, EDUCATIONAL, PHILOSOPHY OF EDUCATION, also CHILD STUDY.

**PEDAGOGY, DOCTOR OF.** — See DEGREES.

**PEDANTRY** — A term given to the display of knowledge for the sake of its display, especially in the exhibition of knowledge upon unusual topics and subjects irrelevant to current needs and interests and hence lacking application. Probably one indispensable factor in pedantry is that the knowledge exhibited be second hand, or show dependence

upon somewhat antiquated authorities, being more or less accompanied by quotations from them. Knowledge that seems vital and important at one epoch may seem a useless affectation at another. At the Renaissance, reformers like Montaigne (*qv*) and humorists like Rabelais (*qv*) found most scholastic scholarship to be mere pedantry while the successors of the humanists regarded as pedantry the humanists' display of classical allusions and Ciceronian Latinity. Such historic illustrations show that the question underlying pedantry is the readaptation of the learning of the past to contemporary conditions. J D

See KNOWLEDGE, MONTAIGNE; RENAISSANCE AND EDUCATION

**PEDICULOSIS** — See INFECTIOUS DISEASES

**PEDOLOGY**. — See PARENTHOOD, EDUCATION FOR

**PEET, HARVEY PRINDLE** (1794-1873) — Educator of the deaf, graduated from Yale College in 1822, having previously taught in the district schools of Connecticut. He was an instructor in the American Asylum for the Deaf at Hartford from 1822 to 1831, when he was called to the principalship of the New York Institution for the Deaf. He prepared a series of textbooks for the use of deaf children and published many papers on the education of the deaf, which were collected and published with the title *Summary of the Recorded Researches and Opinions of H P Peet* (Washington, 1873). W S M

See DEAF, EDUCATION OF THE

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See also the *American Annals of the Deaf and Dumb* for 1873

**PEIRCE, BENJAMIN** (1809-1880) — Mathematician and textbook author, graduated from Harvard University in 1829. He was for two years associated with George Bancroft (*qv*) as a teacher in the famous Round Hill School (*qv*) at Northampton, Mass. From 1831 to his death he was tutor and professor at Harvard. His publications include *Plane and Spherical Trigonometry* (1835), *Algebra* (1837), *Plane and Solid Geometry* (1837), *Miscellany of Mathematics and Physics* (1842), *Analytic Mechanics* (1855), and many papers on mathematical science. He was also the author of the *History of Harvard University from its Foundation in the Year 1636 to the Period of the American Revolution* (1833). W S M

**PEIRCE, CYRUS** (1790-1859) — Principal of the first state normal school organized in the United States; graduated from Harvard College in 1810. He taught for two years and

then studied for the ministry. He was in the service of the church for eight years, "he abandoned the pulpit for the desk of the teacher." He taught four years at Andover and nine years at Nantucket. On the organization of the first state normal school at Lexington (now at Framingham), Mass., in 1839, he was chosen by Horace Mann as principal. "Only three students presented themselves at the opening of the school," but the earnestness and skill of Mr Peirce "soon attracted attention, and the apathy with which his labors were regarded by many friends of education gradually gave place to confidence." The normal school was removed to West Newton in 1844 and to Framingham in 1849. W S M.

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**PENALTIES AND REWARDS** — See REWARDS AND PUNISHMENTS, SCHOOL MANAGEMENT

**PENCRICHE, RICHARD** — See ANGLO-NORMAN SCHOOLS, BLACK DEATH

**PENIKESE SUMMER SCHOOL**. — See SUMMER SCHOOLS

**PENMANSHIP** — See WRITING

**PENN CHARTER SCHOOL** — See FRIENDS, EDUCATIONAL INFLUENCE OF THE SOCIETY OF

**PENN, WILLIAM** (1644-1718) — Founder of Pennsylvania, studied at Christ College, Oxford, but was fined and expelled for "the sin of nonconformity," having connected himself with the Society of Friends. He continued his education in France, and in 1681 obtained grants of land in America which he organized into the colony of Pennsylvania. Before leaving England, he stipulated that the governor and provincial council of the new colony "shall erect and order all public schools and reward the authors of useful sciences and laudable inventions." In the charter granted by Penn in 1711 he emphasized the importance of a "good education of youth, and their early introduction in the principles of true religion and virtue, and qualifying them to serve their country and themselves by breeding them in reading, writing, and learning of languages and useful arts and sciences, suitable to their sex and age and degree." His important educational writing is *Charter of ye Publick School founded in ye Town and County of Philadelphia in Pennsylvania* (Philadelphia, 1701). W S M

See FRIENDS, EDUCATIONAL WORK OF SOCIETY OF, PENNSYLVANIA, STATE OF.

## PENNSYLVANIA COLLEGE

### **PENNSYLVANIA COLLEGE FOR WOMEN, PITTSBURGH, PA**

— Founded in December, 1869, by persons interested in promoting the higher education of women in this region. In addition to the academic department leading to all regular college degrees, there is a music department offering courses in connection with regular college work and a special music course leading to a certificate. A department of social service has been organized recently giving special training to social workers who wish to enter paid work or to give intelligent services as volunteers, and the course combines theoretical study and practical work. Pittsburg, with its great industries and its diversified philanthropies, is an unusual field for observation, investigation, and practical work, many of the institutions cooperate with the college, and experienced social workers give individual assistance. The entrance requirements to the college courses which lead to the degree of A B are four years' work of a high school. The social life receives much attention from the point of view of individual training. The faculty consists of eighteen members and the enrollment of students, excluding those in the department of music, was 134 in 1910-1911. C H C

### **PENNSYLVANIA COLLEGE, GETTYSBURG, PA**

— A nonsectarian institution, founded and fostered by the General Synod Lutheran Church, chartered by the legislature of Pennsylvania in 1832. The impulse which led to the founding of the college came from the Lutheran Theological Seminary established in Gettysburg six years earlier. Thus, while the primary motive was to furnish a thorough preparation for the men contemplating the seminary course in theology, the general object of the founders was the promotion of academic and scientific education under Christian influences. The course of study, as originally planned, covered the subjects of philosophy, Latin, Greek, natural science, mathematics, English, and German, leading to the degree of A B. From 1840 to 1861 a medical department, located at Philadelphia, was connected with the college. In 1884 the scientific department was organized, leading to a division of the course into classical and scientific. During recent years a number of new courses have been added, offering a wider range of choice and differentiation of courses of study. There are at present (1912) nine group courses, determined by the major course of study, leading to the Bachelor's degree. The fourteen units recommended by the committee of uniform college entrance requirements are required for admission to the freshman class. The school is controlled by a self-perpetuating board of trustees consisting of thirty-six members. The grounds and equipment are valued (1912) at \$660,000

## PENNSYLVANIA, STATE COLLEGE

including a library of 25,000 volumes. The productive endowment amounts to \$225,600. The total income for the year ending July 1, 1911, was \$41,877.46. The enrollment in 1910-1911 was 323. Women have been admitted since 1886. The teaching force numbers 23. C F S.

### **PENNSYLVANIA MILITARY COLLEGE, CHESTER, PA**

— An institution organized in 1862 as the Pennsylvania Military Academy, and located at Chester in 1865. The college was the outgrowth of a private boarding school established at Wilmington, Del., in 1821. Military instruction was introduced in 1858. In 1892 the academy adopted the present title. Preparatory and collegiate (civil engineering, chemical, and academic) departments are maintained. Definite entrance requirements are not stated. Degrees are conferred. The enrollment of collegiate students in 1911-1912 was 104, and the faculty consisted of fifteen members.

### **PENNSYLVANIA, STATE COLLEGE OF, STATE COLLEGE, PA**

— Was established by the "Morrill Act" passed by Congress July 2, 1862, and a reciprocal act of the legislature of Pennsylvania passed April 1, 1863. As early as 1855 a charter had been issued to certain public-spirited citizens under the patronage of the state Board of Agriculture, and in 1859 an institution for secondary agricultural education was opened at the present location under the name of "The Farmers' High School," the first class being graduated in 1861. Under the new establishment, the name was changed in 1874 to The Pennsylvania State College. Some of the trustees are *ex officio* state officials, others are appointed by the Governor, others are chosen by the alumni of the college, and still others are elected by delegates from industrial organizations of the state.

The growth was small until 1887, when the state began a regular biennial appropriation to the institution, the total of which now (1911) aggregates \$3,565,726.43. The most recent appropriation was \$800,000. The growth in total attendance of students by decades is as follows: 1891, 209; 1901, 433; 1911, 2007. The present force of instructors numbers 190. No tuition is charged, but preference in admission is given to residents of the state. A very small percentage of the students come from other states and foreign countries. Fourteen units are required for entrance to the college.

There are five schools, viz agriculture, engineering, liberal arts, mining, and natural science, also one department, home economics. In these schools thirty-six courses of study are offered leading to the Bachelor's degree. Courses are also offered leading to the Master's degree. Correspondence work is confined to lessons on agricultural topics, in which



3600 students are now enrolled, and to students in the Summer Session who wish to continue their instruction

Six hundred acres of farm land are owned by the college, part of which is devoted to experimental farming, part to forestry wood lots, and part to campus. The total value of land and buildings is \$1,444,369.

The college differs from other institutions mainly in its rural environment which develops a solidarity of college sentiment, a harmony of college life, an effective system of student self-government, an economy in style of living, and a devotion to the more serious aspects of college residence. Attendance on chapel service is compulsory, many Bible classes are maintained, and the Christian Association has an active membership numbering 1200. There are ten chapters of national fraternities, most of whom own chapter houses in which their members reside. Edwin Erle Sparks, Ph D., LL D., is the president of the college.

#### E E S

**PENNSYLVANIA, STATE OF** — One of the largest and most important of the thirteen original states. First settled along the Delaware by the Swedes in 1638, it was taken over by the Dutch in 1665, and by the English in 1674, later, granted to William Penn as a proprietary colony by Charles II in 1681 and settled by him in 1682. Pennsylvania continued under Penn's charters of 1682 and 1701 up to the Revolution, and was the second state to ratify the Federal Constitution, in 1787. It has a land area of 44,832 square miles or about the size of England proper. For administrative purposes the state is divided into the city of Philadelphia and sixty-six counties, and the counties are in turn divided into city, town, borough, and township school districts. In 1910 Pennsylvania had a total population of 7,665,111, one fifth of which was in the city of Philadelphia, the density of population was 171 persons per square mile.

**Educational History** — Penn's first charter, drawn up in England in 1682, provided that "the Governor and provincial council shall erect and order all public schools, and encourage and reward the authors of useful sciences and laudable inventions in the said province" and provided for "a committee of manners, education, and arts" to prevent "all wicked and scandalous living" and to see that the youth were "trained up in virtue and useful knowledge and arts." It was further agreed upon, in England, as a law for the colony, "28. That all children within this province of the age of twelve years shall be taught some useful trade or skill, to the end that none may be idle." The first general assembly of the colony, sitting at Chester in December, 1682, adopted these provisions. The second provincial assembly, sitting in Philadelphia in 1683, provided further "that all persons in this prov-

ince and territories thereof having children, and all guardians and trustees of orphans, shall cause such to be instructed in reading and writing, so that they may be able to read the Scriptures and to write by the time they attain to twelve years of age, and that they be taught some useful trade or skill," and imposed a fine of £5 per child for failure to comply, unless the child was incapacitated for learning "in body or understanding." This law was so much in advance of ideas then current in England that it was disapproved by William and Mary, but was enacted by the Governor and the assembly in 1693. The law appears to have been enforced in a few places for a time, but soon became a dead letter and was omitted entirely from the revision of 1696.

In 1683 Enoch Flower was engaged as schoolmaster at Philadelphia, and this was the first regular school established in the state. In 1689 a "Friends' Public School" was opened in Philadelphia, after the type of a public grammar school of the time in England. This was chartered in 1697, and again in 1701, 1708, and 1711, and evolved into the William Penn Charter School. This school has been continuously in existence since 1689, and ranks as one of the oldest schools in America. Another school was established at Darby in 1692, and in 1697 the Society of Friends established a second school in Philadelphia, which took poor scholars free, and was the first public free school established within the state. But few other schools seem to have been established, and but little colonial legislation of any kind occurred after 1700. "The first three quarters of the eighteenth century," says Wickersham, "are almost a perfect blank as far as anything was done by the public authorities to provide an education for the people."

Before the Revolution many parochial schools were established by the different denominations, with the clergy frequently as the teachers, private pay schools were established in the towns and cities, and the beginnings of free education for the poor were made. Some of the private schools thus established, such as the Germantown Academy (1761) and the Moravian schools at Bethlehem and Nazareth, founded still earlier, attained a wide reputation and drew pupils from other colonies. The educational policy which developed early was that of depending upon parochial and private efforts, of making no attempt to provide any form of education for those who could pay for it themselves, and of extending charitable education to but a limited number and for a limited time.

A marked exception to these conditions was found among the settlers from Connecticut, and other parts of New England, who settled in the Wyoming Valley, in north-eastern Pennsylvania. These people brought with them from New England their political

independence and their zeal for education. The result was that they were politically troublesome and educationally efficient. In 1768 it was decreed that each township within the settlement should reserve 960 acres of land "for the public use of a gospel ministry and the schools." This was done, and, though there were some losses, the schools derived benefit from the greater part of the reservation, and some schools to-day still receive income from these old grants. School committees were elected by the inhabitants, for each school district, and these in turn employed the teacher, supervised the school, and collected a rate-bill form of tax to pay the teacher. There was also a township tax to provide schoolhouses, and in some cases also to pay teachers. The schools thus established continued in operation until the adoption of the first state school law in 1834, were the nearest approach to public schools of any established before that date in the state, and exercised considerable influence in shaping the new Pennsylvania law.

In 1776 the first constitution made liberal educational provision. Schools were ordered to be established in each county, "with such salaries to the masters, paid by the public, as may enable them to instruct youth at low prices, and all useful learning shall be duly encouraged and promoted in one or more universities." Practically nothing was done under the provisions of this constitution.

Pennsylvania ratified the Federal Constitution in 1787, and in the first constitution adopted after that, in 1790, the early liberal provision was withdrawn, and a provision for the establishment of charity schools was inserted in its stead. The legislature was directed, "as soon as conveniently may be," to provide by law "for the establishment of schools throughout the state, in such manner that the poor may be taught *gratis*." The "rights, privileges, immunities, and estates of religious societies and corporate bodies" were guaranteed, as before, and the promotion of "the arts and sciences" was directed, "in one or more seminaries of learning." These provisions were continued unaltered in the new constitution of 1838.

An act of 1802 made the first provision for carrying these constitutional mandates into effect. This gave to the overseers and guardians of the poor the task of selecting the children who were to receive a charitable education, and of collecting the money, by an increase in the "poor rates," with which to provide their books and tuition. In 1809, in an effort to remove the pauper taint, the administration of the law was given to the township assessors and county commissioners, but without success in eliminating the name of "pauper schools." In 1824 an effort was made to substitute a form of a public for a pauper school system, by a law which provided for an election in each township, borough, or ward,

which should accept the law, of a board of three school men, one to be elected each year. This law was too advanced to stand, and two years later it was repealed and the old pauper school law of 1809 was substituted for it. In this condition matters remained until 1834. During the first forty years of statehood, the chief educational legislation was in the form of private incorporation acts for schools and colleges, a number of which were granted some state aid. By 1830 as many as 133 such special acts had been passed, and in 1833 there were two universities, eight colleges, and fifty academies which had been aided, to some degree, and mostly in return for the education of poor children, by grants from the state.

A few movements looking toward a state public school system were made early in the century. In 1812 the City Council of Philadelphia and the County Commissioners, acting jointly, were permitted to take such action as the public good might require toward the establishment of schools, in 1814 "The Society for the Promotion of a Rational System of Education" was organized in Philadelphia, in 1818 the City of Philadelphia was organized by special law, as the first school district of Pennsylvania, and permission was given to provide Lancasterian schools for the education of the poor (see PHILADELPHIA, CITY OF, also LANCASTER, JOSEPH), in 1821 the counties of Dauphin (Harrisburg), Allegheny (Pittsburg), Cumberland (Carlisle), and Lancaster (Lancaster) were also exempted from the operation of the pauper school law, in 1822 the city of Lancaster was organized by special law, as the second school district of Pennsylvania, and Governors of the state, in their messages to the legislature from 1801 on, made repeated recommendations that some further action be taken to carry into effect the constitutional mandates and to provide better educational advantages for the children of the state. In 1822 the Committee on Education of the Senate reported that the Act of 1809 was wholly inoperative in many counties, and much abused in others, and a report made to the House of Representatives in 1829 showed that there had been educated free, in the 31 counties reporting, but 4940 poor children in 1825, 7943 in 1826, 9014 in 1827, and 4477 in 1828. In 1833, the last year of the pauper school system, the number of free pupils educated was 17,467, and the total cost but \$48,466 25.

The bill establishing the State Common School Fund, 1831, provided for the addition of the income from the sale of public lands, and the interest on the same, until a fund of \$2,000,000 should be reached, after which the income should be applied annually to the maintenance of schools. It was estimated that this would be in about ten years, but, in 1834, the friends of education succeeded in passing a bill which made the beginnings of

a state school system at that time. This act contained many of the provisions of the law of 1824, and the unsuccessful bills of 1831 and 1833. Each county was made a school division, and each ward, township, and borough a school district. For each school district a board of six school directors was to be elected by the people, one third of whom should go out of office each year. Each county court was to appoint two inspectors for each district, and the Secretary of State was made *ex officio* Superintendent of Public Schools. The income from the state school fund was to be supplemented by a state appropriation of \$75,000 and by county and local taxation, though any district might decide to raise no tax for free schools, forfeit its state apportionment, and fall back on the provisions of the old 1806 law for the maintenance of pauper schools.

The provisions here made for free schools, and for secular schools at that, seemed almost revolutionary at the time, and the law was vigorously attacked in the next legislature. Petitions asking for the repeal of the law, signed by 32,000 voters, mostly signed in German script, were presented. The House leader was Thaddeus Stevens, to whom the credit for saving the law has been given. An act of 1836 revised and strengthened all preceding legislation, and laid down the main lines along which the school system of Pennsylvania later developed.

The new school system was accepted but slowly. During the first year of its operation, 536 out of 907 districts accepted the system, 762 schools were conducted, and an average term of 3½ months was provided. During the next two years, the *ex officio* State Superintendent did much to explain the new system and to secure its acceptance by the people, so that by 1838 the number of districts accepting the new system had increased to 861, out of a total of 1033. By 1847, the last year of the old system, 1105 of the 1249 districts had accepted the system. It was not until 1873, however, that the last district surrendered and accepted the state school system. In 1837 the United States Surplus Revenue (see NATIONAL GOVERNMENT AND EDUCATION) was received, and for two or three years very material aid was given to the new school system by appropriations from this fund, to be used for buildings and yearly maintenance. Probably about \$800,000 was derived from this source before the fund was all spent, the aid was no doubt timely and helpful, as the people were not yet willing to bear taxation for schools.

In 1838 the state attempted to systematize the grants for universities, colleges, academies, and female seminaries, which had been made from time to time for nearly half a century, by a general law granting annual state aid to all such institutions meeting certain con-

ditions. The grants were to run for ten years, but in 1843 they were cut in half, and in 1844 entirely abandoned. In 1840 school directors were authorized, directly or by the aid of competent persons, to examine and certificate all teachers. In 1843 directors of city, ward, or borough school districts were authorized to employ district superintendents, and in 1849 this provision was extended to all state-aided districts. Few superintendents were ever employed, and the law was superseded in 1854 by the law providing county supervision. The elections of 1848 being so favorable (about 90 per cent for), the legislature in that year extended the school system to include all school districts. It was twenty years, however, before public schools existed in all of the school districts of the state. In 1849 the laws were recodified, and the minimum term extended from three to four months. This created so much opposition, however, that in 1851 the law was in part repealed. In 1836 Philadelphia had been authorized to establish a high school, similar permission was granted to Pittsburg in 1849, and to Easton in 1850, and in 1854 all doubt as to the legality of districts establishing such schools was removed by a general law, authorizing the establishment of "graded schools and the study of the higher branches."

In 1850 a state convention of the friends of education was held in Harrisburg. The proceedings and resolutions of this convention, published by direction of the legislature, were made a platform for educational advancement, and did much to secure the new law of 1854. In January, 1852, the first number of the *Pennsylvania School Journal* was issued, and in 1855 was made the official organ of the State Educational Department. In 1852 the State Teachers' Association was organized at Harrisburg. Teachers' institutes were now organized in a number of counties, and other conventions held. The result of this awakening was the new school law of 1854, which reorganized the system. By this law the township was made the unit of the system, and districts were given corporate powers, the minimum school term was again increased to four months, and separate schools for negroes were required, where practicable; a district tax for school buildings and the publication of a book by the State Superintendent on school architecture were authorized, reading, writing, spelling, grammar, geography, and arithmetic were made statutory school subjects, thus doubling the course of instruction in many districts, school directors and teachers were directed to adopt textbooks for the district, grants for instruction to endowed and to religious schools were prohibited, and the offices of county superintendent of schools for each county and of deputy superintendent of common schools were created. In 1857 the office of State Superintendent was detached

from that of Secretary of State, a separate department of common schools was created, and a State Superintendent of Common Schools, to be appointed by the Governor for three-year terms, was provided for. The year 1857 also marked the first provision for the education of teachers made by the state. The state was divided into twelve normal-school districts (increased to thirteen in 1874), in each of which a normal school was eventually to be established. In 1859 the Lancaster County normal school, at Millersville (opened in 1855), was recognized as the first state normal school, in 1861 the school at Edinboro, in 1862 the school at Mansfield, and in 1866 the school at Kutztown, were similarly recognized. By 1877, ten schools had been recognized, and the thirteenth was added in 1893. These schools, private in nature, received state aid for buildings and for each pupil trained.

In 1863 an attempt was made to change the basis of apportioning state aid from taxables to school census, but the returns were so unreliable that the taxable basis was restored in 1864. In 1864 the first school library law was enacted. By 1866 the teachers' institutes, begun after 1850, had extended to twenty-three counties of the state, and in 1867 they were legalized and required for all counties with county aid. By the law of 1867, cities and boroughs having a population of 10,000 were permitted to employ city superintendents, the right of eminent domain was granted to districts, the old "provisional certificate," based on an examination in reading, writing, and arithmetic only, was abolished, and all teachers were required to pass an examination in reading, writing, spelling, arithmetic, geography, grammar, United States history, and the theory of teaching, county superintendents were required to hold a teacher's certificate, or to be a graduate of a college or a normal school; and the state permanent teachers' certificates were also authorized. In 1864 the Pennsylvania Soldiers' Orphan Schools were organized, and in 1871 the Pennsylvania Training School for the Feeble-minded was established at Media. In 1872 the minimum school term was increased to five months.

In 1873 a new state constitution was adopted, and in this the progress made during the preceding forty years was recorded and somewhat extended. After the adoption of the new constitution, no new code of laws was enacted, the schools continuing under the laws of 1854 and 1876, with various minor amendments, until the adoption of the new school code in 1911. In 1881 the requirement of separate schools for the races, instituted in 1854, was withdrawn, with but little resulting change. In 1883 an evening school law was enacted. In 1885 physiology and hygiene were added to the list of examination subjects for teachers' certificates, and in

1901 civil government and elementary algebra. In 1887 teachers were first paid for attending teachers' institutes, and separate city teachers' institutes were authorized. In 1893 a district free-textbook law was enacted, the county superintendents' salary law (first enacted in 1878) was revised, and state teachers' certificates were first granted to college graduates. In 1895 there was quite an amount of legislation with regard to district lines, district indebtedness, and district boards; boards of directors were permitted to establish free public libraries, and to levy a one-mill tax for their support, a vaccination law and an anti-religious-garb law were enacted; and joint high schools were authorized, state aid for high schools extended, and the State Superintendent instructed to prescribe a uniform high school course. In 1897 the distribution of state aid was finally changed from the old basis of taxables to a plan based on a combination of teachers, taxables, and school census, stenography and typewriting and kindergartens were authorized, the transportation of pupils was permitted, and a schoolhouse flag law was passed. In 1899 the minimum school term was extended from six to seven months, and a State Free Library Commission was established. In 1901 township centralization, with the transportation of pupils, night manual training schools, and township supervising principals were authorized. In 1907 a minimum salary law, with state aid to weak districts, a school sanitation law, and an annual school directors' convention law were enacted. In 1909 the child labor law was revised and materially strengthened, and a detailed law relating to the handling of school diseases was enacted.

In 1907 the legislature passed a law directing the Governor to appoint an educational commission, to revise and codify the school laws of Pennsylvania. A carefully revised code was prepared and submitted to the legislature of 1909, passed by the legislature, but vetoed by the Governor. The same commission submitted a similar code to the legislature of 1911, and this finally became a law.

**Present School System** — At the head of the present school system of Pennsylvania, as reorganized in 1911, is a State Board of Education, and a State Superintendent of Public Instruction. The State Board of Education consists of six citizens, appointed by the Governor (the members of the educational commission were appointed as the first State Board) with the concurrence of two thirds of the Senate, and for six-year terms, one going out of office each year. The State Superintendent of Public Instruction, also appointed by the Governor, for four-year terms, is *ex officio* a member and president of the State Board. The members serve without pay, and one half of them must be experienced educators, connected with the

public school system of the state. The Board has important duties, largely advisory, and important business functions, and it may elect such officers, employ such assistants, and incur such expense, as it deems necessary. All schools in the state, of whatever kind, supported in whole or in part from state sources, must report to the Board. It may make such by-laws and prescribe such rules and regulations for the sanitary inspection and equipment of schools as it may deem necessary. It is charged with the care and management of the state school fund and with the promotion of agricultural, vocational, and industrial education in the state. For this purpose, and also for the equalization of educational advantages throughout the state, the Board may use so much of the income of the state school fund as it sees fit. It is charged with the purchase of the thirteen normal schools of the state from the stockholders, and thereafter with the appointment of trustees for the schools purchased. The Board is directed to prepare and publish schoolhouse plans, and to furnish them free to districts, and all plans for the construction or reconstruction of buildings, except in first-class districts (Philadelphia and Pittsburg) must be approved by the State Board. The Board makes an annual report to the Governor as to its work and as to the condition of the state school fund, and the Board is also instructed to recommend needed legislation to the Governor and the legislature.

The State Superintendent acts as the executive officer of the Board and has more than the usual functions of this officer. He appoints all of his deputies and assistants, consisting of two deputy superintendents, three experts in agricultural education, industrial education, and drawing, four inspectors of elementary and high schools, and all necessary clerks, and at salaries fixed by law.

For each of the sixty-six counties a county superintendent is elected, for four-year terms, by a convention of all the school directors (trustees) in the county representing districts not employing a city or town superintendent. Assistant superintendents must possess the same qualifications as county superintendents, and are appointed for the same length of time. They assist the county superintendent in the supervision of instruction, the inspection of grounds and buildings, the approval of courses of study, the conferring with directors, and the examination of pupils and schools, and may act for him, as directed. They also examine teachers for the schools of their counties.

Each county is divided into a number of school districts, each city, incorporated town, borough, or township constituting a separate school district, coterminous with the civic division. All independent school districts were abolished in 1911, though provision for their temporary reconstitution was made. All

districts are divided into four classes, as follows: 1st, population of over 500,000,—board of 15, 2d, population of 30,000 to 500,000,—board of 9, 3d, population of 5000 to 30,000, board of 7, 4th, population of less than 5000,—board of 5. There are but two first-class districts, Philadelphia and Pittsburg, and for a description of these and their powers, see special article on PHILADELPHIA, CITY OF. For the other classes of districts, the boards of school directors are elected at large, and for six-year terms, approximately one third going out of office each year. Each district is a school corporation, and the title of all school property is vested in the school district. First and second-class districts must, and third-class districts may, appoint a district (city) superintendent of schools for a four-year term, after which such districts are not under the supervision of the county superintendent of schools. The district superintendent must be commissioned by the State Superintendent, and succeeds to all the duties and powers of the county superintendent. Any third or fourth-class district may appoint a supervising principal. Each board of directors must provide a sufficient number of schools to educate all children six to twenty-one, and they also have the power to provide high schools, evening schools, kindergartens, vocational schools, libraries, museums, playgrounds, special class schools, truant and parental schools, schools for adults, and such other schools as they deem desirable. On petition of the parents of twenty-five children over fourteen, they must provide an evening school, and on petition of seventy-five taxpayers, they must provide an evening manual training school. Any board may establish an agricultural school, and admit those over twenty-one to any vocational classes. Each board also has the power to levy taxes, within fixed limits, for all school purposes, may, similarly, borrow money, and issue bonds; may acquire real estate, may make and enforce all reasonable rules and regulations, may appoint and, for proper cause, may remove teachers and all other employees; in first- and second-class districts must, and in third- and fourth-class districts may, control all student activities and publications, must furnish the textbooks and supplies needed, and may loan books to pupils during vacations, are to adopt courses of study, with the approval of the district or county superintendent, may provide transportation for pupils, or may consolidate schools, or may do both, must take and report an annual school census, and must maintain all schools in the English language. Textbooks are adopted by the boards for five-year periods, and no change can be made, without the recommendation of the superintendent, except by a two thirds vote.

**School Support** — The schools are sup-

ported by a state appropriation and by local taxation, the latter comprising about 80 per cent of all income for maintenance. The state appropriation was about seven million dollars at last report, and this is distributed to the districts (since 1911) on the combined basis of one half on teachers actually employed and one half on school census. The state school fund, created in 1911, is to consist of 80 per cent of the net income from the state's forest reserves (estimated at 1,000,000 acres), the income from the state's water-power rights, the income and proceeds from all state lands not used for public purposes, all escheated estates, and all property or money given to the fund. The State Board of Education is to use so much of the income as they deem wise, to equalize educational advantages in the state, and to aid education in forestry, agriculture, and industrial pursuits, and then to add the remainder of the income to the principal of the fund. Under the new law, each district levies its own school taxes. In first-class districts, the levy must be between five and six mills, in second-class districts not over twenty mills, and in third- and fourth-class districts not over twenty-five mills.

**Teachers and Training** — Three grades of teachers' certificates are issued, — provisional, professional, and state. Each must state on its face the subjects of the examination, for which alone it is valid. No teacher may teach any subject not named on the face of the certificate, so that this virtually creates a form of high school certificate. Each superintendent, county or district, may examine and certificate teachers for his own county or district. Provisional certificates are valid only in the district where issued, and for one year, and no teacher may teach on such over five years. Professional certificates presuppose two years' experience, more advanced examinations, are renewable three times, and may be granted inter-county recognition. State certificates are valid throughout the state, and presuppose two years of teaching on a professional certificate, or college or normal school graduation. Full recognition is granted to college and normal school graduates, and good inter-state recognition of certificates prevails. A certificate cannot be issued to a person addicted to the use of drink and narcotics, not physically and mentally sound, or not of good character, and any certificate issued may be annulled for cause. The reading of pedagogical books designated by the State Superintendent is emphasized in the granting of all higher certificates. Any district may create or contribute to a teachers' retirement fund. A minimum salary law for teachers insures a salary of \$60 or \$65 a month, according to the certificate held.

For the training of future teachers, the state subsidizes and exercises a partial control over thirteen so-called state normal schools. The

new school code contemplates the purchase of each of these joint-stock institutions, authorizes the State Board of Education to negotiate purchases, and directs each legislature to appropriate \$200,000 for the purpose, until all of the thirteen schools are acquired. Philadelphia, Pittsburg, and Reading maintain city normal schools.

**Educational Conditions** — A good medical inspection law was incorporated in the new code, by which all first- and second-class districts must provide for medical inspection, third-class districts must also, unless they vote annually not to do so, and fourth-class districts are to be provided with medical inspection by the State Commissioner of Health, unless they notify him in writing each year that they do not want it. Any district board may also appoint a school nurse. Detailed reports are to be filed and copies sent to parents. The sanitary inspection of buildings is also a part of the work. All school buildings must meet certain hygienic conditions, and all two-story buildings must be fireproof. All deaf, dumb, blind, and mentally deficient children must be reported to the medical inspector for examination, and their proper education provided for.

All first- and second-class districts must provide a school term of 9 months, third-class districts of 8 months, and fourth-class districts of 7 months. All schools must be taught in the English language. Textbooks and supplies are furnished free by the districts. All children 6 to 21 may attend school, and all children 8 to 14 must attend a public or accepted private school every day the public schools are in session, except that in fourth-class districts the directors may vote to reduce the required time to 75 per cent of the school term. All children 14 to 16 not properly employed must also attend school, and those at work must possess employment certificates. Children 8 to 14 cannot be employed at any labor during school hours. All first-, second-, and third-class districts must appoint attendance officers, and fourth-class districts may do so. Two or more districts may join in the appointment of an attendance officer, and the State Superintendent may withhold state funds from districts failing to enforce the law. No religious or political test can be required in the schools, and the requirement of separate schools for the negro race is forbidden.

**Secondary Education** — Three classes of high schools are recognized, and state aid is granted for each class. A first-class high school must provide 4 years of instruction, a 9 months' term, employ at least 3 teachers, and receives a maximum state grant of \$800. A second-class high school must provide 3 years of instruction, an 8 months' term, and employ at least 2 teachers, and receives a maximum state grant of \$600. A third-class high school must provide 2 years of instruc-

tion, and receives a maximum state grant of \$400. Any school district may establish a high school, as it sees fit, except that in fourth-class districts the approval of the county and State Superintendents must first be obtained. The course of study must be approved by the superintendent of the district or the county. Joint district high schools are provided for, with joint high school boards. Children not residing in high school districts, or full four-year high school districts, may attend neighboring schools, then tuition being paid by their home districts. All school districts have the same power to establish and support high schools as they have for elementary schools, there being no separate high school funds. The high schools have developed rapidly during the past ten years. In 1902 there were but 66 township high schools, while in 1910 the number had increased to 332. The same year there were 508 borough and city high schools. There were 125 first-class, 236 second-class, and 479 third-class schools in the state.

**Higher Education** — The Pennsylvania State College (*q.v.*), located at State College in central Pennsylvania, is the only institution of higher learning maintained by the state. This institution, founded in 1859, offers instruction in agriculture, engineering, and household economy. The University of Pennsylvania (*q.v.*) receives some small state aid, but it is essentially a private foundation. The central high school in Philadelphia and the University of Pittsburgh are municipal institutions. The state has a large number (34) of non-state colleges, mostly on religious foundations, twelve of which date back to before 1850. Some of these, as for example Muhlenberg, Dickinson, Lafayette, Haverford, Franklin and Marshall, Bucknell, Lehigh, Swarthmore, Washington and Jefferson, and Bryn Mawr (*qq.v.*), possess considerable property and offer a good grade of collegiate instruction. About one half of the number are open to both sexes, six are for women only, and one is for the colored race.

**Special Education** — For the education of delinquents, dependents, and defectives, the state maintains, in whole or in part, the following special state institutions —

Pennsylvania Industrial Reformatory, at Huntingdon.  
 Pennsylvania State Reform School, at Morganza.  
 House of Refuge, for Girls, at Darling.  
 House of Refuge, for Boys, at Glen Mills.  
 Pennsylvania Institution for the Blind, at Overbrook.  
 West Pennsylvania Institution for the Blind, at Pittsburg.  
 Pennsylvania Institution for the Deaf and Dumb, at Philadelphia.  
 West Pennsylvania Institution for the Deaf and Dumb, at Edgewood Park.  
 Pennsylvania Oral School for the Deaf at Scranton.  
 Pennsylvania Home for the Training of Deaf Children before they are of School Age, at Philadelphia.  
 Pennsylvania Training School for the Feeble-minded, at Elwyn.  
 State Institution for the Feeble-minded of Western Pennsylvania, at Polk.

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**PENNSYLVANIA, THE UNIVERSITY OF, PHILADELPHIA, PA** — This university had its origin in a tract written by Benjamin Franklin, entitled "Proposals relating to the Education of Youth in Pensilvania." Soon after its publication, twenty-four public-spirited citizens of Philadelphia associated themselves for the purpose of establishing an academy, and "laving a Foundation for Posterity to erect a Seminary of Learning more extensive and suitable to their future Circumstances." The board chose Franklin for its president and directed him with the aid of the attorney-general to draw up a constitution. One of the first acts of the board was to secure the use of a building erected at Fourth and Arch Streets, Philadelphia, by a trust founded in 1740, and intended to serve for a "Charity School" and a "House of Publick Worship." For the latter purpose the structure was used in November of 1740, when Whitefield first preached in it, the charity school, however, was never set in operation. The trustees, in order that their trust might be carried out and the building "applied to the good and pious uses originally intended," conveyed it, on February 1, 1750, to the trustees of the Academy by an indenture, which bound the latter to keep a "House of Publick Worship" and "one free school" for the instruction of poor children; but empowered them, so long as they preserved the aims of the original trust, to employ the property as they saw fit. In January, 1751, the Academy was formally opened. It embraced three schools, English, Latin, and Mathematical, over each of which sat a master, one of whom was rector of the institution. The Academy met with marked success, and upon application readily secured from Thomas and Richard Penn, the Proprietors, a charter in 1753.

William Smith, first Provost of the University, began his administration in 1755. The scope of the Academy rapidly widened. In 1755, at the request of the Board of Trustees, Governor Morris granted a second char-

ter which confirmed the first, granted power to confer degrees, and changed the title of the board to "The Trustees of the College, Academy, and Charitable School of Philadelphia." The first commencement of the College, with a graduating class of seven young men, took place in May, 1757. After this its name and influence spread widely and it drew support from Maryland, Virginia, the Carolinas, and the West Indies. Dr. Smith planned the curriculum in 1756 to extend over three years, and to include Latin, Greek, mathematics, chemistry, philosophy, history, ethics, civil and international law. This plan laid the foundation for the educational system of the American college. Dr. Smith was a man of many interests, a church worker, an educator, a scientist, and at times an active politician. In the latter capacity he incurred the displeasure of the Provincial Assembly by an alleged libel against its privileges, and was thrown into jail, where he nevertheless continued to meet his classes. In 1759 he went to England for redress, and while abroad received honorary degrees from Oxford, Aberdeen, and Dublin. In 1762 he went again to England in the interests of the College. As the result of an appeal for aid to George III, to the Penns, and to the English people, he returned to America with slightly over £6000. This favor shown by George III later incited against the College, because it confirmed the feeling then existing that the College sided with Tory interests. Objections were made to the exercise of some of the rights under its charter. As a consequence of complaints, an act of Assembly in 1779 revoked the charters of 1753 and 1755, and formed a new corporation, "The Trustees of the University of the State of Pennsylvania." In 1789 this act was repealed, as a "violation of the Constitution of this Commonwealth," by a bill which once more secured to the College its privileges and franchises with Dr. Smith as Provost. But even thus the College and the University were separate, and there was not room for two institutions. The trustees of both accordingly applied to the assembly to have the charters of each surrendered, a new corporation created, and a board of trustees, representing both College and University, organized. The Assembly passed an act in September, 1791, uniting the University of the State of Pennsylvania and the College, Academy, and Charitable School of Philadelphia under the title "The Trustees of the University of Pennsylvania."

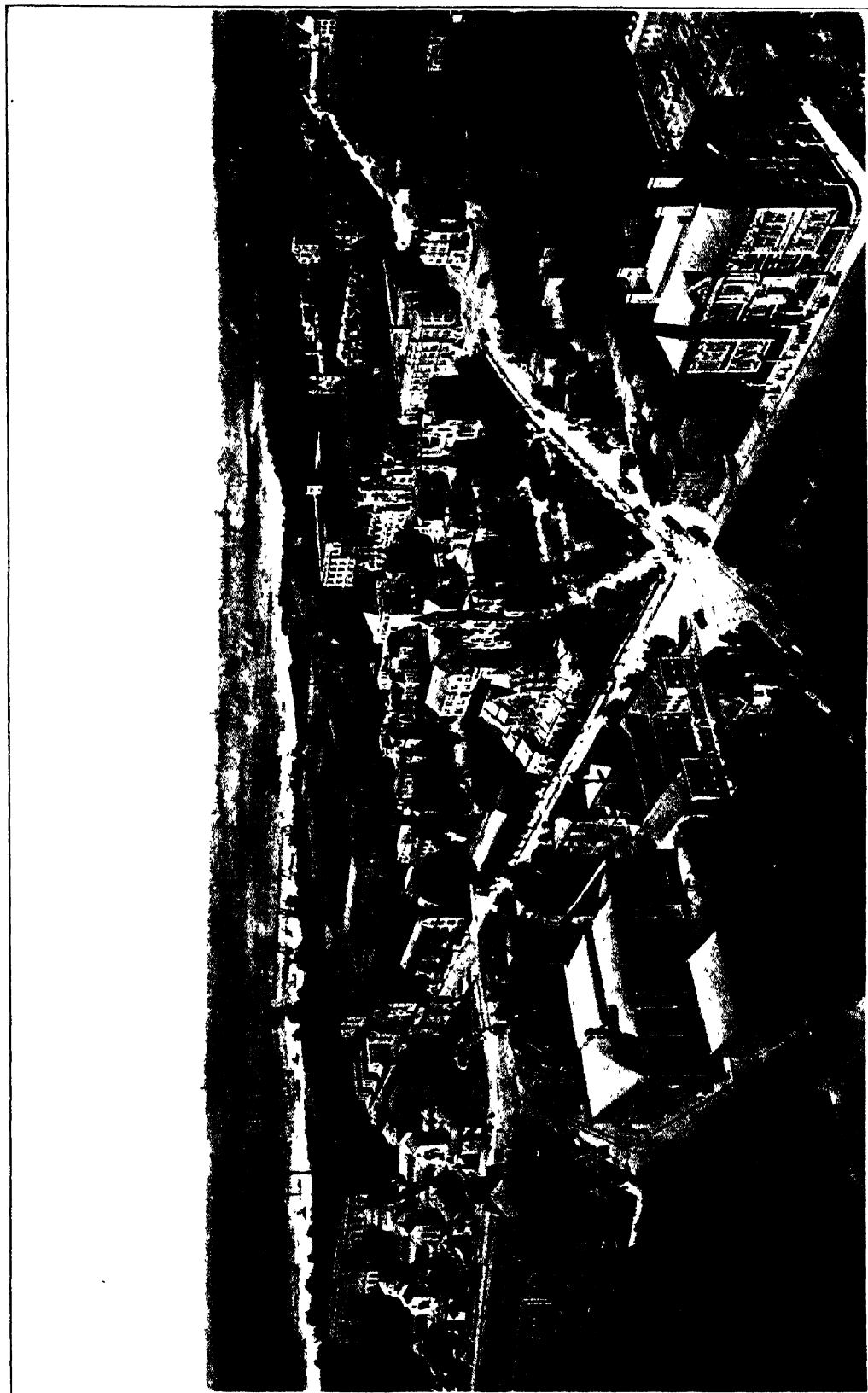
The new organization comprised three departments, the arts, medicine, and law. The department of arts embraced five separate schools under the care of six professors and their assistants. The medical school, the first in North America, had been founded in May, 1765, when Dr. John Morgan and Dr. William Shippen presented to the trustees a plan, approved by Thomas Penn, the Pro-

prietor, for a course in medicine. Dr. Morgan was at once appointed Professor of the Theory and Practice of Physic, and Dr. Shippen, Professor of Anatomy and Surgery. In June, 1768, ten men were graduated with the degree of Bachelor of Medicine. By 1791 there were added to the medical faculty a chair of botany and materia medica and a chair of chemistry. The law school dates from 1790, when the trustees of the College elected to the first professorship of law in America Hon. James Wilson, then one of the Associate Justices of the Supreme Court of the United States.

Dr. Ewing succeeded Dr. Smith as Provost in 1791. During Ewing's administration the University moved from its old home on Fourth Street to a building on the West Side of Ninth Street between Market and Chestnut streets, erected by the legislature in 1791, before the removal of the National Capitol to Washington, as a home for the President of the United States. Thus the University bought in 1800, and occupied from 1802 to 1829, when it was replaced by two large buildings occupied respectively by the College and the Medical School until 1873, when the University removed to its present site in West Philadelphia. In 1807 Dr. Ewing died. The administrations of Provosts McDowell, Andrews, and Beaseley extended to 1828. In spite of attempted reorganizations, the classes diminished in size and public support ran low. Provosts DeLancey, Ludlow, Vethake, and Goodwin, notwithstanding their short administrations, brought to the University once more the spirit of progress and discipline. The enrollment increased, the law school was revived in 1850 by Judge Sharswood, and the auxiliary department of medicine founded in 1865.

It remained, however, for Dr. Stillé, who became Provost in 1868, to reorganize the administration. Dr. Stillé was a man of unusual zeal, energy, and insight. He revised the curriculum, and introduced on its adoption by the Board of Trustees in 1866 an elective system of studies. The Board of Trustees set about to increase the endowment. It suggested that the City should sell to the University at a nominal figure some twenty-five or thirty acres of the almshouse farm in West Philadelphia. Of this, part was to be a new site for the University, and part to be sold, as occasion should present, to increase the endowment fund. Ten acres of land were bought at \$8000 per acre. On this new ground was laid in June, 1871, the corner stone of the present College Hall. In 1875 the department of science, founded in 1852, was endowed under the provisions of the will of John Henry Towne, Esq., and was thenceforth called by the Board of Trustees "The Towne Scientific School." Five and one half acres more were secured in 1872 for the site of a hospital,





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which through state appropriation was completed in 1874. A department of music was established in 1877, a department of dentistry in 1878. In 1877 the Charitable School was discontinued.

Dr. William Pepper became Provost in 1881 upon the resignation of Dr. Stillé. His term of office was a period of marked material and academic growth. Through enlargement of funds, creation of departments, and reorganization of faculties, Provost Pepper united the various departments of the institution under a comprehensive plan of administration. In 1881, through the generosity of Joseph Wharton, Esq., a School of Finance and Commerce was founded. (See COMMERCIAL EDUCATION.) To Dr. Pepper's activity is due in large measure the founding and equipment of the following departments or schools: the Graduate School, 1882, the School of Veterinary Medicine, 1882, the School of Biology, 1883, the Department of Physical Education, 1885; the Department of Archaeology and Palæontology, 1889, the School of Hygiene, 1891, the School of Architecture, 1891, the Wistar Institute of Anatomy and Biology, 1892, the Museum of Arts and Sciences, 1894, and the erection of the University library building, 1889. Furthermore, he acquired twenty-five acres more in West Philadelphia and secured benefactions amounting to \$2,500,000.

Dr. Charles Custis Harrison succeeded Dr. Pepper as Provost in 1894. In the seventeen years of his administration the University underwent phenomenal growth. Provost Harrison built up the University dormitory system, which to-day includes thirty houses. To his influence, zeal, and generosity is due the erection of numerous other buildings, — the John Harrison Laboratory of Chemistry, the new medical laboratory, the law school building, the engineering building, dental hall, the new veterinary buildings, the laboratory of zoology, the gymnasium, and Franklin Field. In 1910 the Henry Phipps Institute for the Study and Treatment of Tuberculosis became part of the University. Furthermore, sixty-nine acres of land were acquired by the University during Dr. Harrison's term of office, and more than ten million dollars raised for University purposes. Dr. Harrison was himself a liberal giver to the University, and established in the Graduate School the George Leib Harrison Memorial Foundation. Upon the resignation of Dr. Harrison in 1910, Dr. Edgar Fahs Smith, Vice Provost and Professor of Chemistry, became Provost.

The University of Pennsylvania is a corporation with a board of twenty-four Trustees, of which the Governor of the state is President, *ex officio*. The trustees are a self-perpetuating body, except that every third vacancy is filled by the nomination of the alumni. The Provost presides over the board, in the absence of

the Governor, and directs the work of instruction and research of the University. The faculty is divided into six faculties, each presided over by a Dean. The Hospital, the Wistar Institute of Anatomy and Biology, and the Museum of Arts and Sciences are governed by boards of directors, under the general direction of the Trustees of the University. The enrollment of the University for the year 1911 was 5389, distributed as follows: The College (which includes Arts and Sciences, Architecture, Biology, Chemistry, Engineering Schools, Wharton School, and Music), 3720; Graduate School, 416, Law School, 347, the School of Medicine, 460, School of Dentistry, 462, the Veterinary Department, 154. These figures include 210 students from foreign countries. The student body is thus complex and cosmopolitan. The faculty of the University numbers 500. Entrance to the College is by examination and, only in the case of preparatory schools recognized by the university, by certificate. Entrance to the medical school presupposes at least two years of work in a recognized college, which must include special work in biology, chemistry, and physics. Admission to the law school requires of the candidate a B.A. degree, or satisfactory proof of fitness by preliminary examination. The annual budget of the University, exclusive of the hospital and of the erection of any new buildings, is \$1,250,000.

J. H. P.

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**PENOLOGY. EDUCATIONAL ASPECTS OF** — The retributory theory of punishment and the death penalty have gradually retired into the background, and the educational purpose of penal institutions has correspondingly become prominent. While the primary and controlling end of the prison is to protect social order, security of person and property, the most competent practical men have come to see that society is best protected by re-educating the antisocial man in social habits, beliefs, and dispositions, if by sad mischance he has not been educated into a social character. Society breathes in comfort the hour the aggressive delinquent is safe inside the high walls, but this is from self-deception, for there is no guarantee of permanent immunity from harm until the criminal becomes a good citizen; and it is by a suitable educational pro-

cess, conducted by capable teachers, that this inward change is brought about, if at all. If education fails, nothing is left but capital punishment or life servitude in prison for the confirmed and habitual offender or the weakling incapable of training for self-control and self-support.

It is now generally acknowledged that the deterrent factor, fear of punishment, has been greatly overestimated. Fear is a weak and fitful motive, and criminals are as a class short-sighted, reckless gamblers, they are ready to take chances, and the risk of detection and conviction gives zest to the game. If society insists on the deterrent factor in punishment, the dread of regular discipline under restraint will be all that is necessary to excite and sustain the fears of lawless men.

It is a mistake to regard the educational aim as inconsistent with the fundamental aims of criminal law, and to conceive of it as purely in the individual interest of the offender himself. On the contrary, the educator keeps in mind the necessity of awakening the conscience, remorse, the recognition of an objective social order, the sense of responsibility, the rights of the public which have been willfully violated. In this sense the words "punishment," "retribution," and "deterrence" have a meaning.

Foerster, Conti, and other antagonists of the "indeterminate sentence" insist that punishment should be measured out in prison days, fines, or otherwise, and not confused with education, although they have not shown clearly and convincingly that there is any common principle for making the "punishment fit the crime." They have, however, come to see and admit that, outside of and apart from retribution and expiation, society should try to reform the offender, — only not as a part of "retribution." They have not always told us clearly whether inside the prison the State should exclude all educational and reforming influences. Certainly industry, religion, and physical care ought to work toward improvement of the moral nature and fitness for honest labor outside. Any attempt to separate education from prison life must fail. If any one chooses to call one part of the period "expiation" and another part "reformation," he is welcome to his hair-splitting logic and metaphysical satisfaction, but in actual practice the distinction cannot change the modes of treatment. A criminal is a man, and every moment of restraint and pain should be a moment of moral discipline. Until the criminal accepts the aim of education as his own, it will seem to him pure punishment and may seem expiation. If the aim of personal amendment is accepted, the restraint and suffering will seem to him an opportunity. In any case society is for the time protected and has the power to prolong restraint so long as the offender is rebellious or dangerous,

but the effort to train, teach, guide, inspire — "to educate" — must never for one moment cease. When society, in its punishment, ceases to try to reform and improve character, it lapses to that extent into barbarism; with its desire for vengeance or for compensation, the community assumes a self-corrupting attitude.

This profound change in the theory of punishment, which is going on throughout the civilized world, has begun to transform the prison, but especially the reformatory, into a school. The ideal of the warden or superintendent is slowly changing. Formerly this officer was selected with reference to his qualifications for exciting terror in the lawless and for using physical force to quell mutiny. In a well-built prison mechanical arrangements of walls, bars, and gates provide for security, and the process of education can go on inside with no more disturbance than in a high school; often with less noise and turbulence. The warden, under the best systems, is also relieved very greatly of the burden of marketing the product of prison industries and purchasing supplies, he has more time to direct the training of the prisoners, and more is expected of him in this direction. If this tendency continues, it will not be long until candidates for positions in penal institutions will be required to be graduates of normal schools and work up to the commanding position by experience in class work. Manifestly manual and trade training must be a large factor in the curriculum.

Gradually, in Europe and America, the reform school (*q v*) has been differentiated from the reformatory and prison. Only in backward communities is the youth under seventeen shut up with adult offenders in jail, even while awaiting trial. For wayward children and youth the penal institution has been transformed into a school having special facilities for dealing with various classes of youthful delinquents. Even bolts, bars, and walls disappear, except for the older group, which includes a few dangerous persons, and for those who are under discipline for offenses against the rules of the house.

The parental school (*q v*) has in some cities been introduced between the public school and the reform schools in order to give special discipline to truants and restore them to normal domestic relations without contact with more hardened offenders. This gradation and classification has been developed in advanced states in consequence of careful observation and experiment, and its value is beyond question.

Little need be said of the curriculum and management in reformatory education. It is true that the teachers must be acquainted with the physical and psychical characteristics of abnormal and subnormal children and youth, and be able to adapt certain special

devices to their peculiar needs. It is also essential to have connected with every juvenile court a competent medical examiner with the training of a modern psychologist to study every young person who appears before the judge, in order to help in selecting the best course of training in each case, but this is true also of any other kind of school. In general the same preparation in psychology and principles of pedagogy is needed as that given in our best normal schools. But a period of residence and teaching in a reform school is necessary as an apprenticeship. The fact has been in the past that almost the only schools which had a full equipment for physical and manual training, with preparation for industrial skill and habits, were the reform schools and reformatories. Boys were compelled to commit crimes in order to get the education they most needed. The contrast between their behavior in an ordinary book and slate-pencil school and that in a good reform school proved the superior adaptation of the reform school curriculum and methods. Such a contrast could not continue. When the historian of education comes to pass judgment on the evolution of school methods of the nineteenth century, he will probably do justice to the part played by reformatory methods in improving the ordinary public school equipment and conduct. At the same time, especially since 1876, the ideas of Pestalozzi and Froebel, through kindergarten and manual training schools, have been carried over into state reformatory institutions, and there found a congenial soil and welcome. For judicial methods of dealing with delinquent children and the educational significance of these methods, see JUVENILE DELINQUENCY.

After more than a century of trial and reflection on experience, the modern mind has about come to this working theory of social necessity and duty: free public schools for all, compulsory attendance, enforced by suitable rules and agents, public relief when destitution renders parents unable to perform their duty; special schools for abnormal, subnormal, crippled, and delinquent children. Recently the conviction has become clear and decided that this policy, to be effective for the prevention of crime, must be extended to nearly the end of legal minority, — the stormy and perilous passage over the years of adolescence. Just when passion is strongest, conceit is most dangerous, desire for liberty most in need of bit and bridle, and parental control relaxed, society is peculiarly exposed to danger and loss. It is the crime age. The present watchwords of a preventive policy are vocational schools, vocational guidance, vocational supervision and control, with community provision for recreation and social intercourse under wise supervision. Add to this, financial aid to destitute parents when necessary to make performance of their duty possible.

These are among the essential factors in the most advanced and most adequate theory of crime prevention, and they must all be under the direction of school administration. There is no other organ of society properly equipped for this function. C. R. H.

See JUVENILE DELINQUENCY, INDUSTRIAL SCHOOLS, REFORM SCHOOLS, also CHILDHOOD, LEGISLATION IN CONSERVATION OF.

For references see the bibliographies to the articles referred to above.

**PENSIONS, TEACHERS'** (Retirement Funds) — As commonly used, the term pension signifies an annuity or other periodical payment made to an individual by a government, an institution, a company, a corporation, or an employer of labor, in consideration either of past services, or of the relinquishment of rights, claims, or emoluments. The governments of most civilized countries provide pensions for those disabled in military or naval service, and for their wives and families in the case of death, also for various state officers and public servants upon retirement from active service. European governments frequently grant pensions to artists, authors, inventors, etc., in recognition of eminent achievement, and to their widows and orphans when left in straitened circumstances. The rapid development, during the past quarter of a century in particular, of the system of state industrial insurance and old-age pensions has modified in a marked degree the significance of the pension. Under modern industrial and social conditions the pension has become an economic force of considerable moment. Each generation endeavors to qualify, through training and education, the members of the succeeding generation. These endeavors have produced the modern public school systems. Each generation also tends more and more to assume a social responsibility for the members of the preceding generation as they pass, by age or other cause, beyond the period of productive or effective activity. This social tendency has produced the modern pension systems.

**Germany** — The oldest and best developed systems of teachers' pensions are found in various states of the German Empire. Voluntary systems more or less local in character have long existed there, but they have been completely overshadowed by public systems. Until well into the nineteenth century, so far as public provision was made, German public-school teachers were commonly pensioned at the expense of their successors in office. A superannuated teacher was assigned a fraction, usually one third, of the regular income of his former position till death. The new teacher was obliged to get along on the balance of the regular income so long as his predecessor survived. This scheme was replaced in the various states at different

points in the last century by modern public pension systems. Contributions were required from teachers at first in most cases.

In Prussia, which comprises approximately two thirds of the empire, the great body of folk school teachers were pensioned under the old scheme until 1885, when a modern non-contributory pension system in favor of such teachers was introduced throughout the kingdom by a law of that year. This law was closely patterned after the civil-pension act of 1872, as amended in 1882, which applies to teachers in all public normal schools and all public secondary schools for boys in addition to state civil functionaries in general. In 1894 a similar act was passed affecting teachers in public middle schools and girls' secondary schools. These three acts, slightly amended occasionally, are very much alike in their provisions, so far as teachers are immediately affected. None requires contributions from teachers. The chief differences are on the side of public financial support, which varies from purely local through various combinations to purely state support. All pensions of folk school teachers are paid by the state up to 700 marks, the remainder is paid by county mutual associations of local school districts organized by law for that purpose. The laws under consideration apply to all full-time teachers. The regular conditions of eligibility are at least ten years of service and regular retirement by the proper educational authorities on account of permanent disability or after sixty-five years of age. The pension is graded according to teaching income and length of service. Its amount is determined at present by the following formula

$$\left[ \frac{1}{3} + \frac{1}{60}(\text{number of years of service between 10th and 31st}) + \frac{1}{120}(\text{number of years of service between 30th and 41st}) \right] \times [\text{teaching income at retirement}]$$

The range of the pension is thus from one third to three fourths the teaching income at retirement. In general the teaching income consists of regular salary plus free house rent or the equivalent in money. In 1906 there were 10,025 folk school teachers on the public pension roll in Prussia, of whom 8381 were men and 1618 women. The aggregate amount of their pensions was 15,007,764 marks. The average pensions of men and women were 1618 marks and 879 marks, respectively. The pension systems for public school teachers in the smaller states of Germany are similar to those in Prussia. The chief differences are in Bavaria, where contributions from teachers are still required, and where in general pensions are not graded according to salary, but are in absolute amounts.

Pensions have long been provided throughout Germany for widows and orphans of public-

school teachers also, for most teachers in Germany, even in the folk schools, are men. The first agencies were voluntary mutual associations of teachers and special funds from philanthropic sources. Such agencies are still active, but they are now merely supplementary in a very small way to state pension systems. During the greater part of the last century the families of deceased folk school and middle school teachers throughout practically the whole of Prussia were pensioned, rather inadequately, from county pension funds, which all men teachers were required to join. At first the funds were supported almost entirely by the teachers, but the relative amount of public support gradually increased until 1889, when it became complete. Until 1882 the families of deceased normal school and secondary school teachers were pensioned through the agency of a state fund primarily for state servants, to which the teachers were required to contribute. By the terms of a series of laws and orders beginning in 1882 the widows and orphans of teachers in all public folk schools, middle schools, normal schools, and both boys' and girls' secondary schools are now pensioned on essentially the same basis, except for differences in the sources of support. With rare exceptions no contributions are required from teachers. In general a widow's pension is 40 per cent of the pension her husband was drawing or would have been entitled to if retired at the time of his death. The pension of a fatherless child is one fifth of the mother's pension, that of a parentless child is one third of the same amount. The sum of the pensions of a deceased teacher's family may not exceed his own. A pension lapses on the occasion of the marriage or death of the pensioner, and in the case of orphans at the age of eighteen. The present pension systems for widows and orphans in the smaller states were established on the whole much earlier than the fairly recent one in Prussia just described. They are quite similar to the Prussian system. The chief differences are again in Bavaria, and they correspond to those obtaining there in the case of teachers' pensions.

In general it has been customary for university teachers in Germany to retain their positions till death. When disability or old age has overtaken them, they have commonly been released from the duty of lecturing without loss of position or salary. The only loss has been in lecture fees. This plan prevails throughout Prussia to-day. In some of the smaller states, however, regular pensions are provided, graded according to salary and length of service. Pensions are also provided for the widows and orphans of German university teachers, chiefly through the agency of special funds maintained in connection with the several universities. Most of these funds are quite old. They have been supported from donations, state appropriations, and contribu-

## PENSIONS

tions from teachers. The contributions are in most cases no longer required. In a few universities widows and orphans are pensioned directly from university or state funds. Widows' pensions range from a small sum to about 2000 marks. Orphans' pensions are very much smaller.

**France** — Prior to 1853 little was done in France in the way of pensioning teachers. Primary (public school) teachers were required to contribute to savings and insurance funds from which they received on retirement in a lump sum the total accumulated amount and proceeds of their deposits, while secondary and university teachers were required to contribute to a special state fund from which they were regularly pensioned on retirement.

Beginning in 1844 large mutual-aid societies of primary teachers have grown up in France, one of the chief activities of which has been the provision on a contributory basis of small pensions for their members, supplementary to civil pensions. They are voluntary organizations, subject to certain legal regulations. At present there is one such society in each department or county. The pensions provided have averaged only about 50 francs per annum.

In 1853 the present civil-pension law of France was enacted, which included in its provisions essentially all teachers engaged in public education of all grades, primary, secondary, and higher, except members of the teaching orders. All persons within the purview of the law were classified into two divisions, the active group and the sedentary group. The former consisted of functionaries whose duties were considered physically exacting. By the terms of the law all persons affected by it are required to pay contributions in support of the pension system as follows: (1) 5 per cent of the salary received each year, (2) one twelfth of the salary of the first year of service, and (3) one twelfth of each subsequent increase in the annual amount of the same. The general conditions of eligibility are thirty years of service, the attainment of sixty years of age, and, as the law has been interpreted and administered, regular retirement by the minister. For persons with fifteen years of service to their credit in the active group, the conditions are twenty-five years of service, the attainment of the age of fifty-five, and regular retirement. The normal pension is one sixtieth of the average salary during the last six years of service, multiplied by the total number of years of service. But for those serving twenty-five years in the active group, the annual pension is one fiftieth of this average for each year of service. Special provisions were made for pensions in certain cases of disability after a large part of the required service had been completed. The pensions of teachers may not exceed two thirds of the average salary upon which they are computed.

## PENSIONS

At first all teachers belonged to the sedentary group, but by a law of 1876 regular teachers in public infant schools, lower and higher primary schools, and normal schools were transferred to the active group where they have since remained. Further, this law provided that the pensions of these teachers should be computed on the basis of the six highest annual salaries received, regardless of their time and order. Minimum pensions of 600 francs for men teachers and 500 francs for women were established.

The act of 1853 also provided pensions under given conditions for the widows and orphans of all functionaries included within its purview. Prior to this time little worthy of mention had been done in favor of the widows and orphans of teachers or other officers, and little has been accomplished since apart from the requirements of the law of 1853. Voluntary and philanthropic activities in this field have been meager in comparison with those in Germany. The law of 1853 conferred the right to a pension upon the widow or parentless children of any functionary who was either drawing a retiring pension under that act or had completed the period of service required for eligibility to such a pension at the time of his death, provided the marriage occurred at least six years before the cessation of the husband's functions. The widow's pension is one third the pension the husband was drawing or would have been entitled to if he had retired at the time of death. Whenever from death or other cause the widow's pension is no longer paid to her, it is divided equally among her surviving children under twenty-one years of age. In case a widow stands in the relation of stepmother to surviving orphans the regular pension is shared between the widow and children. By virtue of a decision of the Council of State in 1882 the children of deceased women functionaries have pension rights corresponding to those enjoyed by the orphans of male officers. This is of considerable importance in this connection since women teachers now slightly outnumber the men in the public schools of France, and many of the women are married.

On Jan. 1, 1909, there were 21,051 retired teachers on the civil-pension roll in France. They were receiving an average annual pension of 1220 francs and in the aggregate an annual sum of about 25,685,000 francs. About 18,966 of these teachers had been retired from the field of public primary education with an average pension around 1052 francs. The remainder were secondary and university teachers. On the same date there were 10,158 teachers' widows and orphans in receipt of pensions aggregating 4,306,042 francs per annum.

**Great Britain** — The activities of mutual-aid or friendly societies and philanthropic agencies in pensioning public school teachers

in Great Britain have been almost negligible. A limited number of pensions are paid under certain conditions to retired teachers in destitute circumstances from the Benevolent and Orphan Fund maintained by the National Union of Teachers. A few pension annuities are purchased by teachers on favorable terms through a pension fund maintained by the Teachers' Provident Society, affiliated with the National Union.

Long before pensions for teachers were established by direct legislation in Great Britain they were provided on a small scale by the Committee of Council on Education established in 1839 for the purpose of superintending the expenditure of funds voted by Parliament in aid of public education. These pensions were for the purpose of relieving the schools of incapacitated teachers. Little was accomplished until 1875, when the pension system was revived after a suspension of thirteen years by joint action of the two Committees of Council on Education for England and Scotland. In 1898, when the present pension law in favor of public school teachers was passed, there were in effect in England and Wales 219 pensions of the Committee of Council of 30 pounds per annum, 668 pensions of 25 pounds, and 732 of 20 pounds. The total expenditure for the year was roughly 36,000 pounds. The total expenditure in Scotland during the same year was approximately 5400 pounds. In 1906 the pension system under consideration was discontinued in England and Wales.

In 1898 Parliament passed the Elementary School Teachers (Superannuation) Act in accordance with which certificated elementary teachers have since been pensioned in England and Wales and until 1912 in Scotland. The act requires all certificated teachers while serving in public elementary schools to contribute to a deferred annuity fund at minimum rates of three pounds per year for men and two pounds for women. The rates of contribution in 1911, fixed by the Treasury under the act, were three pounds ten shillings for men and for women two pounds eight shillings in England and two pounds in Scotland. On attaining the age of sixty-five, when his certificate is to expire, every teacher is entitled for the remainder of his life to such annuity from the deferred annuity fund as his contributions have earned in accordance with annuity tables fixed under the act. Further, on attaining the age of sixty-five, if one half the years since certification have been spent as a teacher in public elementary schools, the teacher is entitled to a life-long superannuation pension from the state at the rate of ten shillings for each year of the specified service. If a certificated teacher who has served in public elementary schools for at least ten years and during one half the years that have elapsed since his certification, is found to be perma-

nently incapacitated for the efficient performance of his duties, he is eligible under certain rules to receive a disability pension from the state. A teacher who accepts a disability pension forfeits his right to an annuity from the deferred annuity fund, unless he later reenters the service. In 1909 there were 936 men and 688 women teachers in England and Wales in receipt of superannuation pensions aggregating 33,261 pounds and 18,525 pounds respectively. Also 406 men and 1205 women were drawing disability pensions amounting to 14,606 pounds and 30,306 pounds respectively. The figures for Scotland were about one tenth of these on the whole.

In 1912 the act of 1898 was displaced in Scotland by a new pension scheme formulated under the provisions of the Education (Scotland) Act of 1908. The new scheme includes all teachers in elementary and secondary schools in receipt of Parliamentary grants. It is supported chiefly from public funds. Teachers are assessed four per cent of their salaries annually, but these contributions may be returned in full on application if the teacher withdraws from the service. Ten years of service are required for eligibility to a pension, which amounts to  $1\frac{1}{2}$  per cent of the average annual salary throughout the period of service, multiplied by the number of years of service. Teachers may retire at the age of sixty and must retire at sixty-five. Disability pensions may be awarded after ten years of service.

Except in Scotland pensions have never been provided to any material extent for secondary and university teachers. In Scotland such teachers have been pensioned to a considerable extent by the institutions employing them. As just noted, the new pension scheme in Scotland includes secondary teachers.

Widows and orphans of teachers are not pensioned in Great Britain except to a very small extent by a few voluntary organizations.

**United States** — Relatively little has been done in the United States in pensioning teachers in comparison with what has been accomplished in European countries. In fact until the end of the nineteenth century the only pensions generally recognized as such in the United States were those paid by the federal government on account of military or naval service. Aside from the provisions made by many municipalities for members of the police and fire departments, pensions for public school teachers have been the first of what ultimately promises to become a complete system of civil service pensions.

According to the sources of the funds and the methods of administration, teachers' pension schemes in the United States may be classified into four principal forms. (1) Private-voluntary, (2) Quasi-public, (3) Semi-public, and (4) Public.

*Private-voluntary Systems* — The working of the social law of mutual aid for common



defense and protection has produced a number of voluntary associations of teachers. There are two principal varieties of these associations, — the mutual benefit association for temporary aid and the fraternal insurance society. While the first variety should not, strictly speaking, be classified as a pension scheme, the organization and inherent motive seem to warrant its consideration in this connection. Examples of this variety exist in Baltimore, St. Louis, Cincinnati, Cleveland, Detroit, Chicago, Buffalo, San Francisco, and St. Paul. Through initiation fees, annual dues, and special assessments, these associations aim to pay sick benefits and in some instances funeral expenses. The second and more typical variety of the private voluntary organization seeks through the payment of assessments, proportional to salary, to provide small annuities to superannuated and disabled teachers. Examples are to be found in several of the larger cities of the country, — New York, Boston, Philadelphia, Baltimore, St. Louis, and Cincinnati. Certain of these annuity associations make provision for temporary aid also. In some instances these associations are state-wide in their operation (Connecticut Teachers Annuity Guild, Massachusetts Annuity Guild).

The voluntary aid and annuity societies have reached but a small proportion of the public school teachers, even of the localities or states in which they have existed. The development of schemes of a public nature has removed the chief causes that brought the private voluntary organizations into existence.

*Quasi-public Systems* — The fundamental characteristic of this class of schemes is the legislative authorization of the creation of funds through assessments, either voluntary or compulsory, equal to a certain percentage of the teacher's salary, and the administration of the fund by public officials. While there is no direct public appropriation to the fund of the quasi-public schemes, deductions of salary on account of the absence of teachers are frequently added to the salary assessments. Further increments arise through donations and bequests. Many of the existing municipal teachers pension funds are organized in general accordance with this scheme.

*Semi-public Systems* — In the semi-public schemes the basis of the fund is an assessment on the salaries of teachers. To this, however, the state adds a definite appropriation either directly or indirectly through the municipality. This appropriation may be in the form of a fixed amount or a specified tax levy. The contemporary development of state and municipal pension schemes is distinctly toward this type. The Wisconsin law of 1911 (ch. 323) establishing a "Teachers Insurance and Retirement Fund" is illustrative of the trend. This law provides a state scheme to be administered by a board of trustees consisting

of the state treasurer, the superintendent of public instruction, and three other members, one of whom must be a woman, to be elected by the members of the fund. Ten cents per capita of the school population of the state is to be annually reserved for the fund from the seven tenths mill state school tax. Teachers must contribute to this fund one per cent of their salaries during the first ten years of service, and two per cent thereafter. Teachers already in service may or may not accept the provisions of the law at their option; but teachers entering the public school service after Sept. 11, 1911, accept the provisions of the law in accepting appointment. Annuities amount to \$12.50 for each year of service, the maximum being \$450. Retirement may be made after twenty-five years of service as a teacher, eighteen of which must have been in the public schools of the state, or, upon permanent physical and mental disability, after eighteen years of service in the public schools of the state. The city of Milwaukee already having a retirement fund, the law does not apply to that city.

The compulsory membership frequently provided in the semi-public and quasi-public schemes has given rise to several judicial determinations of the constitutionality of such a provision. The principal ones of these cases are *State, ex rel John L. Ward vs. Franklin Hubbard, et al.*, 12 Ohio Circuit 87, 64 N. E. 109, a case arising in Toledo (O.), wherein it was decided that the compulsory provision of the Ohio law was invalid, and *State, ex rel Jenkinson vs. Rogers*, 87 Minn. 130, 58 L. R. A., a somewhat parallel case, arising in Minneapolis under the Minnesota law, resulting in a similar decision. On the other hand, the supreme court of New Jersey, *Allen vs. Passaic Board of Education*, 81 N. J. L. 135, maintained the constitutionality of such a compulsory provision.

*Public Systems* — This provides a true pension. There is no assessment. It is intended to operate automatically for all public school teachers. This form of pension system exists in Rhode Island and in Maryland. In the former state, by the act of 1907, teachers sixty-five years of age, having thirty-five years of service, twenty-five years of which have been in the public schools of the state, may be retired and receive from the state an annual pension equal to one half of their annual contractual salary during the last five years before retiring. Such annual pension may not amount to more than five hundred dollars.

Pension funds for public school teachers established on the quasi-public, the semi-public, or the public basis, exist in twenty-three states, — California, Colorado, Connecticut, Delaware, Illinois, Indiana, Kansas, Maryland, Massachusetts, Michigan, Minnesota, New Jersey, New York, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Utah, Ver-

mont, Virginia, and Wisconsin. Some of these schemes are state-wide in application, while others are operative as to individual cities or certain classes of cities. The following list is illustrative of these municipal schemes: San Francisco, Denver, New Haven, Wilmington, Chicago, Indianapolis, New Orleans, Baltimore, Boston, Detroit, Minneapolis, St. Paul, Duluth, Omaha, New York, Albany, Buffalo, Elmira, Rochester, Schenectady, Syracuse, Troy, Yonkers, Cincinnati, Cleveland, Columbia (O.), Portland (Ore.), Philadelphia, Harrisburg, Pittsburgh, Providence, Charleston (S. C.), Salt Lake City, and Milwaukee.

Previous to 1905, no general provisions existed for the pensioning or retirement of the members of the instructional staff of higher institutions of learning in the United States. Certain of the larger universities, such as Harvard and Columbia, maintained a limited system of retiring allowances. A small number of the state universities and colleges sought to accomplish in part the end of a pension system through the establishment of emeritus professorships, the holders of which received a reduced salary in return for merely nominal service. With the establishment of the Carnegie Foundation for the Advancement of Teaching (*q. v.*) a general system of retirement of superannuated teachers came into existence, not only to benefit a large number of American colleges and universities, but also to stimulate public endeavor in behalf of pension funds for teachers in public elementary and secondary schools. R. W. S. AND E. C. E.

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(Summaries of current legislation and reviews of developments of teachers' pensions in the United States and Europe)

**PENTATHLON** (Gk. πένταθλον, Lat. *quinqertium*) — The five contests which made up the greater part of Greek athletic exercises. There were included: (1) *Running* (Stadion or 200 yards, quarter-mile, and long distance, three quarters of a mile to three miles). Races were often run in armor, and over soft sand. (2) *Jumping* on soft earth, often with the aid of grips or dumb-bells (*halteres*). The contestants must alight evenly for the jump to count. (3) *Wrestling* and *boxing*. The bodies of the contestants were naked and oiled, and the contest took place on soft ground. (For further details see the separate articles on these topics.) The *pancratium* (παγκράτιον) was a mixture of wrestling and boxing, and the contestants could use almost any device to win. (4) *Throwing the discus*, a flat disk of metal, eight to nine inches in diameter. (5) *Hurling the spear* or *javelin* at a target.

See GREEK EDUCATION, GYMNASIUM; PALESTRA

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**PEOPLE'S HIGH SCHOOLS** — See ADULTS, EDUCATION OF, DENMARK, EDUCATION IN, NORWAY, EDUCATION IN, SWEDEN, EDUCATION IN

#### PEOPLE'S INSTITUTE, NEW YORK.

— An organization founded in 1897 by Charles Sprague Smith, formerly professor of languages and literature at Columbia University, for the promotion of better understanding and cooperation between the members of different classes in society and different religions. The promotion of social solidarity and social consciousness was to be the chief aim of the Institute. To this end a series of lectures has been organized to distribute better information on the duties of citizens and the various branches of civic and state government. The following are the chief departments into which the work of the Institute is divided: (1) People's Church, meeting every Sunday evening to hold a service, irrespective of creed and based on the fundamentals of religion. (2) People's Forum for the discussion of questions of general interest in politics and social legislation. (3) People's Choral Union and People's Symphony Concert Association to enable those who could not otherwise afford it to hear and study the masterpieces of music. (4) Dramatic recitals and performances are also provided

in the same way. Arrangements have been made between the Institute and theater managers by which members of the Institute are enabled to secure tickets at reduced rates. In this way the Institute indirectly acts as censor of plays. Instruction is also given in literature, art, natural science, and philosophy. (5) The People's Club was organized to provide centers for social intercourse and recreation for both men and women. The work of the People's Institute with the exception of this club is carried on at the Cooper Union (*qv*).

**PEOPLE'S PALACE** — An institution organized in 1887 to afford facilities for recreation and education to the people of the East End of London. Its establishment was made possible by a fund left in 1840 by J. B. Beaumont to promote education and entertainment in the East End. The fund was mismanaged until it was taken in charge by Sir Edmund Hay Currie, who added to it by securing gifts and endowments. Meanwhile *All Sorts and Conditions of Men*, the novel by Sir Walter Besant (*qv*), appeared in 1882, and attracted considerable attention to the needs of an almost unknown section of London. His suggestion for the "Palace of Delight" proved of great assistance to Sir Edmund Currie and his associates. Sir Walter, as a trustee of the Palace, took an active part in its work. At the same time the establishment of Polytechnics (*qv*) in London afforded good models to be followed on the educational side. Queen's Hall, a large concert hall equipped with an organ, a large stage, and a seating capacity of 4000, was opened by Queen Victoria in May, 1887, as part of the scheme. In October evening classes, workshops, laboratories, gymnasium, refreshment and recreation rooms were opened in temporary buildings. In the first year there was an enrollment in the classes of nearly 5000 students. Membership in the institute with free admission to everything but the classes and swimming bath (opened in 1888) was limited to young people of both sexes between sixteen and twenty-five. A Junior section was soon established for those between thirteen and sixteen. The Palace provided concerts, exhibitions and shows, billiard and social rooms, a reading room and library, and clubrooms. Through the support of the Drapers' Company and the Charity Commissioners, financial responsibility for the provision of education was removed from the trustees of the Palace. A day technical school for boys over thirteen preparing for the mechanical industries was opened in 1888 in new buildings. The educational work of the Palace soon grew to such an extent that it was organized into the East London Technical College, now the East London College, a school of the London University (*qv*).

See **POLYTECHNICS, LONDON**

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**PERCENTAGE** — A topic that began to find place in arithmetic after the invention of decimal fractions (See **FRACTIONS**). The idea of percentage is, however, an old one, and many traces are found in the records of Babylon, India, Greece, and Rome, showing that computations were frequently made on the basis of a hundred. The word comes from *per centum*, "by the hundred," and since a hundred is a very natural group unit to take for larger business computations, it is not strange that it should have been used even before the convenient decimal fraction appeared. The common per cent sign (%) is a cursive form derived from *℥*, for *cento*, which appears in the *per ℥*, or *per cento*, of the Italian writers of the fifteenth century. By the seventeenth century the Italians wrote  $p \frac{0}{100}$  and when the symbol became international the original meaning was forgotten and merely the sign % was left.

Educationally there is no reason for discussing percentage as a separate topic of arithmetic, save as tradition dictates. The expression 6 % has no other meaning than 0.06, it is merely a different symbol and might just as well be taught in connection with decimal fractions, so far as the theory goes. Since, however, business problems in which per cents arise are generally too advanced for a child who may properly be considering decimals, it is probably better to postpone the use of per cents until these problems are reached. But even then it is not necessary to give an elaborate treatment of the theory of percentage before the application of per cents is introduced. This is now coming to be appreciated in the treatment of percentage, the extensive discussion of the various "cases," as seen in the arithmetics of the second half of the nineteenth century, having been abandoned of late. There is a reason for retaining the term *rate*, and some reason for using *base* as a non-technical term, but there is no educational necessity for retaining *amount* and *difference*, and not much need for the term *percentage* as meaning the product of the base and rate. Whenever the simple equation, merely in the form of  $0.06 \text{ of } x = \$12$ , becomes familiar in the elementary school, all of these terms, excepting *rate*, will doubtless disappear.

The elaborate applications of percentage as seen in the arithmetics of about 1875 are at present giving place to only a few that are within the grasp of children in the seventh school year. The chief applications are to discount, commission (brokerage), and simple interest.

D. E. S.

**PERCEPTION** — This term is used in educational writings in a narrow and technical sense. It is also employed in a broader sense in general psychology and in common parlance. The influence of Herbartian writing is accountable for the narrow technical sense in which the term is used in educational literature. It is contrasted with the term "apperception." While apperception indicates clear active mental processes, "perception" as used in this connection refers to vague and relatively passing mental processes. The two terms "apperception" and "perception" were first used by Leibnitz. The same terms were afterwards used by Herbart, and are used in current German psychological discussions, especially by such writers as Wundt. There is no confusion in the German language between the German word *Perception* and the more general vernacular term *Wahrnehmung*, which is used in German to indicate sense perception. The German word *Perception* is, therefore, always a technical specialized term related to the term "apperception." When the term is brought over into English in the Herbartian psychologies as a term contrasted with apperception, an ambiguity of a very confusing type arises. As used in the English language, the term "perception" does not mean at all a vague and relatively passive form of experience, but it refers to a very active and usually vivid type of experience. The translators of Herbartian terminology would therefore have rendered a distinct service to educational terminology by the use of some word other than the English word "perception" to translate the German word of the same form. Some such term as apprehension or vague recognition would have been very much better. The former is employed in the translation of Wundt's *Outlines of Psychology*.

In the broader and more general sense, the term perception refers to the mental experience which arises whenever one recognizes some object that is presented to the senses. Thus one perceives the table upon which he writes, etc. In this general sense, the word perception is to be contrasted with two other psychological terms which define the limits of perception on two opposite sides. Sensation is the first term to be distinguished from perception. Sensation is the relatively simple experience which one derives from the stimulation of his senses. Thus one has sensations of red or green, but his recognition of a red or green surface is more complex than his mere reception of the sensation of red or green. The recognition of a surface implies the contrasting of the sensations derived from this surface with those that are derived from the general background upon which the surface lies. The percept of a surface always has, in addition to color qualities, certain spatial characteristics. Not only so, but the recognition of the object usually de-

pends upon some earlier experience with the object. They are therefore interpreting factors drawn from past experience which are added to the present sensory qualities. Thus, the recognition of the surface of the table is supplemented by earlier knowledge of what a table is and of its uses and of its value. Perception may therefore be described as a complex of sensations and memory experience. On the other hand, perception is to be distinguished from ideas. Ideas are those experiences which one has in the absence of objects. One has an idea of the friend whom he saw yesterday, or of the book which he read last year, while he may perceive the friend who is now before him or the book which he is actively engaged in reading. Ideas are constantly employed to supplement perceptual processes, but ideas differ from percepts in that they are largely under the control of the mind, while percepts offer a certain resistance to subjective modification. One cannot change at will the recognition which he has of a present object, he can, on the other hand, form a series of ideas all giving to the same object different colors or different positions. As contrasted with ideas, percepts may be described as composed in major part of sensory elements, while ideas are made up entirely of memory elements.

The properties exhibited by percepts are due in part to the elements which enter into the percepts, and in part to the process of combination by which these elements are united with each other. Thus, a visual percept is dependent for certain of its attributes upon the visual sensations of which it is composed, but these visual sensations are arranged in an orderly fashion, and are fused (see FUSION) with tactual sensations and motor sensations and memory factors. The orderly arrangement of all of these sensations gives rise to the spatial, temporal, and other characteristics of the percept. Form and size are therefore the products of perceptual fusion, and cannot be reduced to any simple sensory factors. In the same fashion, the unity which a percept exhibits is not dependent upon any of the single sensations which enter into it, but rather upon the perceptual process itself. A chair or table is made up of different parts, but all of these different parts are recognized as belonging together. This unity of the experience can be explained only by recognizing the fact that in all human treatment of such complex articles, there is a unity of reaction and adjustment which is paralleled by the unity of mental recognition. Finally, all percepts have position in time, and the time series, like the space series, is the product of the complex process of perception.

The processes of perceptual fusion are so immediate in their character that it has often been assumed that no education of these processes is necessary. The ideational processes, which move more slowly, have been observed

## PERCEPTION

by students of mental development, and the training of these ideational processes, as, for example, in the various forms of memory, has always been recognized as a part of education. When a person fuses his tactual and visual sensations with each other in the formation of a percept, there is no such obvious step from the one group of elements to the other as there is in a series of ideas, and no such evident necessity of assistance from a teacher who can guide the process. For a long time, the school held itself entirely free from responsibility for training the recognition of space, time, and the unity of objects. Experience has shown, however, that children cannot learn fully and accurately to recognize form, size, time, and unity, without some well-directed exercises which aim to train the powers of perception. There is, therefore, at the present time, a strong tendency to introduce into the school program special exercises in sensory training. The above discussion makes it clear that it is not the senses which are trained in this case, but rather the fusion processes which combine sensory experience.

Another reason for the earlier omission of perceptual training is to be found in the fact that certain experiences such as those of space have been reduced in the form of geometry to a system of ideas rather than to a direct form of training of the visual perception. For this reason, a new type of geometry is needed in the lower schools which shall give training in the recognition of space without reducing this experience to abstract ideas. In drawing and in æsthetic training much has been done to improve the powers of perception and the ability of students to discriminate between those forms which are symmetrical and beautiful and those which are irregular. This type of training cultivates space perception as contrasted with Euclidian geometry, which deals with logical comparison.

The importance of the recognition of perceptual processes as significant to the teacher goes very much further than the introduction of the special exercises above described. The necessity of a psychological analysis of all mental processes becomes increasingly obvious as one studies the various forms of perceptual fusion. Fusion is significant because it is not explicitly distinguished by the mind from the elements that are united with each other. It is a kind of involuntary and unrecognized mental development. As soon as teachers begin to note this type of perceptual activity as of importance in mental development, a whole field of psychological investigation is opened up which would be entirely overlooked if one recognizes only the mental processes of an ideational type. C H J

See OBJECT TEACHING

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## PERIOD OF STUDY

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**PERIOD, LESSON** — See SCHOOL MANAGEMENT

**PERIOD OF STUDY** — The fundamental importance of the problems connected with the period of study both for hygiene and for efficient school work is now recognized, but they are, for the most part, unsolved. We do not know, for example, whether, other conditions being the same, it is better for the health of children and the habits developed to have all the school work done in one session or in two. We do not know whether for the majority of children under usual conditions it is better to have school work done in the morning or in the afternoon, or whether there are two types among children as suggested by the experiments of Kraepelin, those who do better work in the morning on the one hand, and those who do better work in the afternoon on the other. Experiments by Lay with a group of children learning nonsense syllables showed that every child retained what was learned better when the study was in the afternoon than when it was in the morning, but fatigue, on the other hand, seems to be greater in the afternoon. Thus, in regard to the many points, we have no adequate evidence as to the best conditions. Significant results have come from many experimental studies, but as regards the length and distribution of the period of study during the school day, the best conclusions that can be given at present are tentative. Putting these briefly and dogmatically on the basis of the studies of work and fatigue, and upon the results of school practice in different countries, the following norms seem wise —

(1) The length of the school day should vary with the age of the children, and the kind of work done. For the kindergarten and early primary grades one session of three hours is a maximum unless a large part of the work consists of play and is out of doors. In the higher grades and in the high school a four-hour session, or two sessions with a total of five hours, or where much of the work consists of manual training, gymnastics, or the like, six hours, should be a maximum. (2) The problem of one session or two is relative to many conditions. One session a day seems preferable where local conditions favor. (3) There should be no prescribed home study in the lower grades; in the higher grades and in the high school the amount required should not exceed one hour, unless there is only one session not exceeding four hours. (4) The recitation period should not exceed fifteen to twenty minutes for children between six and nine, twenty-five to thirty minutes for children from nine to twelve, thirty-five to forty

minutes for children from twelve to fourteen, forty to forty-five minutes for older children (5) Recesses of from five to fifteen minutes in length should follow each period of study, the length of the period being determined by the character of the preceding work, the time of the day, the sequence of subjects, and the like. The total time for recesses for a five-hour period should not be less than that required in Berlin; namely, sixty minutes. The amount of time devoted to recess in this country is usually very inadequate. More time for recess and a better pace of work in most schools would not only favor health but produce more satisfactory results.

Hygiene and pedagogy are quite in accord, and for really efficient school work in most of the schools in this country an entire revision of the program with regard to what is known concerning fatigue and the optimum conditions for intellectual work is desirable. In order to determine the proper length and distribution of the work, many factors are to be considered,—the age of the pupils, the climate, the season of the year, the kind of work done, the home conditions, the sequence of subjects, the work required, the character of the teachers, and the hygienic conditions of the schoolroom.

W H B

See HOME STUDY, SCHOOL MANAGEMENT, FATIGUE

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 See also references under FATIGUE

PERIODICALS, EDUCATIONAL — See JOURNALISM, EDUCATIONAL

PERIPATETIC SYSTEM — See DEPARTMENT SYSTEM

PERKINS, GEORGE ROBERT (1812-1876) — Author of mathematical textbooks, studied privately mathematics and civil engineering. He taught at Clinton, N. Y. (1831-1838); was principal of the Utica High School (1838-1844), instructor in the Albany Normal School (1844-1848), and succeeded David P. Page (*q. v.*) as principal of that institution (1848-1852). His publications include *Higher Arithmetic* (1841), *Treatise on Algebra* (1841), *Elements of Algebra* (1844), *Elements of Geometry* (1847), *Trigonometry and Surveying* (1851), and *Plane and Solid Geometry* (1854). He also published many scientific articles.

W S M

PERMANENT SCHOOL FUND. — See SCHOOL FUNDS

PEROTTI, NICCOLO (1430-1480). — Italian ecclesiastic and humanist, born at Sassoferrato of poor parentage. At the age of fourteen he became a pupil of Vittorino da Feltre (*q. v.*). Later he is found in the household of William Gray, later, Bishop of Ely, who studied under Guarino. With him he went to Rome and was placed in the household of Bessarion, whose secretary he became. Living at Bologna he studied theology and Greek, and taught rhetoric and poetry there in 1451. He attracted attention when Pope Nicholas requested him to translate Polybius, a work executed with more elegance than correctness. In 1458 Pope Pius II made him Bishop of Siponto. Perotti was frequently employed as Papal legate, but spent the greater part of his time in Rome engaged in literary activity. The latter part of his life he spent in his native town.

While Perotti was very productive, only a few of his works have been printed. His main interest was in rhetoric and eloquence. The *Metrica* (1453) was the earliest modern work on Latin prosody. His *Rudimenta Grammatices* (1468) was the best known and most widely used of his works. Erasmus calls it the "most complete manual extant in his day." It was the archetype of all later grammars with the familiar arrangement of accidence, syntax, and prosody. Grammar he defines as *ars recte loquendi rectique scribendi scriptorum et poetarum lectionibus observata*. The *Cornucopiae sive Latinae Linguae Commentariorum Opus* was a collection of some of Perotti's works edited by his nephew, Pirro, and contained in later editions commentaries on Martial, Pliny's preface, Varro, Sextus Pompeius, and Nonius Marcellus. Perotti was an ardent student of Greek, and besides Polybius he also translated Epictetus and Plutarch (*On the Fortune of the Romans*). His *De Puerorum Eruditione*, which would have been valuable as from a pupil of Vittorino, has either been lost or was never printed.

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PERSIAN EDUCATION — In the history of education Persia commands attention both as having been one of the great nations of antiquity and as having possessed in early times an educational policy that engaged the consideration of advanced thinkers, like Herodotus, Xenophon, Strabo, and others, in ancient Greece. The intellectual achievements of the people, moreover, during their long history have been such as to entitle the land to a high rank among the Asiatic nations of the

past; and there is still some hope that under its constitutional government, as framed in 1906-1909, the country may in a measure be enabled to emulate some of the achievements of days gone by.

**Historical Outline** — Of chief interest historically to the student of education is the older period of Persia's development, or that during the thousand and more years of her greatest power, in other words, the period from the seventh century B C to the seventh century A D. This was the long era covered by the Median and Persian empires down to the invasion of Alexander the Great, and followed by the dominion of the successive rulers of the Parthian and Sasanian Kingdoms. During most of this early age Persia was under the influence of the religion of Zoroaster, the prophet of ancient Iran, who was born at least as early as 660 B C, and whose faith and teachings were destined to have an educational bearing upon the general condition of the people. This older creed, whose ethical principle of the warfare between Ormazd and Ahriman proved a potent factor in energizing the people, was supplanted and almost wholly driven out by Mohammedanism when the Arab conquest of Persia took place in 650 A D. From that date onward the country in general shared in the educational as well as the political fate of the adjacent lands that were brought under the sway of Islam. Yet Persia always maintained a certain freedom of thought and independence of judgment that redounded to her intellectual advancement during the succeeding centuries of Moslem rule. In fact many of the products of Oriental learning during the Middle Ages which Europe attributes to the Arabs are not Arab, except in language, but are in reality the work of Persians by birth or extraction (cf. Browne, *Literary History of Persia*, 1, 251-278, London, 1902). A recognition of this truth should play a part in any estimate of Persia's development in later times as well as in any forecast regarding the possibilities of the country when the land is brought into more direct contact with the West and with Occidental modes of thought.

**Educational Views and Aims** -- From the remotest age the aim of education in Persia, as elsewhere, was to train children in such a manner as to make them useful members of the community in whatever state of life they may have been born. A certain amount of religious instruction was regarded as a paramount necessity for the attainment of this end, as is implied in the *Avesta* (Vend 4 44-45, Yasna 62 5, Yasht 13 134, tr Darmesteter and Mills in *Sacred Books of the East*, vols. 4, 23, and 31, Oxford, 1880 (2d ed., 1895), 1883, 1887). Among the qualities most highly prized and extolled in that sacred book is the gift of wisdom and knowledge; this is spoken of both as natural wisdom and as acquired — Av *āsna khratu*, "inborn wisdom,"

and *gaoshō-srūta khratu*, "ear-heard wisdom." A special section of the Avestan code, but one unfortunately lost ages ago, was devoted to "the teaching of children by a guardian or father, and the mode of his teaching," and also to "the association of priestly instructor and pupil," as shown by this very quotation from an analysis of the missing part found in the *Dinkart* (8 22 2, 8 37 4, tr West, *Pahlavi Texts*, in *S B E* 37 77, 114). The loss, in fact, of much of the *Avesta* in its original compass makes it difficult to surmise how broad may have been the vision or how comprehensive the educational aim in those ancient days. If again we may judge from the summary in the *Dinkart* just referred to there was imparted, besides religious instruction, something of science, as it was then known, and likewise of secular knowledge. Further support for this view is to be found in the occurrence in Pahlavi literature of quotations of that nature from missing portions of the *Avesta*, and in some of the old material used in Pahlavi works, like the *Bundahishn*, which is based on the *Avesta* (cf. West, *Pahlavi Texts Translated*, in *S B E* 5, p xxiv). It is at this point that some outside help may be called in from the classic authors, like Herodotus, Plato, Xenophon, and the rest quoted below, to contribute further information at least regarding the general conditions prevailing in Achæmænian, if not Median, times. In this connection it may be added that, although opinions differ concerning the weight to be given to Xenophon's *Cyropædia* as a source, there are not wanting sound critics who regard that work as thoroughly trustworthy in its representation of Persian conditions, even though it be tinged in color by Greek ideals. For the Parthian period (250 B C-226 A D.), or the darker age that followed the invasion of Alexander, there is a scantiness in material to show the educational attitude of that epoch. For the Sasanian age (226 A D-650), on the other hand, there is abundant evidence to prove that learning was valued at its true worth and was liberally fostered. To cite an example in addition to the other quotations given below, the *Dinkart* says, "Education is the life of mankind," and "Men ought to raise themselves to illustrious positions by education (which enables them) to read and write" (see tr. by Peshotan Sanjana, and Darab Sanjana, vol 12, p 29 and vol 9, p 585). After the Mohammedan conquest, although an Arab infusion came into the Persian speech, and the religion of the Koran superseded that of the *Avesta*, it was the Persians, nevertheless, who taught their vanquishers the value of learning, and, by imparting their own literary gifts to the Moslems, created a golden age of letters for Islam in the eighth and ninth centuries (cf. Browne, *Literary History of Persia*, 1, 251-278). The general attitude toward education in the thirteenth century, as well as

later, may be gathered from the fact that the celebrated Persian poet and moralist Sa'di who died in 1291 A.D., devotes to the effects of education a part of one of the chapters (ch 7) in his well-known work, the *Gulistan* (tr Eastwick, 2d ed., London, 1880). The existence of Persian ideals to-day regarding education, despite the obstacles in the way of their fulfillment, is illustrated by the presence of two articles (18 and 19) in the supplementary fundamental laws adopted as a part of the national constitution that was framed in 1907. The first of these articles recognized entire freedom in the matter of "the acquisition and study of all sciences, arts, and crafts," except such as may be forbidden by ecclesiastical law, the second exacted that "the foundation of schools at the expense of the government and the nation, and compulsory instruction, must be regulated by the Ministry of Sciences and Arts, and all schools and colleges must be under the supreme control and supervision of that Ministry."

**Teacher and Pupil in Antiquity** — From the earliest times the priestly class naturally occupied the foremost position in the matter of teaching. In the *Avesta* a special religious atmosphere is associated with the oft-recurring words for pupil and teacher, which are *aethrya*, "(priestly) learner" and *aethrapaiti*, "master of (priestly) learning." The relation between disciple and master was an intimate one, and even a devoted one, as we know from Yasht 10 116, where a list of sacred ties is given, and this particular bond is rated as "seventyfold" in the scale of a hundred, being surpassed only by that between father-in-law and son-in-law, between two brothers, and between father and son. At this point we may likewise recall the import of the quotation given above from the lost Avestan *Husparam Nask*, bearing upon "the association of priestly instructor and pupil, and their meritoriousness together" (Dk 8 37 4). A recognition of the importance of this bond, moreover, may partly account for traditions ascribing to Zoroaster himself a special teacher or teachers (see Jackson, *Zoroaster*, pp 29-30, and compare the Avestan fragment given by Darmesteter, *Le Zend-Avesta*, 3 151 and *S.B.E.* (2 ed.) 4 371). It is not without interest to add that the name of an ancient teacher appears to be mentioned in a list of sainted names found in the Avestan canon, but we unfortunately know nothing more about him, the passage (Yasht 13 105) reads, "we worship the guardian spirit of Manthravaka, son of Samuzhi, the master of (priestly) learning and master of the conference." His son Vahmaedhata is likewise named (Yasht. 13 115). An original Avestan fragment relating to the duties of a priestly student and his preceptor has been preserved, but the text is in so corrupt a condition that the interpretation of it is not wholly clear (see Erpatistan, 16-18, tr. Darmesteter, *Le Zend-*

*Avesta*, 3 85, and *S.B.E.* 2 ed., 4 311-315). The passage in question runs as follows —

"How long a time, of a year's length, shall a student go to a master of spiritual learning? For a period of three springtides (i.e. years) he shall gird himself with the Holy Wisdom. If within a half of this period, when he is reciting, he makes a mistake or leaves out something, he shall go to a second teacher, to a third, even to a fourth. If we see that he knows his text within the half of this period, he must recite it and not leave out anything afterwards" (see also Bartholomae, *Altiranisches Wörterbuch*, col 132, s.v. *antara*, Strassburg, 1904). In the light of such a passage it is easy to understand the importance attached to religious and moral instruction in Sasanian days as shown by the admonitions of the sage Buzurgmīhr, prime-minister to Chosroes I, surnamed Anushirwān the Just (550 A.D.). In his *Pandnamak*, or "Book of Advice," he says —

"(36) Education makes man noble, good habits endow him with a virtuous disposition, education is a corrector of man, good deeds the guardian of his soul. (126) A man should spend one out of the three parts of every day and night in getting religious training and in asking sensible questions of pious men. (142) Hence all men, except blind, dumb, and disabled persons, ought to take as much trouble as they can in this world, and to educate themselves in a theological summary. (143) It is the duty of parents to instruct their children, before they attain their fifteenth year, to do many of the good deeds (duly enumerated). For those parents that give a certain amount of education of this kind to their children obtain their recompense from whatsoever good deeds their children do, but those that do not give it draw upon their own heads whatever iniquities their children, devoid of the strength it affords, commit" (see the Pahlavi *Pandnamak-i Vajorg-Mitro*, ed and tr. by Peshutan Dastur Behrami Sanjana, under the title *Ganjeshayagan*, pp 11, 21, 25).

From expressions like the above regarding parents, children, and teachers, we can appreciate the claim made in the first century B.C. by the Greek writer Nicolaus Damascenus (fragm 67) to the effect that "Cyrus was versed in the wisdom of the Magi, in which he was educated, he was instructed in righteousness and truthfulness, and in certain customs of his native country, which exist for prominent men among the Persians." In keeping with this is the statement of Xenophon that "boys attending school pass their time in learning justice" (*Cyrop* 1 2 6). Of a like tenor is the information given by Strabo to the effect that the youths are given "the most virtuous instructors, who interweave useful stories into their narratives, and relate, sometimes with and sometimes without music, the deeds of their gods and celebrated men" (Strabo, 15 3 19, Cas p 733).

**Age of Instruction** — As to the age at which the child's education was to be begun, there appears to have been a natural degree of latitude between the ages of five and seven, the latter being certainly the time when formal instruction was commenced. Up to the age



of five, according to Herodotus (1 136), the boy did not enter his father's presence, but was brought up among the women. The same age is mentioned by Strabo (15 3 18, Cas. p. 733), although Valerius Maximus (2. 6) gives seven. The part played by eunuchs as well as the women in the child's bringing up is noted by Plato, *Leges*, 3, 695 A, 694 D, and the Platonic *Alcibiades*, I, 121 D. At the Sasanian court, according to Firdausi (tr Mohl, 5 341), a special priest was in charge of the youthful Shapur II (309-379 A D) until he reached the age of five, and similar care was taken of the precocious Bahram Gur (420-438 A D) until the end of his fourth year (*op cit*, 5 400). From five until seven years the child was under the father's tutelage, according to the Pahlavi treatise *Shayast la-Shayast*, 5 1 (tr West, *SBE* 5 290). In general the systematic course of education began when the child was seven years old. This may be inferred from a passage in the *Avesta* (Vd 15. 45), which says that "the care (*thrathra*) of the child is for seven years", as well as from the *Dinkart* (tr Sanjana, vol 4, p 263), which regards the child's power of reasoning as developed at seven, and the child as then responsible to being held accountable by its parents, and a similar idea is found in the *Shayast la-Shayast* (5 1-2) and elsewhere (Cf also Platonic *Alcibiades*, I, 121 D). This continued from the seventh to the fifteenth year. The age of majority was reached at fifteen when the young man, as did the maiden, took upon himself the religious and other obligations belonging to maturity as recorded in the *Avesta* and in the Pahlavi books (see *Avesta*, Vd 18 54, Vd 14 15, Yt 8 3-14, Ys 9 5, H N (Yt 22 9), Pahlavi, Syls 5 25, Zsp 20 1, Dk 7 10, 17 (tr West, *SBE* 47 151, 115); Pandnamak, 143, tr Sanjana, p. 25). Such was the case with the young prince Ardashir Babagan, the founder of the Sasanian dynasty (cf *Karnamak-i Artakhshir*, ed and tr Antia, p 6, Bombay, 1900, also ed and tr Darab Sanjana, p 5, Bombay, 1896), but the exceptionally gifted Bahram Gur, on the other hand, appears to have completed his studies at twelve (see Firdausi, tr Mohl, 5 402). These natural differences in point of years may well account for the varying ages given by the classical authors who refer to the education of the Persian princes and nobles, especially their military and physical training. Thus, Xenophon (*Cyrop* 1 2. 8) makes the earlier stages of instruction continue to the sixteenth or seventeenth year, Herodotus (1. 136) to the twentieth; and Strabo (15 3. 18) up to the twenty-fourth year. According to the Platonic *Alcibiades* I, 121 D, the age of fourteen was the time when Persian princes were given out to special royal tutors for advanced training.

**Study, Recreation, and Physical Exercise** — Persians, like their descendants to-day, were

early risers, and all instruction appears to have begun at an early hour. The *Avesta* (Vd 18. 23-26) insists upon the virtue of being out of bed by cockerow, and the Pahlavi tractate containing the advice given by Atūrpāt to his son bids the youth, "rise early that you may be able to continue your work" (*Andarz-i Aturpat-i Maraspandan*, 98, ed and tr Sanjana, p 7). The ideal distribution of the day for the Zoroastrian, especially the peasant, is given by Buzurgmihr (Pandnamak, 126 tr Sanjana, p 21), and this arrangement assigned one third of every day to religious thought and pious activity, the second third to cultivating the soil, and the remainder to eating, recreation, and sleep. Judging from an Avestan allusion to the duties of a priest (Vd. 18 5-6), the true cleric was supposed to study day and night (lit "through the whole night"). In the case of the warrior class and the nobles, early rising was insisted upon, and much of the training consisted in physical exercise. Xenophon (*Cyrop* 1 2 4. 1 2 10) related that the boys, like the men, were accustomed to rise early and to appear in the market place "at daybreak". Strabo (15 3 18, C p 733) adds, "the youths are called to rise before dawn, at the sound of brazen instruments, and assemble in one spot as if for arming themselves, or for the chase, they are arranged in companies of fifty, to each of which one of the king's sons or the son of a satrap is appointed as leader, who runs, followed at command by the others, an appointed distance of thirty or forty stadia. They require them also to give an account of each lesson, when they practice loud speaking, and exercise the breath and lungs." Both Strabo and Xenophon elaborate upon the athletic and martial aspect of the instruction, and no one can overlook the oft-quoted statement of Herodotus (1 136) that the Persians taught their boys "three things only to ride, to shoot, and to speak the truth." This was undoubtedly true, because the Persians from the days of Zoroaster onward have been advocates in practice as well as theory of the doctrine *mens sana in corpore sano*, and riding horseback, hunting, archery, javelin throwing, swimming, and polo were regarded not merely as manly sports, but as an essential part of education (see Modi, *Education among the Ancient Iranians*, pp 1-40).

**Scope of Instruction in Early Times** — As already indicated, the general scope of the education in early times was both mental and physical. The former preponderated in priestly education, the latter in the training of the knights and nobles, the training of the third estate, as intimated above, must have been mainly practical in its bearings. Owing to the loss of portions of the *Avesta*, previously referred to, no definite details have been preserved to show the general method of instruction in vogue, but there is undoubtedly much

truth in the picture of Persian education drawn by Xenophon (*Cyrop* 1 2 2-13), even if the likeness be an idealized one

In substance, according to Xenophon, the Persians insisted upon positive precepts and examples in their teaching rather than upon negative commands, and they believed in educating numbers together in common. To this end they had "an assembly place (*ἀγορά*), called the Free, where the royal palace and other official residences were built," and from which all business was excluded as interfering with the instruction. This "assembly place" (which corresponds to the "Maidan" in modern Persian cities) was divided into four parts, one for boys, one for youths, another for men of age, and still another for those past military service. Over each of the four divisions, which again were subdivided into twelve, a presiding officer was placed, old men being in charge of the children, and men of maturity directing the youths. The children were taught justice and its administration, obedience, and self-control, together with training in archery, and throwing the javelin. This continued until they reached the age of sixteen or seventeen and entered the class of young men. Upon them now developed the more serious activities, largely military in character, such as standing on guard, practice in the use of weapons, and taking part in the royal hunt. After ten years, or at the age of twenty-five or twenty-six they were accounted as full-grown men.<sup>1</sup>

**From the Middle Ages to the Present** — As a direct consequence of the Mohammedan conquest, which occurred in the seventh century A.D. and introduced a different era in Iran's history, Persian education underwent a change in regard to its religious basis, since the Moslem faith was then substituted for Zoroastrianism and has ever since remained

<sup>1</sup> Twenty-six years was also the age when the Sasanian King Shapur II is regarded as having reached his sovereign dignity according to Firdausi (tr. Mohl, 5 342). This age corresponds in effect with the twenty-fourth year mentioned by Strabo (15 3 18, C p. 733).

There are passages in the classics which show that the children of noble families were sent to court to enjoy the advantages given by royal education (see Xenophon, *Cyrop* 8 6 10, *Anab* 1 9 3, Procopius, *De Bello Persico*, 1 23), and reference has been made above to the "royal tutors," four in number, appointed respectively as instructors to the princes in religion and kingly duties, truthfulness, self-restraint, and bravery (see Platonic *Alcibiades*, I, 121 D-122 A, and Clemens Alexandrinus, *Pædag* 1 7). This statement may be compared with the fact that as a youth the Sasanian king Ardashir Babagan was "instructed in reading, writing, riding, and other arts, and became so proficient that his fame spread all over Fārs" (*Karnamak*, 2 4-5, ed and tr. Antia, p. 6, also ed and tr. Sanjāna, p. 5). A further idea of the general regimen employed in the education of princes in Sasanian times may be gathered from the training of Bahram Gur (420-438 A.D.), who was sent to Arabia for his earliest education, and from that of Hurmāz IV, in the sixth century, so far as this portrait by Firdausi in his *Shah Namah* may be regarded as accurate (tr. Mohl, 5 398-405, 6 424-430).

as the general creed of Iran. This departure, however, did not interfere with the production of great works on history and science, standard for their day and times. As witness of this truth may be cited the learned annalist Tabari, in the ninth century, the philosopher-physician Ibn Sina, a contemporary of the great Khivan scholar al-Biruni, at the end of the tenth, several renowned authorities among the number of so-called Arab geographers from the tenth to the twelfth century, Omar Khayyam, the algebraist and astronomer-poet, early in the thirteenth, not to mention the long line of Persian poets down to the fifteenth century. Each dynasty had some intellectual product to mark its fame. Noteworthy in regard to the culture he inspired was the reign of Shah Abbas the Great (1587-1629), not only a great ruler and administrator, but also a noble patron of art and of learning, so that the renown of his reign has rarely been surpassed in the history of Persia's glory, and has never since been even approached.

Education unfortunately has been allowed steadily to decline, and although the traditional native instruction is still in the hands of the Moslem priests in schools attached to the mosques, general learning has fallen more and more into decay. Illiteracy is largely the rule to-day among the people outside of the cities, except where the introduction of Western education may have forced a rise of standard in the local system. Chief among the centers that serve as nuclei for Occidental education are the mission institutions at Urumiah, Tabriz, Rasht, Hamadan, Isfahan, Shiraz, Yazd, and Mashad. In Teheran there are a number of madrasahs, or native colleges, and also several institutions on royal foundations, including the Shah's college, in which European instructors are employed as well as native teachers. Best attended, perhaps, among the Christian institutions of Teheran is the American School for Boys (cf. Jackson, *Persia Past and Present*, p. 423; and on mission and native education consult Wilson, *Persian Life and Customs*, pp. 187-188, New York, 1895, Wishard, *Twenty Years in Persia*, pp. 238-242, New York, 1908). A wholesome sign for Persia's future possibilities, if given an opportunity, may be seen in the establishment of a number of newspapers after the Constitution came in, and also in the rapid multiplication of printing presses.

From the historic standpoint it is not without importance to add that the relatively few members of the ancient Zoroastrian faith, numbering now about eleven thousand, who have managed to exist in the face of religious persecution and civic disabilities, are still a potent moral factor in Persia, and have succeeded in keeping up some sort of educational standard in their relatively outcast community. In maintaining this they have been liberally aided by their coreligionists, the

Parsis of India, who fled from Iran at the time of the Mohammedan invasion, twelve centuries ago, and established themselves most prosperously in the Bombay Presidency, where they themselves maintain flourishing schools that still give broad instruction on Western lines, and also exercise an influence in keeping up the ancient faith (see Jackson, *Persia*, pp 379-380, 427, Karaka, *History of the Parsis*, 1 280-332, London, 1884, Menant, *Les Parsis*, pp 292-332, Paris, 1898)

**Female Education Largely Neglected** — The general neglect of female education throughout the history of Persia has been due largely to the Oriental custom of secluding women. Even in ancient Zoroastrian times, so far as can be gathered from the *Avesta*, a girl's education was practically confined to some religious training and to such simple instruction as would make her a dutiful wife and a good mother of the household (cf *Avesta*, *Avisturuthrima Gah*, 4 9, and the references given by Sanjana, *Position of Zoroastrian Women*, pp 15-17, Bombay, 1892). A Pahlavi treatise containing admonitions, the *Andarj-i Atupat* (ed and tr Peshutan Sanjana, p 2, Bombay, 1885), includes, it is true, an allusion to the education of one's wife together with one's children, self, and countrymen, but the reference is really to religious instruction (as also is noted by Sanjana, *op cit*). As to Mohammedan times, evidence may be adduced in proof of the fact that girls received some instruction by the side of boys. This is shown by the romantic story of Laila and Majnun, or the Persian Romeo and Juliet, whose love began while they were still mere school children, according to the poet Nizami in the twelfth century (See Atkinson, *Laila u Majnun*, tr, p 5, London, 1836). Miniatures portraying this supposed schoolroom scene are found in some of the oldest and most beautiful Persian manuscripts of Nizami's poems, and they might well be consulted by students interested in the history of education. In modern times, little has been done thus far for female education in the native communities, but a good deal has been accomplished in the Christian mission schools, where education for girls is universally given, and indications of progress lend encouragement to the cause, especially as the Persians themselves are now promoting it (Wishard, *op cit*, pp 240-241, and cf Ella C Sykes, *Persia and its People*, p 197) A V W J

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**PERSONAL EQUATION** — The amount which must be allowed for by a person in making an observation because of the individual character of his reaction time. Originally the term was used by astronomers in connection with the observation of the time of transit of the heavenly bodies. This was done by observing the image of the heavenly body as it crossed parallel lines in the telescopic field, the time being noted simultaneously by counting the beats of a clock. It was found that different observers varied in their results and that the difference was large enough to interfere seriously with the results of the observation. Historically this difficulty led to the reaction time experiment of experimental psychology E H C.

See EXPERIMENTATION, INDIVIDUAL DIFFERENCES, MENTAL MEASUREMENTS, TESTS

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**PERSONALITY** — Personality is closely allied with the conceptions of individuality (*q v*) and selfhood (See SELF). Taken literally, it means the state or quality of being a person. The concept of person arose in connection with Roman law. To be a person was to be a subject of legal rights and responsibilities; that is, of powers and duties capable of enforcement by civil authority. On this view, a corporation or minor civic group, likely a municipality, was a person; slaves were not persons, while minors were persons only vicariously, or through their authorized representatives. As the external traits of this legal view disappeared, an ethical sense developed out of them, a person is the subject of moral rights and duties. Thus Kant said that the moral laws was summed up in the injunctions. Be a Person, and respect others as Persons. A person is an end in and for himself, never a means to anything beyond.

Because of this ethical sense personality is often treated as a "higher" idea than individuality. From another point of view personality is an abstraction compared with individuality. All persons have personality in the same sense; there is nothing distinguishing, nothing concrete about it. Individuality, on the other hand, is always differential; it is something that *specifically* characterizes each self. Individuality expresses what one uniquely is, personality expresses what one has — a property that one may acquire. In this sense, individuality is deeper than per-

sonality In earlier days children were classed with slaves as intermediate links between things and persons, save that they differed from slaves in the potentiality of personality. This conception of childhood was embodied in methods of discipline, punishment, and instruction, it being assumed that children had no rights of their own. With the development of the democratic idea, rights of personality were extended to children, and methods of education have accordingly undergone considerable reconstruction. No consistent theory upon this point has, however, as yet, been worked out in practice J. D.

**PERSONALITY OF THE TEACHER** — See PERSONALITY, TEACHING AS A PROFESSION

**PERSPECTIVE** — See ART, METHODS OF TEACHING

**PERTUSSIS** — See WHOOPING COUGH

**PERU, EDUCATION IN** — Peru is a republic with an area of 700,000 square miles, including disputed territory, and a population of 4,600,000. The population of Peru is composed of whites, chiefly the descendants of the Spaniards, mestizos or a mixture of Spanish and Indian blood, Indians, Negroes, and a few Orientals. There is almost every degree of civilization, from the barbarous tribes of the montaña to the highly cultured people of Lima, the capital of the Republic, and other large centers. The population for the most part is grouped in centers, but these centers are widely distributed, and means of communication are not good. Geographically, Peru is divided into three sections—*la costa*, *la sierra*, and *la montaña*. The first is a narrow strip extending along the Pacific coast for a distance of some 1200 miles. It is generally arid, but it is pierced by sixty mountain streams which during the ages have left along their banks rich deposits of alluvium now covering an area of 2000 square miles. The *sierra* is the mountainous area, including many fertile valleys, lying between the coast and the *montaña*, which comprises about two thirds of the total area of the country. Only a small portion of it is inhabited. The political divisions of the country are as follows: nineteen departments and three provinces with the organization of a department, 103 provinces, nearly 800 districts, and a large number of sub-districts. The political organization is governed by the constitution, as formed in 1860. The authorities in immediate control of the different subdivisions of the state are, prefect, subprefect, governor, and lieutenant-governor, respectively. These form a political hierarchy responsible to the President of the Republic and his cabinet, in whom all administrative authority is centralized. The Roman Catholic

Church is the only one recognized by law, but as a rule other denominations are not molested.

**Historical** — The Spanish adventurers whose conquest of Peru with its ruthless spoliation of the Incas forms one of the most thrilling episodes in the history of the Western continent, were accompanied in this region, as elsewhere, by church dignitaries and prelates who established the authority and ceremonial of the Roman Catholic Church as fast as permanent settlements were effected, organized schools, and upon the ruins of the ancient civilization built up a new aristocracy, tyrannical, luxurious, but, in a sense, cultured. While this alien power was strengthening itself, a few priests with true missionary zeal labored to convert the humble natives, and opened mission schools which imparted to them a curious mixture of letters and religious dogma. The Jesuits controlled many colleges in the colony from the sixteenth until their expulsion in the eighteenth century. The University of San Marcos, the oldest in the Western continent, was established in Lima under Dominican auspices, by Papal Bull of 1571 and confirmed by royal decree the following year, that of Cuzco in like manner in 1692. Around these institutions grew up preparatory schools, or colleges, intended mainly for the training of religious novitiates and teachers. The natives that came into direct contact with the Spaniards gradually assumed their social ideas and mental habits. Thus modern Peru has inherited from the colonial period the framework of a centralized scholastic system and the culture ideals of an aristocratic order.

In 1821 Peru declared its independence, and in the organization of the republican government due regard was paid to education. In 1822 a normal school was established in Lima on the Lancasterian plan, and in 1823 a central office of education was created. This early agitation had, however, little effect outside of Lima, where in 1833 four schools were established for each sex. Like the earlier normal school they showed the influence of the Lancasterian system. The course of study comprised reading, writing, arithmetic, grammar, and religion, with instruction in sewing for the girls. For half a century the history of elementary education in the Republic is little more than a record of official orders and the increase of free schools in the capital. During this period secondary education was represented by the colleges in which pupils were prepared for admission to the universities. The continued interest in higher education was shown by the founding of the universities of Trujillo and Arequipa in 1824 and 1835, respectively. In 1876, under the leadership of President Manuel Pardo, a reform movement was started; but its progress was interrupted by the destructive war between Chile and Peru which raged from 1879 to

1884. The century was near its close before popular education again engaged the attention of the government.

**Present System** — In 1896 a special commission, the *Junta Reformadora*, was appointed to deal with the educational problem of the Republic. The outcome of the work of the commission was the law of 1901, which forms the basis of the present system of public instruction. The law provided for a Minister of Public Instruction, Justice, and Worship, in respect to his educational functions he was to be assisted by a Director-General and a Superior Council. The reaction against local independence, which is indicated by the law of 1901, was completed as regards secondary and higher education by an order of September, 1905, transferring their control from the Superior Council to the Minister, and as regards primary education, by the law of December 5, 1905, which bore the signature of José Pardo, who had succeeded his father as President. By this law the control of primary education was centralized in the Minister of Public Instruction, and the inspection of primary schools intrusted to district inspectors subordinate to provincial inspectors, the latter being directly responsible to the Minister.

In 1907 the National Council of Education was reorganized, its membership being fixed as follows: the Minister as presiding officer, the Director-General of Public Education, the Rector of the University of San Carlos at Lima, a delegate elected by each of the faculties of this university, the Director of the National College of Guadalupe, Lima, the director of the men's Normal School, the three directors of the schools of Engineering, Agriculture, and Arts and Trades, respectively, and a delegate named by the private schools. This Council, which works through committees, has the right of initiative in all school matters. As regards primary education, the most important feature of the administrative system is the inspectorate. In accordance with the provisions of the law of December, 1905, a paid inspector of primary schools was placed in each of the 101 provinces of the Republic, while in nearly all the 800 civil districts, unpaid inspectors, subordinate to the former, were appointed.

As the work of organizing public schools went on, the need of expert guidance became more and more evident, and at the beginning of the present administration measures were taken to supply this demand. The newly appointed Minister of Public Instruction, Dr Manuel V. Villarán, was a man of exceptional ability, familiar with educational movements in the leading countries of the world, and desirous of introducing into Peru the main features of the system of school administration in the United States. At the suggestion of the Minister, the Peruvian government, in May, 1909, secured from the United States a

small number of professionally trained men, for appointment as inspectors of primary instruction, a specialist in commercial education to organize the work in the national college of secondary instruction in Lima, and a specialist in educational administration, to act as adviser to the Minister. Soon after these appointments were made, a change of ministers occurred, but the educational work was not interrupted. In February, 1910, a special commission was appointed under the presidency of Dr. Villarán, for the purpose of preparing a new education law and perfecting the administrative system on the lines already laid down. As indicated by the crude draft of the bill on which the commission is working, they will endeavor to secure, as first essentials, provision for a permanent force of trained teachers, for an inspection corps of high qualifications, and a permanent school fund. The importance of local activity and responsibility in a system of public education is recognized by the commission, but at present these conditions cannot be secured in Peru.

**Primary Schools** — Primary instruction is divided into elementary, covering two years, and higher primary, which covers a period of three years. The elementary period is legally obligatory for all children. The higher primary or optional course is provided only in central schools (*centros escolares*) which exist in all the capitals of provinces and in some of the other more important towns. The regulation provides for one school in all plantations, mining settlements, and villages of less than 200 inhabitants, those of more than 200 are entitled to a central school. Unfortunately the funds available are not sufficient to carry out this purpose. The regulations provide for infant schools, or kindergartens, in the capitals of provinces, but so far they have been organized in the larger cities only. In general the pupils are separated according to sex, but mixed schools exist for economic reasons. On account of the prejudices of parents, a mixed school is very rarely coeducational, in most communities the sex that happens to predominate will attend, the other remaining at home, this generally falling to the lot of the girls. Even when both sexes attend, they are seated in different rooms and are instructed separately. Although the school age is from six to twelve for girls and six to fourteen for boys, mixed schools cannot legally receive boys over ten years of age or girls of more than twelve, however, in many "mixed schools" where one sex is crowded out, there are pupils over fifteen years of age. The principals of boys' schools are always men, though women teachers are frequently employed as assistants, only women may have charge of or teach in mixed schools. Outside of the larger cities not much interest has been awakened in the education of girls.

*Course of Study.* — The course of study for

the elementary division comprises, besides the three essential branches, nature study and religion (catechism), notions of geography and history of Peru.

The second division continues these subjects and adds Spanish, physics, chemistry, natural history, manual training with inventive geometry and drawing, music, physical exercises and hygiene, notions of agriculture and arboriculture, the moral instruction consists of the Christian dogma and sacred history, and social duties. In the fourth year horticulture and drawing from nature are added to the preceding subjects, and the manual training begins to differentiate according to the sex of pupils, the girls taking up weaving, sewing, embroidering, and laundering, while the boys have elementary work in carpentering, blacksmithing, tailoring, shoe-making, and printing, according to the trades most in demand in the community. In the fifth year, civic education takes the place of moral and religious instruction. It is an overcrowded program and is seldom fully carried out.

*Schoolhouses and Supplies* — Public education is not only compulsory, but free, the government provides the schoolhouse and furniture, and, also, free of cost to the pupils of the first two years (the compulsory period), textbooks, pencils, tablets, pens, etc. This liberality, together with the aim of the government to provide a home for each teacher holding a permanent appointment, a gradual increase of salary and a pension after twenty years of service, indicates something of the scope of the reforms recommended by President Pardo in 1905. Owing to the lean years through which the government is now passing, it has not been possible to realize all these purposes.

*Teachers, Certificates, Salaries, etc* — Teachers belong to one of three classes according to the manner of appointment, that is, by the provincial inspector, by the prefect of the department from a list of three proposed by such inspectors, or by the minister. The first class of appointment is temporary, the teacher being subject to removal or transfer at the will of the inspector, only the minister can remove or transfer a teacher of the second class; those of the third class receive their appointment as the result of a competitive examination, or on the basis of successful experience, and hold their position for life or until they are retired, unless removed for flagrant misconduct.

There are three grades of teachers' certificates which are secured by examinations conducted by the departmental inspectors. Under present conditions the examinations are of little value, but with the improvements contemplated it is believed they will offer the means of obtaining competent teachers, provided fair salaries are paid. At present these

are very low, the average annual salary not exceeding \$240. The few graduates from the normal school for men command \$600 a year, graduates from the normal school for women, from \$270 to \$480. The cost of living is about the same as in the United States. According to the law of 1905, teachers who hold their schools by permanent appointment, after serving twenty years may be retired on half pay, provided that during that period they have contributed to the fund 4 per cent of their salary, which must be at least \$25 a month.

For the training of teachers, there are three normal schools — one for each sex in Lima and one for women in Arequipa. These schools have been staffed in the main with foreign teachers and are doing excellent work. They are, however, quite inadequate to supply the annual demand for new teachers, as they do not send out more than forty graduates a year. Consequently the commission advises the maintenance of teachers' institutes in all the departments, as a means of giving professional training to candidates who have met the scholastic requirements for certificates. There are now about 3000 teachers and principals in the public schools, of whom not more than 160 have had a normal course or other professional training, and less than 40 per cent have secured any certificate whatever.

*Condition of School Buildings* — The provision of sufficient school buildings suited to the work imposes a heavy tax upon the school income. In 1909 there were nearly 2000 buildings in use, of which 550, valued at \$410,199, belonged to the government. Many of these buildings had been used as prisons or barracks and had been converted into schoolhouses without much alteration. The new buildings constructed in Lima and Callao are models in arrangement and sanitary conditions, but under the straitened financial conditions, progress in this respect has ceased for the present.

*Signs of Progress* — In spite of the difficulties of the situation and the many deficiencies to be overcome, there are gratifying signs of progress accomplished since 1905. This is more apparent in the awakened interest in the cause and the aroused ambition of the teachers than in measurable results. The following statistics, however, show advance in important particulars.

	1906	1909
Number of schools	1425	2159
Number of teachers	1557	2909
Number of enrolled pupils	85,000	153,901
Average attendance	73,086	84,408
Number of pupils completing two-year period	8375	11,177
Number of pupils completing five-year course	278	511

**Secondary Education** — The secondary schools of Peru (*colegios*) offer a course of study continuous with that of the primary schools and leading up to the universities. The principal or director of each college reports directly to the Minister of Public Instruction as to the state of his institution. For each college there is a financial committee which prepares the estimates of annual expenditure and exercises a measure of supervision over the disbursement of the funds appropriated. The professors are responsible only for their class instruction. A few of the colleges in Lima and Callao have a permanent staff of foreign teachers and are doing good work; but the prevalent custom of engaging local professional men, lawyers and doctors, to give instruction precludes satisfactory results.

The course of study which is uniform for all the colleges covers four years, and comprises for the first two years the following subjects: Spanish, English or French, general history, geography, arithmetic, science, religion, penmanship, drawing, and music. The science subject for the first year is zoology, for the second, botany. In the third year the science course is extended to include mineralogy and geology, physics and chemistry with laboratory work. The fourth year, philosophy and civics are added, time for these being gained by reducing the other subjects. Pupils enter the colleges at twelve years of age, coming alike from the public primary schools or from preparatory sections of the secondary schools. The overcrowded course is intended for four years, which is evidently too brief a time for the mastery of the severer studies. The total number of colleges is twenty-seven, of which three situated respectively at Cuzco, Trujillo and Ayacucho are for girls only. The others are also open to girls, but few ever seek admission to them on account of the prejudice against coeducation. The number of pupils attending the colleges in September, 1910, was 2787, of whom 1106 were in the primary departments.

**Sources of Support** — The sources of support for the secondary schools are government and departmental subsidies, income from properties, and tuition fees. The last-named source yields about 25 per cent of the entire income, which in 1910 amounted to \$340,000, or an average of \$12,592 for each college. The repeated endeavors to establish a permanent school fund have been thus far unsuccessful; the organic law of 1901 provides that 5 per cent of the national revenues, 30 per cent of the departmental revenues, and the proceeds of the duties on liquors shall be devoted to the maintenance of primary schools. But the amounts thus realized have not been sufficient for the service. The total receipts for the successive years 1906 to 1909 were as follows:—

		PER CAPITA OF EN-ROLLMENT
1906	\$1,115,785	\$7.52
1907	1,158,590	7.42
1908	1,309,090	8.06
1909	1,400,000	9.09

In estimating the relative value of the per capita expenses it must be considered that the enrollment in public schools in 1909 was only 3 per cent of the population, whereas the normal proportion would be at least 12 per cent.

**The Universities** — The secondary schools prepare students for admission to the universities. The latter are four in number: San Marcos at Lima, having six faculties, San Antonio Abad at Cuzco, and San Augustin at Arequipa, four faculties each, San Tomas and Santa Rosa at Trujillo, the faculties of letters and law. The complete scheme of higher education is illustrated by the distribution of studies at the major university of San Marcos, Lima, which in 1910 was as follows:—

FACULTY	NUMBER OF STUDENTS
Philosophy and Letters	136
Mathematics and Natural Sciences	229
Political and Administrative Sciences	24
Theology	4
Law	140
Medicine	172
Total	705

The total registration in the four universities in 1910 was 1154 students.

For admission to the faculties of philosophy and letters, and of mathematical and natural sciences, a certificate showing that the candidate has completed the regular four years' course of secondary instruction is required; for admission to the faculties of jurisprudence and of political and administrative sciences, a certificate secured by two years' work in the faculty of letters, for admission to the faculty of medicine, the completion of two years' work in the faculty of sciences.

At the completion of five years' work in the faculty of medicine, of three years in the faculty of law, and of two years in the other faculties, the degree of A. B. is awarded. The completion of the full course, *i. e.* seven years in medicine, five in law and theology, and four in the remaining faculties, entitles the student to the degree of Doctor in the respective faculty.

Although the universities are under the general direction of the Minister of Public Instruction, they have a large measure of independence. The internal affairs of each are nominally regulated by the Rector and University Council, the latter consisting of representatives of the several faculties. In fact, these authorities have chiefly to do with

the fiscal affairs of the institutions, and the professors are practically independent in their work. The reorganization of the universities with a view to promoting internal unity and forceful administration is one of the most important problems before the education commission. On the scholastic side there is need of closer adjustment with the practical interests of the country. It is urged that a strong department of education should be created in the University of Lima, as a means of preparing students for the higher positions in the public school service. Already plans have been made for developing a commercial department in the University of Cuzco. This is due to the work of Dr Alfred Giescke, a graduate of the University of Pennsylvania, who was engaged to establish a commercial department in the college of Guadalupe, Lima, and who was subsequently appointed president of the university named.

The School of Agriculture and the School of Engineering together registered 200 students in 1910, which raises the total in higher institutions to 1354. The annual expenditure for higher education, universities, and technical schools, both included, is about, \$200,000. While Peru is looking to foreign countries, and in particular to the United States, for expert guidance in the effort to extend popular education and the higher order of technical training, there is an evident purpose to maintain the standards of professional training that are already well established. This purpose is indicated by the decree requiring foreigners who seek to practice either medicine or dentistry in that country to present the diplomas of their respective universities and also to submit to the same examinations as native applicants for professional sanctions. Even in the proposed reorganization of public instruction, care is taken to conserve the administrative system which experience has shown to be best adapted to present conditions.

H E B and A T. S

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PERUGIA, UNIVERSITY OF. — See ITALY, EDUCATION IN.

PERWICK, MRS. — The proprietress of an English girls' boarding school, one of the earliest of which we have any notice. This school, in 1643, was kept in the Black and White House, in Church Street, Hackney, London. The details about the school are given in a biography of Mrs. Perwick's daughter Susanne (1636-1661), written by John Bachler. The girls (of whom Mrs. Perwick had about eight hundred) were taught principally by masters, thus continuing for schools the custom which had obtained in Tudor times, of employing a man as private tutor for the girls of the family, e.g. Roger Ascham for Princess Elizabeth, Richard Hyde for Sir Thomas More's daughters, and Christopher for Margaret Roper's daughters. Thus ten masters' names are given as teaching at Mrs. Perwick's school. Bachler's book (published in 1643) advocates the "public" education of girls and argues that schools do not necessarily corrupt manners and morals. The subjects incidentally named as taught in the school are religious knowledge, reading, especially scripture, and music. In the latter the "grounds" were studied, and of instruments, the treble viol, the lyre, the harpsichord and the organ were all taught, and vocal music was cultivated. Dancing, including gesture and bearing, was an important object. The handwork taught and practiced included the needle, and work "by silver, silks, straws, glass, wax, gums, etc." Penmanship seems to have included accountancy. Housewifery and cooking were not neglected. On Sundays, the girls went to church close-covered with the hood. On return, they wrote out the sermon, made notes, and "reinforced daily prayers." F. W.

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PESSIMISM. — In popular usage the disposition to look on the dark side of things, as a systematic philosophy, the theory that existence and life are radically evil, so evil that the only remedy is the negation of the "will to live," the exact antithesis of optimism (*q.v.*) as a philosophy. In considerable part, the motivation of pessimistic systems has resided in the superficial and complacent view of evil as an incident which contributes to the perfection of the whole taken by optimistic systems. Leibnitz's formula that this world is the best of all possible worlds obviously lends



itself readily to an extremely pessimistic interpretation. A certain pessimistic tone concerning the world as it *now* exists has also been a marked feature of the most serious and influential religions, such as Buddhism (*qv*) and Christianity. In general, nineteenth-century thought reacted in this as in other respects against the characteristic eighteenth-century thought, which had been optimistic. The latter held to the doctrine of natural harmony working inevitably for the increase of perfection and happiness, the former dwelt upon the existence of discord, struggle, and competition. The Darwinian idea of the omnipresence of the struggle for existence accentuated this tendency. While the pessimistic spirit found its most adequate expression in literature, especially poetry, it also found systematic metaphysical embodiment, notably in Schopenhauer and Von Hartmann. While systematic pessimism is too contrary to the needs of living beings to secure for itself many consistent adherents, it has made impossible the older type of optimism, and has been a leading factor in bringing about the transformation of optimism into meliorism. The latter holds to the reality of evil as a genuine fact, but emphasizes the possibility, through good will and intelligently directed effort, of a progressive amelioration. It is essentially a doctrine of progress.

J D

See OPTIMISM, SCHOPENHAUER

**PESTALOZZI, JOHANN HEINRICH** (1746-1827). — One of the world's greatest pioneer educationists, and a Swiss patriot who did much for his country by his work for social regeneration through educational reform.

**Life and Career** — Born in Zurich, he lost his father when five years old, and was brought up almost wholly under the influence of his mother and a devoted servant. As a boy he was delicate, shy, awkward, dreamy, and unpractical. He passed through the elementary, preparatory, and Latin schools, and finished his education at the Public College of Zurich. In none of these did he distinguish himself as a student, owing to his want of accuracy and thoroughness in details, but he showed real ability and excelled in his grasp and understanding of principles. While still a youth he attached himself to the Swiss reform party — the country being at that time in the throes of social and political revolution — and was greatly influenced by two of his professors, Bodmer and Breitinger (prominent thinkers and literary men); the writings of Rousseau; and the friendship of Lavater, Füssli, and Bluntschli. He joined the Helvetic Society, took part in its debates and social activities, and wrote for its journal, *Der Erernerer*, articles criticizing the public corruptions of the time and urging social and educational reforms. Touched by the poverty and ignorance of the poor, which he saw in the parish

of his grandfather, Pastor Hongg, he resolved to prepare himself for pastoral work, but changed his mind after his first attempt to conduct a service. Then he began to study law, with a view to help his country through local and national affairs. Overwork in this, and shock at the sudden death of his friend Bluntschli, brought on a serious illness. His doctor advised him to give up study and live an open-air life. The writings of Rousseau and the Physiocrats had already led him, with other enthusiastic students, to make amateur experiments in the return to the life of nature; and he was quite willing to take to the simple life. So he burnt all his books, vowing never to read one again, and turned farmer in 1767. Two years later he bought a farm in the canton of Aargau, and took to himself a wife. His young and beautiful bride, Anna Schulthess, proved a gifted and devoted wife, a helpmeet for him through all his sufferings, failures, and successes.

**Neuhof** — As a farmer his brilliant but erratic gifts were his downfall. After seven years of struggle he found himself in desperate straits as a man of affairs. But as a man of ideas he had begun to find himself in these same seven years of failure. At Neuhof, as he called his farm, was born to him a son whose early education he himself undertook, and thereby began his educational discoveries. His observations, experiments, and experiences in the education of his little boy "Jacobli," proved a pioneer effort in practical child study, or experimental pedagogy, and was the beginning of his formulation of the practical principles of education according to nature. Basing his attempts on the theories of Rousseau, he was led to modify and correct many of this great writer's views. From the beginning of 1774, when his son was three and a half years old, he kept a regular record of his work with him in *A Father's Journal*, and therein are to be found all the great root principles of his final views on education, in particular, the principles of intuition and sense perception as the only real bases of true education. He had also begun to develop ideas on the education of the children of the poor from the industrial standpoint. The barrenness of the farm and his unsuccessful management led him to set up cotton spinning as a means of livelihood in 1774. To do the light work connected with this, he employed the children of the very poor, so that they might be rescued from mendicancy, enabled to earn their bread, and pay something towards their education. Workhouse children were sent to farmers in those days, and were often turned out to beg their bread. Pestalozzi's central idea was that the employer should be responsible for the education of young employees. But in cotton spinning also he failed, from the practical point of view, and was soon absolutely at the end of his financial resources.

But just at this time he had the good fortune to be introduced to Iselin (*qv*) at a meeting of the Helvetic Society. Pestalozzi discussed his view on industrial education with Iselin, who encouraged him, and advised a public appeal for support. This was drawn up in December, 1775, and published in Iselin's *Journal* (*Die Ephemeriden der Menschheit*) in 1776, as an appeal to "The Friends of Humanity" to support the Neuhof industrial school. The appeal was successful, and Pestalozzi was able to add to the twenty children already in his employ. He undertook to teach them to read, write, and calculate. The boys were to be taught all the practical processes of small farming, so far as this could be done at Neuhof, the girls, gardening, domestic work, and needlework, and all were to do cotton spinning. All were to receive such a religious education as would develop in them pure and tender hearts. The subscribers were to receive reports on the work of the institution. The appeal, two reports, and three letters, which all appeared in *Die Ephemeriden*, and another report on the school published as a pamphlet, set forth Pestalozzi's views on *The Education of Poor Country Children* (1777-1778). There were seventeen boys and twenty girls in the school in 1778. Two years later the whole thing collapsed because of financial difficulties due to Pestalozzi's business incapacity. He and his family were ruined, and became poorer than some of those whose sufferings they had learned to understand, and for whom they had sacrificed themselves.

*Literary Activity* — In this dire distress his pen was his only means of support. Encouraged by Iselin and Fussli, he began to write: first a series of short maxims on education, morals, and religion, for Iselin's journal, under the title *A Hermit's Evening Hours*, then a prize essay (dividing first prize with another writer) on *Sumptuary Laws*, and soon after a skit on the clothing of a town watchman, during 1780. The last of these was seen by Fussli's brother (the painter), and caused him to suggest that Pestalozzi should write a story. The result was *Leonard and Gertrude* (1781), a romance of rural life, based on his own experience and knowledge of the lives of the poor, and expressing his views on social reform and regeneration through home and school education and democratic local government. It revealed Pestalozzi as a writer of original and exalted powers, met with great and immediate success, and has become a world's classic. He calls it "a book for the people," and wrote four other parts of it in 1783, 1785, 1787, and 1826, respectively. Feeling that the main purpose of the book had been missed by its readers, he published another to point its morals. This was *Christopher and Eliza* (1782), "my second book for the people," in which a peasant family read and discuss *Leonard and Gertrude*. It

was not a success. During 1782 he conducted a weekly paper, *The Swiss Journal*, in which he wrote on education, politics, and morals. It only lasted a year. In 1797 he made a third attempt to explain, by parables or fables, his *Leonard and Gertrude* in a book entitled *Figures for my ABC Book*. From 1783 to 1797 he published several political essays. At the suggestion of Fichte (*qv*) he endeavored to work out the philosophical bases of his views on education, and after three years of laborious study published his *Investigations into the Course of Nature in the Development of the Human Race* (1797).

*Stanz* — On the 9th of September, 1798, occurred the battle and massacre at Stanz, one result of which was that a poorhouse had to be provided to shelter the homeless orphans of the neighborhood. Pestalozzi was asked to take charge of this, and eagerly consented. No conditions could have been more unfavorable for testing his theories, — half-restored ruins for a school building, himself the only teacher, a peasant and her young daughter the only domestic servants for a household of eighty, distrusted as a heretic by the inhabitants, without sufficient furniture or school apparatus, and with many of his pupils very dirty, degraded, and diseased, he was overwhelmed with worry and work. But he was filled with a great hope and a great zeal, he would realize the picture of Gertrude's school at Bonnal. Physical education in the form of play, drill, and industrial work alternated with mental and moral culture through reading, writing, arithmetic, and living the good life. Simultaneous repetition was much used in lessons, and older and more advanced children put to teach others. No books were used, nor was there any definite syllabus or time-table. Yet, in spite of all defects, there were splendid successes, and all who saw the work were amazed and delighted. But the school which received its first pupils on the 4th of January, 1799, was closed at the beginning of June, in the same year, so that the building might be used as a military hospital. Pestalozzi retired to the mountains to recruit his seriously impaired health. After a few weeks' rest — which probably saved his life — he returned to Stanz, anxious to resume his work, but meantime other arrangements had been made.

*Burgdorf* — Through the influence of Minister Stapfer (Arts and Sciences) he obtained a post in a school in Burgdorf, under a headmaster who was a working shoemaker. He was given a small salary, and lodging in the castle, on condition that "his work benefited the pupils and furthered the perfecting of his method." Some parents, urged on by the schoolmaster, raised an outcry against experiments being made on their children, and Pestalozzi was transferred to an infants' school, with twenty-five pupils from five to eight years old (boys and girls) under a mistress.

Here he had full liberty and directed his experiments to the discovery of the psychological laws and the simplest methods of teaching. He began the plan of teaching through language, number, and form, and was remarkably successful, though he still used simultaneous repetition and had no time-table. And now fortune was kind to him — he met Fischer, the head of the training college for teachers in the castle of Burgdorf, who was formerly professor of philosophy and pedagogy at the Bern University, and a disciple of Salzmann (*qv*) the Philanthropist. They became friends, and Fischer, later on, introduced Krusi (*qv*) to him. When Fischer died rather suddenly in May, 1800, the castle was handed over to Pestalozzi and Krusi, who proposed to carry on a training college, a secondary boarding school, an elementary day school, and an orphan asylum, and to combine with their work experiments in education and the publishing of books thereon. In a short time the staff was increased by the arrival of Buss, Tobler, and Niederer (*qv*), who became and remained loyal, devoted, and self-sacrificing colleagues, and together with Krusi introduced method, order, and thoroughness into Pestalozzi's plans. Under them Burgdorf was the center of educational experiments, investigations, and training such as the world had not hitherto seen. High and low came from all parts to admire and to learn. Here Pestalozzi published (1801) *How Gertrude teaches her Children*, in which he expounded his principles and methods of education, so that — as he thought — the psychology and practice were reduced to such simple terms that every mother could understand and use them. All who wish to understand education according to Pestalozzi must read this book. It makes and marks an epoch in education and is the source of many of the best and most modern views. For the guidance of parents and teachers, Pestalozzi and his staff published the following elementary books during 1803. *The Mother's Book*, *The ABC of Intuition, or the Intuitive Teaching of Form Relations* (in two parts), and *The Intuitive Teaching of Number Relations*. These books explain his underlying ideas in teaching speech, form, and number, and give detailed examples of lessons in these subjects. They are intended to be used only for young beginners. By such means Pestalozzi worked out his ideas and spread them abroad. He achieved fame and success, and did his very best work, at Burgdorf.

*Yverdon* — In July, 1804, Pestalozzi had to vacate the castle, which was required for governmental offices. An arrangement was made for the institution to be housed at Munchenbuchsee, near to Fellenberg's Institution at Hofwyl, and the practical direction of it was committed to Fellenberg (*qv*), while Pestalozzi continued to be the proprietor.

Unhappy differences arose between them, and, in July, 1805, the agreement was canceled and Pestalozzi's Institution was removed to the castle at Yverdon, where it continued till its end on March 2d, 1825. The first five years of this time were years of brilliant successes in which the institution became world famous. After this came private and public misunderstandings, strife, humiliation, and decay, and the less said of these the better. But the worse matters became the more Pestalozzi returned to his original and constant idea of the education of the poor. He started the Clindy Poor School (1818), and at the moment of final failure his one great wish (unfulfilled) was to transport it to Neuhof. At Yverdon the method was applied to older pupils from many countries, to more advanced stages of school subjects, including classics; and to the education of girls in a separate school. Pestalozzi's chief writings from 1805 to 1827 were: the *Weekly for Human Education* (1807-1821), in which appeared his *Lenzburg Address*, the *Discourse on the Idea of Elementary Education* (1809), a *Report on the Condition and Organization of the Yverdon establishment* (1808), Nageli's articles on the teaching of singing, etc., *Views and Experiences relating to the Idea of Elementary Education* (1807); *Addresses to the whole school* (1808-1813), the *Swansong* (1813), the first part of which is *On Education according to Nature*, and *Letters on Early Education* (1818), written to an Englishman. His political enthusiasm had endured and he wrote important political pamphlets. The closing year of his life found him faithful to his three great purposes: as friend of the poor he was engaged in reestablishing his industrial school at Neuhof, as political reformer he wrote an address *On Fatherland and Education*, for the Schinznach Helvetic Society, of which he had been elected president, and as educationist he wrote a paper entitled *An Attempt at a Sketch of the Essence of the Idea of Elementary Education*, for a meeting of the Brugg Society for the Promotion of Education, at which he was present.

**Educational Theories** — Though Pestalozzi never wrote a clear, systematic, and complete account of his theories, his writings and work give the material for a definite outline of his views. Fischer, Chavannes, Jullien, Niederer, Moir, Mayo, Krusi (junior), and Payne have all given such outlines. The foundation of his doctrine is that all human development and power spring from possibilities native to the human being, *i.e.* "the growth of man is God's work, and the result of universal laws conferred on his nature", that "the moral, spiritual, and artistic capabilities of our nature must grow out of themselves", that "a man's powers are all part of an organic whole", that "nature develops all the human faculties by practice, and their growth depends

upon exercise"; and that man's development is itself organic, *i.e.* "the individual and separate organs of his being form themselves gradually into unison." Hence, the function of the educator is to assist "nature's march of development" so as to secure a natural, symmetrical, and harmonious progress, thus "improving the tendencies and powers of humanity." These fundamental truths lead to the following general principles: (1) *Education must be essentially religious*, since man has a divine origin and end. (2) *Education must develop man as a whole*. It must draw out all his moral, mental, and physical powers, in a balanced and harmonious progress at every stage, "the development of human nature, the harmonious cultivation of its powers and talents, and the promotion of manliness of life—this is the aim of instruction." We must develop the powers of "the head, the hand, and the heart," concurrently and according to the nature of each. (3) *Education must guide and stimulate self-activity*. "The only means of development our powers possess is their use." The educator must do as little as possible, his work consists "in a continual benevolent superintendence—giving a helping hand to the instinctive efforts after self-development." (4) *All education must be based upon intuition and exercise*. This is Pestalozzi's great theory of *Anschauung* (*qv*), by which he means "the immediate and direct impression produced by the world on our inner and outer senses, *i.e.* the impressions of the moral world on our moral sense and the physical universe on our bodily senses." Sense experiences need to be elaborated and organized through observation, and the learner must, therefore, acquire a true art of observation, *i.e.* the thorough and exact grouping, separating, and combining of objects. (5) *Education must observe a right graduation and progression in development*, for "there is in nature an order and march of development, and if you disturb or interfere with it you make the powers of the mind weak, unstable, and unbalanced." "Each child should be taught that which he has to learn at the time his nature calls for it, for this is proof that his sensibility and power are ready for it." The child repeats the history of race in its development. Each stage of development must grow out of the preceding and into the following stage by scarcely perceptible additions. Mind and body are one, and, therefore, practical power must develop with knowledge, and practical skill with insight. Both must proceed from the known to the unknown; the simple to the complex; and the near to the remote, and always in relation to the experiences of real life. (6) *Education must foster the growth of knowledge through the development of ideas*. From mere vague impressions the mind must evolve values and meanings. From "a swimming sea of confused sense-

impressions" some one thing stands out as a separate something, *i.e.* the person has a *distinct* idea of it. Next it may be observed more fully and in detail, so that the person can describe it accurately, *i.e.*, he has a *clear* idea of it. By further analysis and by combining and comparing it with other objects, he is able to define it, or state its essential qualities so as to mark it off from all other objects, *i.e.* he has a *definite* idea of it. This progress of ideas is obtained through getting to know how many, and how many kinds, of objects appear in consciousness, investigating what their form and outlines are, and abstractly thinking about these by the help of words, *i.e.* through number, form, and language.

From the foregoing six principles follow certain practical rules for the educative process: (1) *An all-round training must be given*. (2) *All possible liberty must be allowed to the learner*. "The nature of the child must determine all the details of his education." Enlightened affection and confidence, and geniality, must exist between teacher and pupils. (3) *Work is more important than words*. "Work in general is the surest of all exercises for the attention," and "man is much more truly educated through that which he does than through that which he learns." Knowledge without practical power, or insight without the ability to apply it, is a "fearful lot for a human being." Words may "not only destroy the powers of attention to the impressions of nature, but mar the very susceptibility toward them." Our activities are "the sense-foundation of our virtues." (4) *The method of learning must primarily be analytic*, *i.e.* based upon the analysis of experience. "We put our children on the road which the discoverer of the subject himself took, and had to take." A pupil at Yverdon writes "we are made to invent geometry, the masters contenting themselves with pointing out the end to attain, and putting us on the road to it." (5) *Realities must come before symbolism in learning*. "Elementary education must aim at establishing connections between the child and the realities of his actual life." Sense-perception is the one sure basis of thought and judgment which are developed through language, and therefore this order must be observed, whilst maintaining harmony between experience, thought, and language. Hence, the great importance of object lessons and science. We "get knowledge by our own investigation, not by endless talk about the results of art and science." "I desire to make the effect of words and talk on the mind of little account, and to secure that dominating influence proper to the actual impressions of physical objects." (6) *Organization and correlation are necessary*. This applies to the relations between mind and body, the nature of the child and of knowledge, and the pupil and school conditions. H. H.

**Pestalozzi's Influence** — The influence of Pestalozzi very soon spread over Europe and into this country. His influence was most profound in Germany, where Pestalozzian methods were employed as the means for the regeneration of the country after the disaster at Jena. Young Germans were sent to Switzerland to study by the side of the master and returned to their country full of enthusiasm for the new movement. Among these the following may be mentioned, while for further details the reader is referred to the separate articles: Fichte, Froebel, Herbart, Ritter, Harnisch, Zeller, Ramsauer, Plamann, Dinter, Diesterweg, and many others, who contributed by a reconstruction of theory or practice to the reform of methods of instruction in elementary schools and in the training of teachers. In another direction Pestalozzian influence was also powerful; namely, the reform of philanthropic educational institutions and orphan asylums. In Switzerland Pestalozzian methods were early adopted, and through his immediate assistants Pestalozzian influence soon made itself felt. Among these may be mentioned Hermann Krusi, Sr. (*qv*), Gustav Tobler, Nageli (*qv*), and De Guimps, while the work of Fellenberg, Wehrli, and Père Girard (*qv*) was also inspired to some extent by Pestalozzi.

At the time when she might have profited greatly by the Pestalozzian movement, England was too deeply interested in the monitorial system of the two educational societies. But she was not entirely unaffected by the movements, for through James Pierrepont Greaves (*qv*) and the Infant School Society (see INFANT SCHOOLS), and through the Mayos, Charles and Elizabeth (*qv*), and the Home and Colonial School Society (*qv*), some little influence was exerted on English education, even though in the latter case it was somewhat perverted.

In no other country, perhaps, was the Pestalozzian movement so widespread as in the United States. Introduced and naturalized by William Maclure (*qv*), the practical side was well illustrated by Joseph Neef (*qv*), whom Maclure induced to come to this country. The work was a few years later taken up in New England, and its chief representatives were William Russell, J. G. Carter, Charles Brooks, William C. Woodbridge, A. Bronson Alcott, Lowell Mason, and Henry Barnard (*qqv*). This influence was expressed not only in the introduction of reformed methods in schools, but in the foundation of normal schools and a greater interest in public education. The strongest influence, perhaps, radiated from Oswego (see OSWEGO MOVEMENT), whither by different routes the Pestalozzian influence found its way and where too it led to improved schools and the training of teachers. Trained by Edward A. Sheldon and his daughter Mary Sheldon Barnes and by Hermann Krusi, Jr.

(*qqv*), teachers in turn spread the Pestalozzian movement far and wide in this country. The culminating point of the movement may be said to have been reached in the introduction of Pestalozzian methods in the schools of St. Louis by W. T. Harris (*qv*). Elsewhere the influence of Pestalozzi, if it went no further, may be recognized in the introduction of object teaching (*qv*) into the schools. H. H.

See GERMANY, EDUCATION IN; INFANT SCHOOLS, OBJECT TEACHING, OSWEGO MOVEMENT, and the articles on Pestalozzi's assistants, e.g., GREAVES, KRUSI, NEEF, NIEDERER, MAYO, etc.

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**PESTALOZZI-FROEBELHAUS** — An institution established in Berlin for the propagation of Pestalozzian and Froebelian methods and the training of kindergarten teachers. The departments of this school are (1) a public kindergarten for children from 2½ to 6, (2) an intermediate class for children from 6 to 6½, (3) an elementary class for children from 6 to 7½, (4) manual trade school for boys and girls up to 14, (5) a cookery school, and (6) training school for kindergarten teachers. (For photograph of the school, see article on KINDERGARTEN.)

**PESTALOZZI VEREIN** — The name borne by a large number of elementary teachers' benevolent associations in Germany for the support primarily of orphans and widows of

teachers. To celebrate the centenary of Pestalozzi's birth, a movement was begun under Diesterweg's (*q.v.*) influence to found a number of orphanages. It was soon felt, however, that it would be preferable to establish a fund to board out orphans and not deprive them of family life. The Pedagogical Association of Dresden established the precedent. In 1846 a number of other organizations bearing the title of *Pestalozzi-Verein* sprang up, and in fifty years spread throughout the whole of Germany. The purposes of the funds were soon gradually extended,—a change made possible by the improved conditions of the teachers in the shape of higher salaries, pensions, and provision for widows and orphans. The funds are now used for the support of (1) orphans up to the age of fourteen or fifteen, (2) of orphans beyond those ages, (3) of widows, (4) of the blind, (5) of needy and convalescent teachers. The funds are obtained from voluntary contributions, concerts, and sales of books, songs, magazines, calendars, etc. A number of societies, however, have practically become insurance companies by making support and its amounts depend on fixed contributions. In this way they have placed themselves under the Imperial Law for Private Insurance Enterprises of 1901.

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## PESTILENCE — See EPIDEMICS

## PETER THE LOMBARD (1100–c 1160)

— Theological teacher born at Novara in Lombardy. He studied at Bologna, Rheims, and Paris. At Paris he was, probably, a pupil of Abélard. It is certain, in any case, that he was a careful and sympathetic student of Abélard's method. After being advanced to several ecclesiastical dignities, he was made Bishop of Paris about the year 1158. He soon resigned his see, and died at some time between that year and 1160. Peter owes his importance in the history of education to his *Books of Sentences* (*Quattuor Libri Sententiarum*) written about the year 1145, or, perhaps, a few years later. Although the book and the method which it embodied met with violent opposition at first, especially from the mystics of the School of St Victor, both ultimately prevailed. The *Sentences* became the textbook of theology in the Schools, it was commented on by all the great teachers in the thirteenth century; its arrangement of topics was followed and its method adopted in all the subsequent *Summae*, or textbooks of theology. In substance it is orthodox, although a few propositions taken from it were formally condemned. It was recognized by the academic authorities in Paris and Oxford in the thirteenth century as the official textbook,

the candidate for the degree of *Magister* being obliged to lecture on the *Sentences* for two years. The essence of its method is dialectical. It is, however, positive, also. Its quotations from the Fathers and the Scriptures are abundant, and one of its chief merits is that it makes use of the *Decretum* of Gratian of Bologna (about 1140). W. T.

## See SCHOLASTICISM

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## PETRARCH, FRANCESCO (1304–1374)

— The great Italian poet and humanist, born at Arezzo, whither his father had fled from Florence. After several changes the family removed to Avignon in 1313, where Francesco studied the humanities for four years under the direction of Conventino of Prato. But his studies did not accord with the wishes of his father, and in 1319 he was sent to Montpellier to prepare for the legal profession. On the death of his father, in 1327, however, he returned to Avignon and shortly after took priestly orders. It was about this time that he met Laura, who inspired his *Canzoniere* and *Sonnets*, which brought him into marked prominence and won for him the favorable notice of men of influence. In 1333 Petrarch yielded to a restless desire to see the world and visited Paris, Ghent, Boulogne, and Liège, meeting well-known scholars and adding to his collection of classical MSS. In 1337 he withdrew to a quiet retreat at Vauchuse, near Avignon, and there published the Latin epic on *Africa*, on the appearance of which he was hailed as the poet laureate of Italy. In 1341 he received the laurel crown from the hands of a Roman senator upon the hill of the Capitol.

During this period three events took place of some importance in shaping Petrarch's life and thought. In 1345 Cicero's *Familiar Letters* were discovered, and Petrarch became the eager student of that famous Roman whom he always acknowledged as his master. In 1348 Laura died, and there can be no doubt that her death was a profound loss to the poet she had so long inspired. But two years later, while passing through Florence on his way to the jubilee at Rome, Petrarch met Boccaccio and then began what was destined to be the deepest and most satisfying friendship of his life. It was beyond question Petrarch's eager

enthusiasm for the new learning which inspired his friend and made of Boccaccio another powerful instrument in the spread of humanism

In 1353 Petrarch abandoned Vauluse and took up his home in Milan at the court of the tyrant, Giovanni Visconti. Here he held the position of court orator and ambassador, and was sent upon many brilliant missions, notably to Charles IV in 1356. His final home was made at or near Padua under the patronage of the despot Francesco di Ferrara. Here, in his later years, he met the Byzantine Greek teacher Leontius Pilatus, and apparently made an earnest attempt to learn the Greek language. But it is clear that he never mastered its difficulties, for in his well-known letter to Homer (*Fam.* XXIIV, 12) he acknowledges that he was "not so fortunate as to have learned Greek." In 1369 Petrarch sought the quiet of the little village of Arquà in the Euganean hills, where he studied with the most unremitting industry, employing a large number of secretaries and copyists. Here he was found dead among his manuscripts and books on July 18, 1374.

The personality of Petrarch is hardly less interesting to the student than his work. In him first flamed the ideal of self-culture, interpreted as the development of a free, enlightened personality through the medium of classic prose and verse. Religious as he was, the conflict between his spiritual interests, as he conceived them, and his intellectual desires was a very real one. Introspective interest in his own mental states, his own soul struggles, mark Petrarch as the first modern man in this regard. The reader has only to scan the pages of his *Confessions* (*De Contemptu Mundi seu suum Secretum*) to appreciate how conscious of self, of the interest and worth of personal aspiration and struggle, is this pioneer of a new intellectual world-order. While he heaped contempt upon the Averroists for a materialism closely bordering upon atheistic impiety, he yet found it difficult not to regard the great classics of Rome with the same veneration that he bestowed upon the Scriptures. To his impassioned mind Homer, Cicero, and others of the ancient writers lived again, and in his *Letters* he addressed them with enthusiastic greeting. Animated by his ideal of self-culture, he refused appointments which few men would have felt justified in rejecting. Yet in the very heart of his ideal were elements of weakness which increasingly characterized the intellectual revival for which he labored—the tendency to define self-culture as æsthetic and literary appreciation rather than in terms of a dominating social and moral conviction.

When we turn to the scholarship and achievements of Petrarch we cannot fail to recognize the unique character of his services to human culture. He was indefatigable in

his zeal for the collection and accurate transcription of manuscripts. Possessed of a truly remarkable power of arousing enthusiasm in others, he influenced a wide and varied group of acquaintances, through his vivid personality and his no less vivid correspondence, and enlisted them in the cause of the new enlightenment. He was in truth the mouthpiece of his age, voicing with enthusiastic conviction what other men felt more vaguely. His scholarship was genuine, if not profound, and was the product of years of intense industry and careful analytic thought. His zeal for the exact transcription of the precious MSS., thus far collected from musty corners of schools and monasteries, led him bitterly to deplore the careless methods of the copyists of his day.

Petrarch's writings comprise his Italian verse (*Canzone* and *Sonnets*), his Latin *Ecolques* and *Epistles*, with the epic of *Africa*, his *Historical Anecdotes*, *Lives of Famous Men*, *Life of Julius Cæsar*, and certain miscellaneous writings, including the *Confessions*, *Orations*, and minor *Essays*. There should be added two serious works on *The Life of Solitude* and *On Monastic Leisure*. His library, dedicated to the Republic of Venice, probably never reached that city. After passing through the hands of the tyrants of Padua and Pavia, twenty-six volumes found their way to the National Library in Paris, where they now remain. A few of his other manuscripts are divided among the cities of Rome, Florence, Padua, Milan, and Venice; but a large number have never been accounted for.

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#### SEE RENAISSANCE AND EDUCATION

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**PETTY SCHOOL** — Schools or classes preparatory to grammar schools in England. The grammar school did not admit pupils until they had learned their "accidents." The petty school received pupils from the age of five and kept them until they could be admitted to the grammar schools, or about three years. The curriculum consisted mainly of learning the A B C and reading of English, with elements of Latin grammar. The term "petty school"

did not come into use until the seventeenth century, but the terms "petties," "petits," "pettetes," primarily young children, are already found in the preceding century for lower school pupils. The master of the grammar school was not expected or compelled to teach the petties, they might be under the charge of an usher, or the master might "assign so many of his scholars in the third and fourth forms as may suffice to instruct them" (Guisbrough Grammar School, 1561). Of course the preparatory training of the petties might be given by private schoolmasters, dame schools (*q v*), song schools (*q v*), etc. As used by Hoole (*q v*) in his pamphlet on the *Petty School*, the use of the term is extended to include not only pupils preparing for the grammar school, but those who are unable to profit by a grammar school education and remain in the petty or elementary school for a curriculum including English literature, writing, and arithmetic. This use may be compared with the *Petites Ecoles* (Little Schools) of the Gentlemen of Port Royal (*q v*), a use of the term which was common in Paris in the Middle Ages for elementary schools, as opposed to the high or grammar school (*Grande École*) under the chancellor.

See ABCDARIANS

**PETTY, SIR WILLIAM** (1623-1687) — Political economist, born at Romsey, England, the son of a clothier. After attending the grammar school at Romsey and early showing considerable mechanical ability, he went to sea, and later entered the Jesuit College at Caen in France. For a brief period he was in the royal navy, but later he studied at Utrecht, Amsterdam, and Leyden, whence he proceeded to Paris, where he met Hobbes and Father Mersenne, mathematicians and friends of Descartes. On his return to England he took up his father's business for a time and invented a manfolding machine, the "Pentograph," which brought him considerable fame. He again took up the study of medicine, which he had begun at Leyden, and took the degree of Doctor of Physic at Oxford in 1649 and became fellow of Brasenose College and professor of anatomy in 1651. He was appointed physician-general to the army in Ireland in 1652, and while there helped to survey the country in a scientific manner and with much rapidity and thoroughness. At the Restoration, Petty, who sympathized with the Cromwellian party, was deprived of his appointment, settled in London, and became a member of a scientific coterie there. On the incorporation of the Royal Society (1662), which in part was inspired by an early work of his, Petty was knighted. He devoted much time to mechanical inventions, among them "a wheel to ride upon" and a double-keeled vessel. Both Evelyn and Pepys speak in high praise of his versatility.

Of his writings the larger number deal with

questions of political economy. He urged the establishment of a statistical bureau, and himself wrote a number of essays in *Political Arithmetick*. In 1662 he wrote a *Treatise of Taxes and Contributions*, which gives a correct account of the origin of wealth. In the field of education, his most interesting work is the *Advice of W P to Mr Samuel Hartlib, for the Advancement of some particular Parts of Learning*, written in 1647-1648. It consists of four parts. The first commends Hartlib's proposed *Office of Publicke Addresses*, a central bureau of information, research, and compilation of bibliographies. Various departments are described and in their comprehensiveness recall Bacon's *New Atlantis*. The "Gymnasium Mechanicum or Colledge of Tradesmen for the Advancement of all Mechanical Arts and Manufactures" was to be an institution for the encouragement of workmen to perfect their work, they were to be granted free dwellings and fellowships to encourage them in continuing at their particular branch. The study of pure science was to be pursued at the "Nosocomium Academicum," a combination of hospital, museums of different kinds, observatory, library, collections, "an Abstract of the whole world."

The education of children is dealt with in the second part of the *Advice*.

Petty in his comprehensive view of the school does not neglect the teachers, and hopes that "the business of education should not be (as now) committed to the worst and unworthiest of men, but . . . be seriously studied and practised by the best and ablest persons." To this end he recognizes the value of a study of individual children and advises "That effectual Courses be taken to try the Abilities of the Bodies and Minds of Children, the strength of their Memory, inclination of their Affections either to Vice or Vertue, and to which of them in particular, and withall to alter what is bad in them, and increase and improve what is good, applying all, whether good or bad, to the least Inconvenience and most Advantage."

Petty's *Advice* should be classed with Milton's *Treatise* and Locke's *Thoughts* among the most valuable contributions to the development of educational theory in England.

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**PHARMACY, EDUCATION IN. — Historic Development** — In order to understand the present status of pharmaceutical education in this country, it is necessary to recall that, unlike the learned professions, pharmacy is still clinging to the apprenticeship system, and this in spite of the universally recognized



deterioration of the modern drug store as an educational factor

Though the pharmacist has had his precursors in antiquity and during the middle ages, he traces his direct descent from the Italian apothecary of the Renaissance, who had his professional birth in the edict of 1224, issued by the emperor Frederick II. This edict created the public apothecary and established his relation to the physician and to the public. From Italy the apothecary crossed the Alps into Germany, France, and England. Although some of the apothecaries completed their education at the Italian and later at other universities, the large number were trained exclusively in the shops of their preceptors. In England they seem to have played, at least in part, the rôle of assistants to physicians, as seen in Chaucer's *Canterbury Tales*, later they entered into serious competition with the physicians, and since the beginning of the eighteenth century have been licensed as general medical practitioners. Their place as apothecaries, in the continental meaning of the term, was filled by the present-day chemist and druggist.

In Paris the apothecaries were organized into a gild, first with the wealthy spicers, later independently of them. As such they had charge of the education and examination of apprentices. Shortly before the French Revolution the apothecaries' gild of Paris was reorganized as a college of pharmacy, *i.e.* as a corporation of the master pharmacists. Being thus proclaimed as professional rather than as commercial men, the duty of the proper education of their apprentices was thereby made more important than before. However, the Revolution disposed of all special privileges. Since then the education of the prospective pharmacist has been regulated by the state.

In Germany, where the system of concessions of apothecary shops was continued after the political and economic reorganization that followed the Napoleonic wars, the apprenticeship was taken very seriously. The apothecary shop served not only as a means of educating the pharmaceutical apprentice, but, before the days of Liebig's laboratory at Giessen, also as almost the only means of acquiring a practical knowledge of chemistry. Hence Liebig, although he wanted to become a chemist, served an apprenticeship in the apothecary shop at Heppenheim. Indeed, it would seem that Trommsdorff's private school, maintained in connection with his apothecary shop at Erfurt, must have suggested the idea of laboratory instruction to Liebig.

In England the development of pharmacy was hampered not only by commercial, but by medical tendencies. Among the small traders on Chepe Street, London, were the spicers and pepperers, the latter being organized into

a gild as early as 1180. Out of these developed the grocers, the sellers *en gros*, who received their first charter in 1429. On them were conferred the charge of the king's beam, the exclusive power of garbling drugs, spices, and imported merchandise, and the duty of examining the drugs and medicinal wares sold by the apothecaries.

The earliest apothecaries in England appear to have come from France in the fourteenth century. Not satisfied with the mere preparation of medicaments, they soon indulged in medical practice. Their charter of 1617 freed them from their old enemies, the grocers, but their medical practice brought them into conflict with the College of Physicians incorporated in 1511. After a long quarrel, in which even men of letters took part, the apothecaries came out victorious in 1703, since which time they have been recognized in England as medical practitioners. Preferring the keeping of shop to medical practice, some of the assistants of apothecaries, as well as others, developed into druggists proper, such as was Druggier, one of the characters of Jonson's *Alchemist*. Conflict between these and the apothecaries over the recommendation of medicines for the sake of gain, led to the incorporation of the Pharmaceutical Society of Great Britain in 1842, which was given power to control its own educational policy.

Such a development, coupled with the general *laissez faire* policy of England, could not produce a highly developed calling of the pharmacist. The chemist in England, as Liebig wrote to his friend Woehler in the fifties of the past century, is not a chemist but an apothecary. Yet according to English laws, the apothecary is a general medical practitioner, not an apothecary or pharmacist in the continental sense of the word.

**United States** — Although the colonies and the original thirteen United States obtained such meager pharmaceutical literature as was available to them almost entirely from Great Britain, the idea of organizing local colleges appears to have been taken from France. Thus, when the University of Pennsylvania in 1821 took steps to improve the educational status of the local apothecaries, some of the Philadelphia druggists resented this as interference, and organized a college of pharmacy, *i.e.* a corporation of local druggists. One of the objects of this body was to provide more systematic instruction than could be offered to apprentices in the exacting occupation of drug-store life. Evening lectures during the winter were provided and a "school" was started by the college.

The other larger cities followed the example of Philadelphia in the organization of some of the more ambitious local druggists as colleges of pharmacy, *viz.* Boston in 1823, New York in 1829, New Orleans in 1838, Baltimore in 1841, Cincinnati in 1850, Chicago in 1859,

St. Louis in 1864, Mobile in 1866. But whereas the Philadelphia College of Pharmacy began its educational activities almost immediately, the Massachusetts College of Pharmacy, although the second to effect organization, did not seriously assume its educational obligations until 1868.

As already pointed out, these colleges of pharmacy were corporations of local druggists organized for general professional purposes. Incidentally most of them provided more or less regular courses of evening lectures for the benefit of their apprentices, and later for such others from a distance as did not enjoy similar advantages at home. An attempt to foster pharmaceutical education by means of a conference of delegates of the colleges—not of the faculties of their schools, it should be noted—was made between the years of 1870 and 1882, but failed. During this period six new colleges were organized, viz those of Louisville (1870), San Francisco (1872), Washington (1872), Pittsburg (1878), Albany (1881), Cleveland (1882).

It was about this time that the state universities of the old Northwest Territory began their period of phenomenal development. The University of Michigan, which had given pharmaceutical instruction since 1868, reorganized this department in 1876. Wisconsin followed in 1883, Indiana in 1884, Ohio in 1885, Illinois in 1887 (since abandoned for an affiliation with the Chicago College of Pharmacy). Since then many states west of the Mississippi have offered similar courses of instruction. Owing to the lack of endowment or other support, the older colleges had to restrict their required instruction to lectures and occasional quizzes. With the state universities, the laboratory at once took its place as one of the most important means of imparting instruction in the basal sciences and their pharmaceutical application.

The fourth period is that of the second conference, the Conference of Pharmaceutical Faculties, organized in 1900. Of possibly more than eighty institutions in the United States, thirty-two belonged to this conference in 1910. Its standards are still very low, but it must be remembered that, until favored by legislation, the older eastern colleges had no entrance requirements whatever. Although a prerequisite law has been in force in the state of New York since 1905, the minimum number of hours of instruction demanded by the Department of Education does not yet exceed 1200 hours, about one half of which must be laboratory work. The state universities demand about twice this amount in their two-year courses. Based on one year of high-school work as a general preparation, and in many states not even that, pharmaceutical education in this country has still much to strive for.

In order to appreciate why such a low standard prevails in spite of the desire of many

an institution to raise the standard, it is necessary to know that the state boards of pharmacy, and not the educational institutions, are the controlling factor. Since about 1875 the practice of pharmacy has been controlled in one state after another by legislation. These state pharmacy laws have created state boards which pass upon the qualification of candidates for registration. As a rule, two classes of pharmaceutical practitioners are recognized by these laws: first, the registered pharmacist, who enjoys full privileges in the practice of his calling, and second, the assistant pharmacist, who enjoys limited privileges only. Until recently no special schooling of any kind was demanded. In addition to the requisite four or five years of drug-store experience demanded by law, the prospective pharmacist could prepare himself for the state board examinations in whatever manner he saw fit. Quiz compends and cramming schools have played an important rôle in this preparation for the state boards. Correspondence courses have also given some aid. Inasmuch as in the case of failure a candidate can repeat *ad libitum* his experience before the board, these examinations themselves have been a farce.

New York was the first state to have a pharmacy law. About thirty-five years later it became the first state to enact prerequisite legislation, *i. e.* legislation making graduation from a recognized school a prerequisite to the state board examination. Similar legislation will no doubt spread. Thus a minimum of technical education will gradually be provided for, but the even more fundamental general education is still in a sad plight. Only a few universities have thus far been in a position to demand graduation from a high school or similar preparation as a prerequisite for a course in pharmacy.

In like manner as the pharmaceutical faculties have organized for conference, so the state boards have organized a National Association of Boards of Pharmacy. Much good in the way of harmonizing ideas and even requirements has already been accomplished. So long, however, as these boards are composed exclusively, or well-nigh so, of retail druggists, much progress cannot be expected. The several boards of pharmacy, medicine, health, etc., of a given state will have to be reorganized into one board of health and sanitation, on which pharmacy is represented, before any radical change can be expected.

Yet in spite of this rather unfavorable state of affairs progress is being made. While the grandeur of buildings, not infrequently burdened by a heavy debt, is the most striking outward sign, more subtle forces for advancement are at work. In 1892 the University of Wisconsin for the first time offered a four-years' course, on a par with the regular college course, leading to a bachelor's degree. Since then a number of other universities have

followed. Thus, a very different ideal is being held up to the pharmacy student. Even graduate work is being done.

With the older colleges, the school work was and still is supplementary to the training received by the apprentice in a drug store. At first certificates of attendance upon lectures were given, later the degree of graduate in pharmacy was conferred. The University of Michigan early followed English practice and gives the degree of pharmaceutical chemist. Some institutions also gave the degree of bachelor of pharmacy. A number of the eastern institutions now give the degree of doctor of pharmacy. The University of Michigan first broke away from the drug store experience requirement for graduation. Even the older colleges of the East now offer courses and degrees to those who have not had such experience, but this is not the rule. In many of the colleges of pharmacy of the larger cities, the college work is so arranged that the student can spend more than one half of his time in the drug store while attending college. All of the colleges belonging to the Conference, however, have abandoned evening instruction, though to a large extent they still maintain the character of a *Fortbildungs-Anstalt*.

**Germany** — In Germany a compromise system also exists, but on a much higher plane. The apprentice must have passed the *Ein-jährig Freiwilligen Examen*, i. e. he must have passed the *Unter-Sekunda* of the *Gymnasium*. After an apprenticeship of three years he takes the assistants' examination before a local board. After three years as assistant he goes to the university for four semesters and then presents himself to the state board, consisting mostly of university professors, with one or more *Apotheker*. Not a few German pharmacists, however, have completed the entire course of the *Gymnasium*, have continued their university studies after the *Staatsexamen*, and have taken the degree of Ph. D.

**France** — While Germany recognizes a second class of pharmaceutical practitioners, viz the *Drogist*, France has abolished its second-class pharmacists as well as the former herbalist, and now recognizes but one class, viz the pharmacist of the first class. Although the apprenticeship still plays a rôle in the education of the French pharmacist, only such pharmacies may now accept apprentices as are licensed for this purpose by the Superior School of Pharmacy. The Paris school is a part of the University of Paris and gives a three years' course for *pharmaciens*, and four years for *pharmaciens supérieurs*. Like many a German *Apotheker*, so not a few French *pharmaciens à première classe* continue their university studies for the degree of doctor of pharmacy, which in France is in every way the equivalent of the degree of doctor of philosophy. (See FRANCE, EDUCATION IN, under HIGHER EDUCATION.)

**England** — As already indicated, in England the examination of the Chemist and Druggist has been the special privilege of the Pharmaceutical Society of Great Britain since 1868. This society maintains a school in Bloomsbury Square. Still, most of the candidates for this diploma attend other schools. The course for the Chemist and Druggist at Bloomsbury Square covers one year. A second year is offered for those who aspire to the honors of Pharmaceutical Chemist. A movement is on foot to improve the educational status of the British pharmacist. One suggestion looks toward the establishment of a five-year curriculum, or more correctly an apprenticeship of five years, supplemented by systematic science courses in the technical schools conducted by the county committees or boards. So long as the education of the future pharmacist is a special privilege rather than a public duty, no fundamental reforms can be expected. Recently some of the newer universities have taken up the subject of pharmaceutical education neglected by the older ones. With these may rest the higher development of pharmaceutical education in Great Britain.

**Other Countries** — In Austria, Switzerland, and the Scandinavian countries, also in Russia, pharmaceutical education follows, more or less, along German lines. The other Romance countries follow France to the extent of their ability. E. K.

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**PHELPS, ALMIRA HART LINCOLN** (1793-1884) — Pioneer in the movement for the higher education of women and author of many science textbooks, was educated in the Berlin (Conn.) Academy and studied botany, geology, and chemistry privately under Professor Amos Eaton (*qv*) of the

Rensselaer Polytechnic Institute at Troy. She taught in the district schools of Connecticut, was instructor of science in academies at Berlin, Conn., Pittsfield, Mass., and Sandy Hill, N.Y. For several years she was an instructor in the Female Institute at Troy, N.Y., conducted by her sister, Mrs. Emma Willard (*qv*). She was later principal of a school at West Chester, Pa., and her last work was as principal of the Patapasco Institute at Ellicott's Mill, Md., where she trained many distinguished women teachers. She was an ardent advocate of the scientific *vs.* the classical and literary education for women; and she was the second woman (Professor Maria Mitchell was the first) to be elected to membership in the American Association for the Advancement of Science (*qv*). Her publications are numerous, *Lectures on Botany* (1828), *Dictionary of Chemistry* (1829), *Botany for Beginners* (1833), *Female Student* (1833), *Geology for Beginners* (1834), *Chemistry for Beginners* (1835), *Lectures on Natural Philosophy* (1836), *Natural Philosophy for Beginners* (1836), *Lectures on Chemistry* (1837), and *Hours with my Pupils* (1858). With her sister, Mrs. Willard, she translated from the French (1834) Mme. Necker de Saussure's (*qv*) *Progressive Education*. She wrote many papers on the higher education of women, several of which were translated into French, and she was active in the American Association for the Advancement of Education (*qv*).

W S M

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**PHENOMENALISM** — A name given to two different types of philosophy. According to one theory, what we know is simply the appearances of real things, these appearances consisting of the impressions which they make upon the mind. This view includes within itself many philosophies otherwise diverse from one another. Kantian phenomenalism, for example, is distinguished by the emphasis which it lays upon the synthetic activity of *a priori* powers of the mind in transforming passive impressions into objects concerning which universal judgments are possible. Spencerian phenomenalism emphasizes the fact that the unknowable things-in-themselves have gradually molded the mind, through heredity, in the long-continued evolutionary process, so that the impressions made upon it arrange themselves in modes which somehow parallel the relations of things-in-themselves. The other type of phenomenalism is radical. It holds that there are no things-in-themselves back of the phenomena and causing them, but things are what they are known to be. Shadworth Hodgson in England and Renouvier in France are the best known modern representatives of this kind of phenomenalism. Its

influence in developing the radical empiricism of James was considerable. J D

**PHILADELPHIA CENTENNIAL EXPOSITION** — See EXPOSITIONS, INTERNATIONAL, AND EDUCATION

**PHILADELPHIA, CITY OF.** — The chief city in the state of Pennsylvania, and the third city in size in the United States. Its population in 1910 was 1,549,008, which was about one fifth of the total population of the state.

**Educational History** — The colonial history of education in Philadelphia has been traced, under the history of education in the state of Pennsylvania (*qv*). Private and denominational schools were established from time to time, and these supplied the educational needs of the city until the nineteenth century.

The state laws of 1802 and 1809 provided for the organization of pauper schools, but not much was accomplished in the city under it. Under a supplement to the 1809 law, secured in 1812, the county commissioners and the councils were enabled to organize a few schools. In 1814 the "Pennsylvania Society for the Promotion of Public Economy" was organized, with Roberts Vaux as chairman of the subcommittee on public schools. In 1817 a number of schools after the Lancasterian plan were opened in Philadelphia, and in 1818, as an outcome of agitation, the legislature organized the county of Philadelphia as the First School District of Pennsylvania, and provided for the education of the children of the city at public expense. The city was divided into school districts, directors were appointed, one for each section, to be known as the Board of School Controllers. The beginnings of the dual control, which so long continued, were here made by giving the appointment of teachers to the directors for each section. The schools were open only to indigents. A model school, under Joseph Lancaster himself, was opened in 1818 for the training of teachers. In 1827-1828 three Infant School Societies were organized in Philadelphia, and by 1830 some ten such schools were in existence in the city. In 1832 the Controllers opened an Infant Model School for the training of teachers for the Infant Schools, and in 1837 thirty primary schools, under the charge of women teachers, were established as a result of the movement. The model school lapsed and became a grammar school after four years, and the real city normal school was not established until 1848.

In 1827 "The Society for the Promotion of Public Schools" was organized, and this Society undertook to agitate for a better public school law. The state law of 1834, establishing a general system of common schools (see PENNSYLVANIA, STATE OF), was in part the result of the work of this Society. The revised law of 1836, which really estab-

lished the system, contained two provisions of special interest to the city of Philadelphia. By the first, the Board of Controllers of the Public Schools were authorized to establish a central high school, and by the second, the obligatory use of the Lancasterian system and the limitation of the schools to indigents were withdrawn. The central high school was opened in 1838. This was followed, in 1848, by the establishment of the Girls' High and Normal School, the first city normal school in the United States.

In 1854 the Consolidation Act combined the city and county of Philadelphia, and annexed a number of suburban towns. For each of these a new sectional board was created, and local or sectional interest now attained new importance. Gradually increasing with the growth of the city, there were 31 sectional boards with 403 members by 1880, 34 sectional boards with 455 members by 1889, 41 sectional boards with 533 members by 1900, and 43 sectional boards with 559 members by 1905. In that year the law was revised; the old Board was legislated out of office, a Board of Education of 21, appointed from the city at large by the judges, took their place, and the local boards, while continued, had their powers materially curtailed. The new Pennsylvania school code of 1911 made still further changes.

**Present School System** — The control of the schools of the city is vested in a Board of Public Education of fifteen, appointed by the Judges of the Court of Common Pleas of the city, and for six-year terms. One third go out of office each biennium. For each of the municipal wards of the city a Board of School Visitors of seven members is elected, for four-year terms, approximately one half going out of office each biennium. The members of these Boards of School Visitors are paid \$25 (formerly \$100) a year, are required to visit the schools every three months and inspect them, and to make reports as to their inspection and as to the needs of their district to the Board of Public Education. They may also appoint the janitors for the elementary schools of their ward. The City Controller is elected as controller for the Board of Education, and approves all orders on the school treasurer, certifies to all contracts made, and keeps a record of the budget and funds of the Board. A Secretary is elected from outside the Board, while the City Treasurer acts as treasurer for the Board. The Board also elects a Superintendent of Buildings, a Superintendent of Supplies, and a Superintendent of Schools. The Board of Education defines the general policies of the school system, enacts all necessary legislation, determines the tax levy and directs expenditures, appoints teachers and other employes, and determines the qualifications and salaries of all employes. The supervision of the school system is vested

in the Superintendent of Schools, the associate superintendents, and the assistant (or district) superintendents. The supervision of instruction is in the hands of the school principals and of the assistant superintendents. The Board may appoint a board of city examiners, on nomination of the Superintendent of Schools, to examine teachers for the city, and of this board the Superintendent is *ex officio* chairman. The Superintendent of Buildings must be an architect or an engineer, and he has charge of the building, repair, and maintenance of all school buildings. He appoints all of his assistants, and all janitors, except for the elementary ward schools, and may remove even these for cause. The Superintendent of Supplies makes all purchases of supplies and books, and attends to their distribution. The Board may levy an annual city tax of not less than five nor more than six mills, for all maintenance purposes. They may also issue bonds for sites, buildings, or debts, up to a total of 7 per cent of the assessed valuation of the city. If the school debt is less than 2 per cent, the Board may borrow money on notes, up to  $\frac{1}{2}$  of 1 per cent. They may also designate any bank as a depository for the school funds.

The school system of the city contains a large number of different types of schools, adapting it to the needs of a large and cosmopolitan city. A city normal school, with a three-years' course beyond the high school; the central high school for boys, with a School of Pedagogy as an adjunct, two high schools for girls, one of which is a vocational high school, three manual training high schools; one day and two evening trade schools, a number of district high schools, in part as branches of the above, evening high schools and trade-school classes in nearly all of the higher schools, a number of special disciplinary and special backward classes, day and evening elementary schools, evening schools for aliens, kindergartens, an industrial art school, many playgrounds, school gardens; open-air schools, public lectures, and much special instruction indicate the nature and extent of the city's school system. In 1910 the system required 4609 teachers and supervisory officers, and enrolled 175,549 pupils. The total value of all school property employed in 1910 was \$20,632,630, and the total expenditures for all purposes \$8,242,218.

E P C

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**PHILADELPHIA, INTERNATIONAL CONGRESS OF EDUCATION AT.** — See INTERNATIONAL CONGRESSES OF EDUCATION.

**PHILANTHROPINISM** — A movement which derived its name from the *Philanthropinum* established at Dessau by Basedow (*qv*), in 1774. The term denotes the humanitarian tendency which inspired the movement. Few educational institutions have had such immediate influence. The movement was strong enough to attract and hold the interest of men in all ranks of life and of divergent religious and philosophical views. The *Philanthropinum* was the first school which was established under the impulse given by Rousseau's *Émile*. It aimed to train up citizens of the world, men who recognized the community of interest among all human beings. Rich and poor boys were taught together, distinctions of religion were not recognized, manual and industrial work was introduced for social as much as educational reasons. The vernacular was emphasized as the medium of instruction. Things were placed before words, and if objects could not be obtained, pictures and illustrations were used. Grammar was given a secondary place and languages were taught by improved methods. Everything was done to make learning attractive and experience as broad as possible. Special attention was given to physical exercise, health, and diet. Among ardent supporters were Kant, Lessing, Moses Mendelssohn, Iselin, Von Rochow. But there were opponents, too, mainly theologians and old teachers. Basedow himself was assisted by Wolke, Simon, Schweighauser, Campe, Trapp, Salzmann. The *Philanthropinum* at Dessau continued from 1776 to 1793, but Basedow was not director throughout that period. Campe (*qv*) opened a similar institution at Trittau, near Hamburg, in 1777, and was succeeded in 1783 by Trapp (*qv*), who had been professor of pedagogy at Halle (1777-1783). In 1781 Salzmann (*qv*) established with the favor of Ernest II of Saxe-Gotha a *Philanthropinum* at Schnepfenthal which has continued to the present day. Outside Germany the influence of *Philanthropinism* was strongest in Switzerland. In 1774 Charles Ulysse de Salis transferred to his castle at Marschlin in Grisons a school which had been established in 1761 by Martin Planta. Karl Friedrich Bahrdt was placed in charge, but left in 1776 to open a *Philanthropinum* at Heidesheim. Another school of this type was opened by J. B. de Tschärner at Jenins in the same district and transferred to Reichenau in 1796 where it met with great success under H. Zschokke.

The Philanthropinistic movement was as influential as the Pestalozzian in drawing attention to existing defects in education and in leading to salutary reforms. A large body of literature was inspired by it, Campe's *Allgemeine Revision des gesamten Schul- und Erziehungswesens* in sixteen volumes, and his *Braunschweiger Journal*, and Trapp's *Versuch einer Pädagogik* may be mentioned. In

another direction the new attitude to children led to a large number of books written for children by Campe, Salzmann, and others.

See BASEDOW, CAMPE, GUTSMUTHS, SALZMANN.

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**PHILANTHROPY, EDUCATIONAL. —**

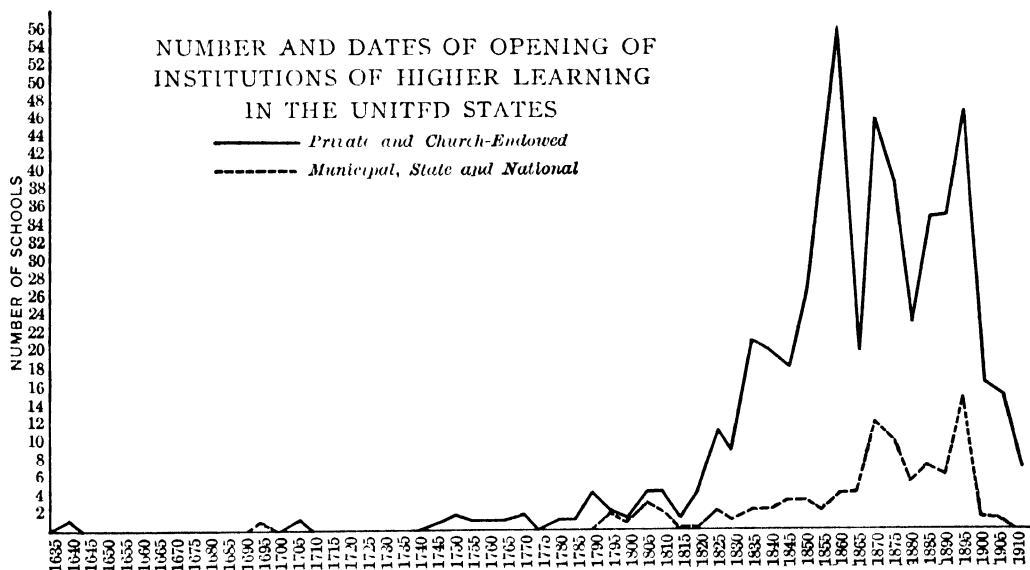
The custom of giving for educational purposes is one of long standing and of the greatest importance. It finds numerous illustrations in the classical period and, as connected with the church, became widespread and of fundamental significance during the late medieval centuries. Following the Reformation, there was a marked decline in this custom, but there were periods in English educational history wherein charitable gifts for education again became very general, first through the interest of dissenting bodies in developing higher educational interests of their own and later through the interest of the established church in building up an elementary school system, the so-called charity schools (*qv*). The entire historical phase of this topic of educational philanthropy is presented under the caption Endowments (*qv*). But it seems quite evident that the existence of an established church and the growth of state subsidized or supported school systems, first on the continent and later in England, has resulted in the atrophy of this significant social custom. In America, owing partly to the absence of an established church and, even when local or general governmental support of education became general, partly to the fact that such support awaited the initiative and cooperation of the people themselves, private philanthropy has played a very large part in the development of the entire educational system.

At present the extent of private philanthropy for educational purposes is one of the most significant phenomena in American life, and certainly when compared with conditions in other countries one of the most significant features of the educational system. In 1910 22 per cent of the entire income of the 602 universities, colleges, and technological schools reporting to the United States Commissioner of Education came by way of benefaction, in amounts ranging from sums of a few dollars to over a million, and over 52 per cent of these gifts was applied as permanent endowment funds. Five hundred and thirteen of these institutions are controlled by private corporations and eighty-nine by city, state, or nation. These facts alone point to the present significance of philanthropy in higher education in the United States.

Doubtless the same instinct, fundamental to group life in general, which prompts the humblest man to relieve his brother in distress, is finding here in man's higher intellectual aspirations a suitable interest for the bestowal of charity. The one type of giving is prompted by immediate needs, and seeks only to conserve; the other by remote needs, and looks toward progress. If the one is socially negative the other is as distinctly positive. And regardless of the theories of Turgot, Adam Smith, Hobhouse, and others, that the "dead hand" policy in education is inimical to progress (see ENDOWMENTS), yet, as will be seen in the following diagrams, gifts and bequests have played and are playing no small part in making our higher institutions of learning what they are. The following chart, including the 602 institutions referred to above, will indicate, so far as numbers of schools can indicate, the part which philanthropy has played in establishing colleges and universities from the beginning down to 1910.

The simple gifts of "sheep, cotton cloth worth nine shillings, a pewter flagon worth ten, and such silver goods as fruit dishes, silver spoons and jugs," recorded among Harvard's early receipts do not seem to foretell the millions in stocks, bonds, and real estate which are among her more recent gifts. From an analysis of gifts to educational institutions it is clear that relative to the total annual income, religious interest is on the decline, and scientific interest is increasing; that the qualifications of scholarship are replacing those of indigence, that it is a specific rather than a general educational interest which prompts the gift, and that the number of interests has increased correspondingly with the number of professions and callings that have gradually been opened to college graduates.

The following analysis of the gifts recorded in the *Appleton and International Yearbooks* and the *World's Almanac* -- gifts of five thousand dollars and over, made during the years 1893 to 1910 -- will suggest the relation of



The early history of higher education is a very simple story, and the extremely local nature of our early foundations, such as Harvard and Yale, which were built for and by Massachusetts and Connecticut respectively, and for years developed according to their neighborhood interests, stands out in strong contrast to the recent foundations of Chicago and Stanford Universities, the Carnegie Institution, and the General Education Board, whose interests are at least national, and which are in no sense products of local causes and conditions. These tendencies seem to indicate that philanthropic interests and methods have kept pace with our rapid development in population, wealth, and business methods.

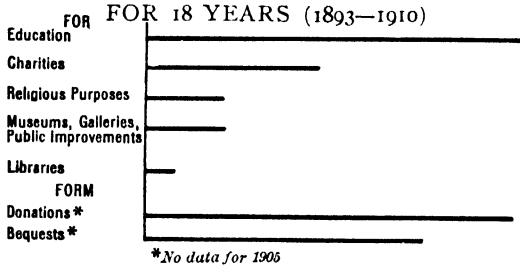
educational to other kinds of philanthropy in this country during recent years. As to form, it will be noticed that there is a slight tendency toward gifts rather than bequests, and that education is receiving more than half of all the gifts.

The actual importance of these gifts in the support of higher education is seen in the diagram on page 670, statistics for which were compiled from the annual *Reports* of the United States Commissioner of Education. As permanent endowment funds accumulate, naturally income from that source increases, consequently 22 per cent of the total income in 1910 means much more than a similar proportion in 1871. Statistics for the past few years

## PHILANTHROPY, EDUCATIONAL

show that about 50 per cent of all gifts to higher education are applied as permanent endowment, over 30 per cent goes to buildings and improvements, and less than 20 per cent for current expenses

### TOTAL BENEFACTIONS IN THE U.S.

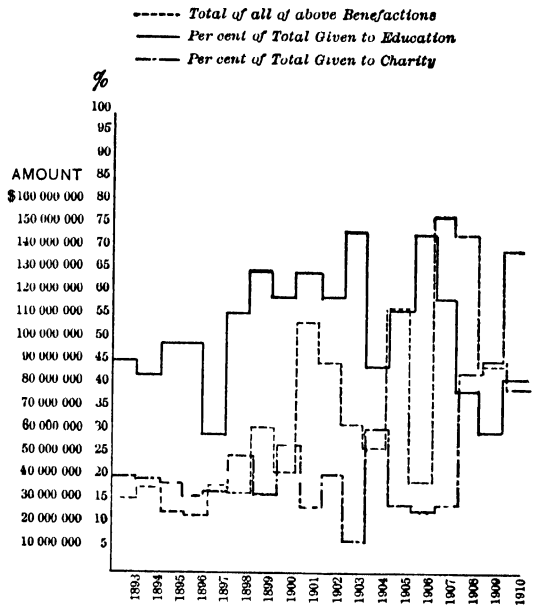


Unlike England, philanthropy has had little to do with elementary education in this country during its early history, and save indirectly it has done little in later years. The Peabody Education Fund of \$3,000,000, established in 1867, was used during its first four years in starting city systems of public schools in towns and cities throughout the southern states, then to 1875 it was used to aid in the establishment of state systems of public schools. Its next work, 1875 to 1904, was to aid elementary education indirectly by the training of teachers and by establishing the idea of state normal schools throughout the south. The John F. Slater fund of \$1,000,000, established in 1882, is devoted to the training of colored children in industrial pursuits, the Anna T. Jeanes Foundation (1908) of \$1,000,000 is to be devoted to the fostering of negro rural schools; while the studies made by the Russell Sage

## PHILANTHROPY, EDUCATIONAL

Foundation are indirectly devoted to this end. These are a few noteworthy cases in recent years but do not suggest the educational, social, and industrial problems which philanthropy sought to solve in England through the endowed, the charity, and the workhouse schools.

The problems of secondary education have received some attention. Most of the early



endowed and church colleges had preparatory departments, and many such are still maintained. The history of the academy move-

### DISTRIBUTION OF ALL BENEFACTIONS IN THE UNITED STATES

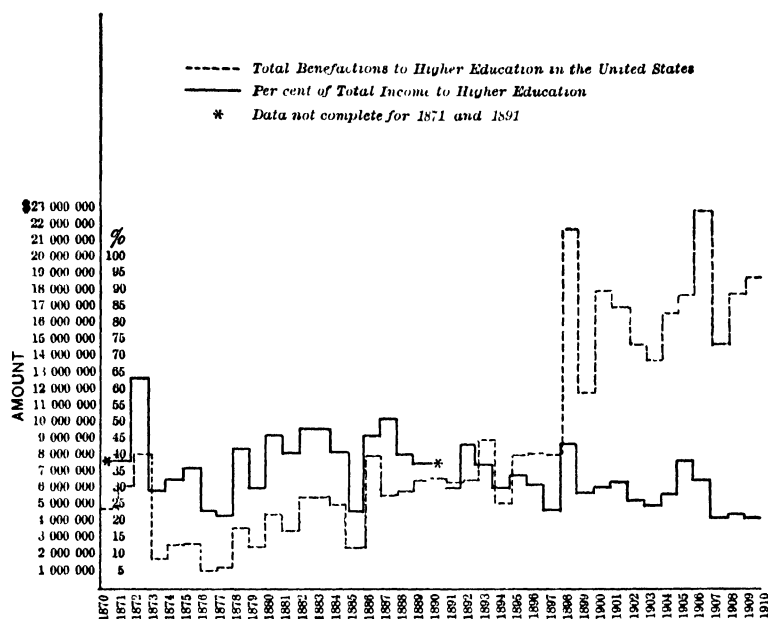
DATE	PER CENT OF TOTAL GIVEN TO					FORM OF GIFT	
	Education	Charity	Religious Purposes	Museums and Public Improvements	Libraries	Donations %	Bequests %
1910	43	38	8	6	5	70	30
1909	31	16	15	5	3	47	53
1908	40	44	4	10	2	48	52
1907	58	16	4	20	2	67	33
1906	79	15	4	2	0	83	17
1905	57	18	17	8	0	*	*
1904	45	29	9	14	3	30	70
1903	75	7	3	9	6	60	40
1902	60	21	6	8	5	49	51
1901	66	13	5	7	9	73	27
1900	54	27	7	5	7	55	45
1899	66	18	10	3	3	69	31
1898	57	25	7	7	3	54	46
1897	31	17	13	35	4	32	68
1896	50	16	19	9	6	48	52
1895	50	19	12	12	7	66	34
1894	43	20	11	17	9	17	83
1893	47	21	14	6	12	28	72

\* Data inadequate



ment is to a large extent the history of private munificence in an effort to solve some of the problems of secondary education. The work of the General Education Board (1902) was, up to 1905, devoted to secondary, rural, and negro education in the southern states, and

new era in respect to the size of gifts, but he attached no religious or ecclesiastical condition to his gift. The only conditions governing its administration are general in character, and adequate provision is made for further modifications as social and educational changes



one of its present aims is the development of a system of public high schools in the south.

The experience of England which resulted in the establishment of government commissions for the investigation of the influence of the "dead hand" in education, and finally in 1869 in the Endowed Schools Act (*qv*) should have suggested to America the wisdom of accepting the aid of philanthropists in education with due precaution. The early gifts to Harvard, Yale, and Columbia were in large part direct to the college, leaving the Trustees to apply them as they saw fit. Yet the early Presidents of Yale several times complained that with all the money received, so much of it was given for the development of some particular, often some new, line of work that the college was very much in need of funds. A gift for a new wing to a hospital lays upon future benefactors the burden of its support. Many peculiar and too often unwise gifts have thus been made in the brief history of American philanthropy. Yet, if we take note of the modern methods in giving, there seems to be reason to believe that we are forestalling some of the misfortunes which befell the endowed schools of England. In 1867 George Peabody, probably through the assistance of Robert C. Winthrop of Boston, suggested a new and important idea in philanthropic methods. With him there not only began a

new era in respect to the size of gifts, but he attached no religious or ecclesiastical condition to his gift. The only conditions governing its administration are general in character, and adequate provision is made for further modifications as social and educational changes

#### PHILANTHROPY, EDUCATIONAL ASPECTS OF MODERN

— The earlier conceptions of charity regarded it chiefly from two aspects, neither of which related it to educational work. It was regarded first as a means of promoting the spiritual development of the donor, and second, as the distribution to unfortunates of a bounty, prompted by sentiment and not based on rational grounds. The bestowal of alms was an event which did not relate itself in any important way to the life history of the donor, or to that of the recipient. In the case of the donor it was a distribution of a surplus by methods having no relation to those by which the surplus was acquired. In the case of the recipient it dealt with the passing need which, presumably, no one could have foreseen, and which it was hoped would soon disappear through the operation of economic forces, or which, if permanent, would be cared for in an elementary way by the provisions of the poor law.

Later conceptions of charity try to rationalize the giving of relief of every nature; to relate it to the life history both of the donor and of the recipient, to take into account fully the facts, both social and individual, which have resulted in the condition of need; to

take into account all the important factors in the life of the recipient and not merely those lying on the surface; and to deal with present need with a view to future efficiency as well as to immediate relief. The donor also feels increasingly the need of making his benefactions square with all his other social relations. Not only must the left hand know what the right hand does, but it must be admitted frankly that one and the same mind directs both. These points of view having been met, the giving of charity in whatever form relates itself directly and in numerous aspects to the field of education. The following educational aspects of modern charity will be considered: (1) training the recipient in efficiency, (2) social work becoming a profession, (3) popular education, looking toward the removal of some of the individual causes of poverty, (4) research and agitation for legislative and administrative reforms, (5) education by conferences, (6) education by periodicals.

(1) The larger and truer view of the recipient of charity, taking into account not merely his condition of need at the moment, but his social relations and responsibilities, trying to understand his past and to safeguard his future, leads necessarily to considering whether his need is due to fault or to misfortune, and, if due to his fault, it points to an effort to revive, develop, or train whatever latent powers he may have, in order that he may become, if possible, a fully self-supporting economic unit. The educational development, especially of juvenile charges, the training of the adolescent in industry, and the development of the unused faculties on the part of the adult have become a part of all well-considered relief work.

(2) This conception of charity calls for a considerable degree of acumen and a high degree of efficiency on the part of those who are to administer it. It calls for specialization in work. Any one can pass out coins to beggars on the street, but only men of training and efficiency can so give relief as to increase the power of self-support and thus diminish the future need of relief. Until quite recently those who had been failures in some other line of work, or suffered from impaired health, or lack of tact, or want of energy, were regarded as clearly marked out for the position of almoner or relief agent. It is now evident that such persons cannot be considered competent to undertake the delicate, difficult, educational problem of modern charity. In the late eighties and the early nineties a considerable number of important charitable agencies in the larger cities began to look to the colleges and universities for trained men and women, not only as their chief executives, but also to fill the subordinate positions. At the International Congress on Philanthropy, held in Chicago in 1893, the writer presented a paper on benevolent work as a profession, calling

attention to the fact that charitable and correctional activities offered an attractive field which college and university men were just beginning to appreciate. From about that time the number of well-trained men and women who chose the field of social work as a career rapidly increased. As a result the work of the agencies choosing such executives became much more vital and stimulating, attracted much more attention from the communities in which they were placed, and brought into the field of discussion and action many matters of civic, economic, social, and political interest having a direct bearing upon the condition, needs, or relief of the poor.

It had now become evident, however, that the graduate of a college or university still lacked much in the way of preparation. The Charity Organization Society of New York City led the way in a further departure, the establishment of a school for the training of social workers. This school, organized as a summer course in 1898, developed into a course extending through the usual school year in 1903-1904, and was greatly strengthened by an endowment of a quarter of a million dollars from the late John S. Kennedy in 1904, which was increased to a million dollars by a legacy from Mr. Kennedy, received in 1910.

Similar institutions have since been established in Chicago, Boston, St. Louis, and Philadelphia. The School for Social Workers in Boston was established in 1903 under the joint auspices of Harvard University and Simmons College. The Chicago School of Civics and Philanthropy, established in 1903, and the St. Louis School of Social Economy, established in 1901, are not directly connected with other educational institutions, but are carried on in each case by groups of persons closely identified with the leading agencies for social betterment. The Philadelphia Training School for Social Work was established largely by those interested in child-caring work in that city. All four of these institutions are rapidly becoming fully developed professional schools, and social work is rapidly gaining recognition as a trained profession.

(3) From the study of the best methods of relieving individuals and families, the trained social worker naturally passed on to consider the possibility of ascertaining and of restraining some, at least, of the great causes of poverty. The development of medical and social sciences has given new and most important information as to the relations of disease to poverty, and new and most valuable weapons for the conquest of disease. The first society for the prevention of tuberculosis in the United States, that in Pennsylvania, was an independent organization. The second organized effort for the prevention of tuberculosis, and perhaps the most effective and far-reaching agency of the kind in existence,

is the Committee on the Prevention of Tuberculosis appointed by the Charity Organization Society of the City of New York in 1902. The campaign for the prevention of tuberculosis in the state of New York, outside of New York City, has been carried on by the State Charities Aid Association, which was organized in 1872 for the special purpose of securing the improvement of the condition of public charitable institutions and the administration of public relief. The National Association for the Study and Prevention of Tuberculosis was composed at the outset largely of physicians, but included also a group of active and effective representatives of social work. It is generally the case throughout the United States that state and municipal campaigns for the prevention of tuberculosis are either carried on by committees appointed by charitable or relief societies, or that the active workers in independent agencies for the prevention of tuberculosis are drawn from the ranks of those who have been active in charitable work. These campaigns for the prevention of tuberculosis are, however, now primarily educational. The tuberculosis exhibition, with its accompanying publicity, popular leaflet and popular lecture is practically a new departure in popular education.

The effectiveness of the exhibition as a factor in popular education has been developed by charitable agencies more strongly than by any other group. A tenement house exhibition, organized by the Charity Organization Society, was the first step in a series of events which led to the creation of a tenement house department in the government of New York City. The State Charities Aid Association, in prosecuting its movement for the prevention of tuberculosis, has sent popular exhibitions to the county fairs throughout the state of New York, and to the State Fair. Plans are already in hand for the utilization by charitable agencies of this same form of popular education for restraining other great causes of poverty. The relation of intemperance and of immorality to disease, insanity, blindness, and other misfortunes is likely in the near future to be brought home to people generally by charitable agencies, in a manner which bids fair to be far more convincing than any other presentation of the arguments for right and simple living.

(4) In their search for the causes of poverty and in their efforts to control such causes, charitable agencies have, in a number of instances, taken the lead in informing and arousing popular sentiment as to the need of new forms of administration and in securing legislation for such changes in administration. The search for the causes of poverty, emphasizing in certain aspects the responsibility of the individual, has nevertheless done its chief service in pointing out the direct relation between certain social conditions, legislation,

and administration and poverty. The movement to secure better legislation in the matter of employers' liability in a number of states has gained its chief impetus directly from inquiries set on foot by social workers. The Pittsburg Survey, undertaken by *Charities*, now *The Survey*, which, in turn, is a department of the Charity Organization Society of the City of New York, is probably the most widely known, as it is perhaps the most comprehensive and far-reaching effort to give a concrete description of the actual conditions of life and work in an American city, in such form as to disclose the responsibilities of the various factors in the community for conditions affecting health and life, and the directions in which municipal administration, legislation, and conscientious employers should move.

(5) The development of the professional spirit among social workers led naturally to a desire for an exchange of experiences and views, and for the discussion from time to time of problems of common interest. What is now known as the National Conference of Charities and Correction came into existence in 1874, through the agency of the American Social Science Association. The National Conference of Charities and Correction, while primarily a meeting place for the expression of opinion, and while it does not formulate platforms, nor suggest nor approve legislation, has become an educational factor of great importance. In the absence of any federal bureau or department dealing with questions of this nature, it has served to a considerable extent as a means by which active citizens in the different states have been informed in some degree as to legislation and administration in other states. It has tended to prevent excessive divergences in legislation or in policy as between different states, and has afforded at least an opportunity for advocates of varying systems to set forth their claims and to defend them. While the difficulties of securing anything like a harmonious development of social work in the different states under our federal system seem almost insurmountable, the National Conference of Charities has made a substantial contribution toward the development of a common body of knowledge and toward an interchange of experiences. More recently there has been developed in many states an annual state conference of charities and correction which, by enlisting the interest of local officials and agents of local societies, many of whom would not attend a national gathering at a considerable distance, has helped to spread the influence of the national body, to raise standards of work, to discourage easy satisfaction with traditional methods, and to make advanced legislation possible.

(6) Modern charity has to its credit the development, as part of its educational work, of a number of periodicals, several of which have merged in one, — *The Survey*, which ex-

erts a very substantial influence throughout the country *The Charities Review*, established by the Charity Organization Society in 1891, under the editorship of Dr. John H. Finley, then secretary of the State Charities Aid Association, and now president of the City College of New York, after a period of ten years was merged in *Charities*, a weekly started by the same society, with which were subsequently merged the *Chicago Commons* and *Jewish Charities*

It is perhaps not too much to say that in the course of the last four decades, charity, from being something incidental, irrational, unrelated to the main currents of social life, has become a thoroughly vital influence, addressing itself consciously and directly to the problems of social education and of political reform, as well as to the education of the individual

H F

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**PHILBRICK, JOHN DUDLEY** (1818-1886) — City superintendent of schools, born at Deerfield, N H, the 27th of May, 1818, and graduated from Dartmouth College in 1842. He was teacher in the high schools of Roxbury and Boston from 1842 to 1847 and principal of a grammar school at Quincy from 1847 to 1852. He was for two years principal of the State Normal School at New Britain, Conn, and two years state superintendent of the schools of Connecticut. In 1856 he was elected city superintendent of the schools of Boston, which position he held until 1878. He was special educational commissioner to the Vienna exposition of 1873 and director of the United States to the Paris exposition of 1878. He was also a member of the international jury of education at both these expositions. "He was the first American city superintendent of schools to win international distinction"

Mr Philbrick's educational writings include *Truancy and Compulsory Education* (1862), *City School Systems in the United States* (1885), several addresses in the *Proceedings of the American Institute of Instruction*, articles in Buisson's *Dictionnaire de Pédagogie*, reports on the educational exhibits at Vienna in 1873 and Paris in 1878, *American Union Speaker*,

*Primary Speaker*, and reports on the schools of Boston. For several years he was editor of the *Connecticut Common School Journal* and the *Massachusetts Teacher*. He was prominently connected with the Connecticut Teachers' Association, the American Institute of Instruction, and the National Education Association (q.v.), and held offices in all these associations. His report on the *Tenure of Office of Teachers* is a valuable educational document

W S M

See BOSTON, CITY OF; TENURE OF TEACHERS.

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**PHILIPPINE ISLANDS, EDUCATION IN THE** — Consists of islands and islets,

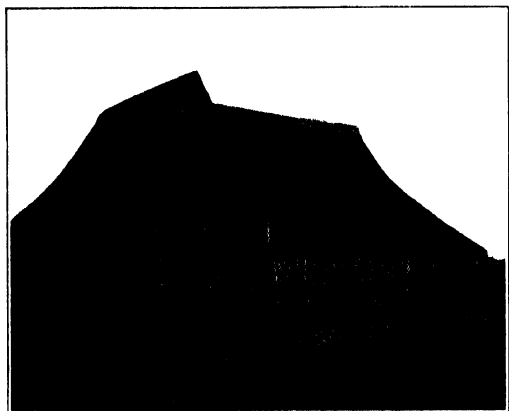
3141 in number, with a total area of 127,853 square miles and a population in 1910 of 8,276,802. Formerly Spanish possessions, they were ceded to America in 1898. Manila is the capital.

**Historical** — The Filipinos were not wholly illiterate before the arrival of their Spanish conquerors. The influence of the civilization of India had extended to Malaysia and modified the culture of the primitive forest-dwelling and seagoing Malays. Syllabic systems of writing were in use in the Philippines. Chirino (*Relación de las Islas Filipinas*, 1604) states, "So given are these islanders to reading and writing that there is hardly a man, and much less a woman, that does not read and write in letters peculiar to the island of Manila." "They write upon canes or the leaves of a palm, using for a pen a point of iron." These syllabaries passed quickly out of use among the peoples Christianized by the Spanish, and no actual examples have come down to us, though the form of the syllabaries has been preserved as used by Bisaya, Tagalog, Pampango, Pangasinan, and Ilokano. Similar syllabic forms of writing are still employed by the uncivilized Mangyan of Mindoro Island and the Tagbanwa of Palawan.

Mohammedanism had also entered the southern islands of the archipelago and sent colonists to Manila Bay. The entrance of this faith meant a new source of civilization, with writing in the Arabic characters, and books of laws, genealogies, and devotion. The Moro peoples of Mindanao and the Sulu Archipelago still maintain teachers and *imams*, while the proportion who can write their Moro languages in Arabic character is surprisingly large.

But the dominant influence in the civilization of the islands was destined to be European and Christian. The permanent occupation by Spain began with Legazpi's expedition in 1565. It was an American undertaking and it enjoyed the profit of three generations of





A Village School of the Old Type



A Three-room Village School of Steel and Concrete  
The New Type, Plan No. 3



An American Supervisor with his Filipino Assistants



Lace Making in the Primary Schools



The Old Amusements Cock Fighting



Athletics under American Influence, Volley Ball.

Spanish colonization in America. The Spanish conscience had revolted against the cruelty of the West Indies, Las Casas was still living in the monastery of his order at Valladolid, and the experience of years with the American Indian was available to guide the conqueror in his efforts to subdue and civilize the Malay.

The conquest was achieved with surprising rapidity and with little conflict. The "Indians," in accordance with the system in vogue in America, were given in *encomiendas* to the Spanish soldiery. Their numbers at this time were few, probably not over 600,000 in the portions of the islands subdued. There were no large settlements and few powerful chieftains other than the sultans of Magindanao and Sulu.

The spiritual conversion of the Filipinos was for a time delayed. A few Augustinian friars went out with the first conquerors, but, after more than a decade, Governor Sande wrote that there were only thirteen friars who could say mass, and he was not sure that any understood the language of the natives. A year later arrived a company of Franciscans, two Jesuits, shortly followed by others, came with the first bishop in 1581, the Dominicans arrived in 1587, and in 1606 the Recollects or unshod Augustinians. As late as 1594 the report of a friar relates that there were no missionaries on the islands of Leyte, Negros, Bohol, Samar, Mindanao, Masbate, or many other smaller islands where the natives had been under tribute for nearly a generation, but in that year the king of Spain began to provide generously toward the sending out of missionaries, and there were soon 300 scattered among the islands, the number rising to approximately 500 in the succeeding century.

These missionary friars gathered the Indians into towns or *reducciones*, built churches and parish houses or *conventos*, and organized the communities both civilly and religiously. By the middle of the eighteenth century they had the whole archipelago reduced to docility to Christian rite and practice, except the "Moro country," the mountain region of Northern Luzon, and the forested and mountainous interiors, inhabited by wild people.

Some attention was early given to educating the natives. The missionaries learned the divers Malayan languages spoken in the Philippines, reduced them to written form, introduced the Roman alphabet, and early established printing offices where were published catechisms, books of doctrine and devotion, and grammars and vocabularies of the native tongues. In each *convento* it was usual to conduct a native school in the dialect, taught by the sacristan or some humble dependent of the church, where boys and girls of the town were prepared for communion and perhaps learned to write their native tongues. The teaching of Spanish was not attempted until late in the Spanish régime and was

opposed and condemned by the friars as likely to loosen the authority of Church and government.

Musical instruments were introduced for purposes of worship and recreation, and the astonishing aptitude of the Filipino in musical directions has made common in every village pianos, harps, violins, and the *bandúrria*. Organs are played in every church, and it is a poor town that has not a native orchestra and band.

The motives which led the Spaniards to establish secondary and high schools in the Philippines were the education of their own sons and training for the priesthood. The pioneer institution was the *Colégio de San José*, a college and seminary established by order of the king of Spain, opened in 1601. In 1610 it secured a bequest from the *encomendero* of Mindanao and from this endowment supported and educated from twenty to forty students (*becas*) for many decades. In 1644 it obtained by papal brief the right to grant degrees. A royal decree of 1722 recites that "the greater part of those who to-day obtain their prebends have been reared and prosecuted their studies in San José." In 1768 on the expulsion of the Jesuits it was confiscated, then erected into a school of medicine and pharmacy. Its possession became a subject of controversy that lasted to the close of Spanish authority and was revived under the American government.

In 1619 the Dominican order founded the College of Santo Tomas, which in 1645 by papal bull was made a university. A letter of the king in 1644 stated the desire to see it possess the same qualifications as the universities of Ávila, Pamplona, Lima, and Mexico. At this period it taught grammar, rhetoric, logic, philosophy, and scholastic and moral philosophy, had about thirty secular students, and bestowed the bachelor, licentiate, master, and doctor degrees. By decree of 1785 it received the title of "Real" and became known as the "Royal and Pontifical University of Saint Thomas Aquinas." The teaching of civil and canon law was added in the eighteenth century, and in 1875 courses in medicine and pharmacy. The "Moret Decree" in 1870 attempted to secularize this institution and bring it under government control as the "University of the Philippines," but the opposition of the Church prevented the enforcement of the decree. Since the American occupation it has reorganized and amplified its courses and is attended by large numbers of Filipino students, especially those seeking a training in law.

A number of other secondary schools, including *beatérios* for orphan girls, existed from an early date. The *Colégio de San Juan de Letran*, established about 1640 as a school for orphan boys, developed into a secondary school and, in charge of the Dominicans, be-

came a preparatory school to the University. It still exists and is largely attended.

At the beginning, these and similar institutions were not open to Filipinos, but during the eighteenth century the practice grew of ordaining native curates, and this opened the way for Filipino education. In 1800 five "concliar seminaries," one for each diocese, were opened to train native priests, and in 1862 they were placed in charge of the Paulist Fathers. The instruction at these seminaries was not adequate to prepare a trained clergy, and the curates became subject to harsh depreciation, especially after the opening of the Suez Canal (1869), when the numbers of the regular orders increased and antagonism developed between these Spanish missionaries and the Filipino priests (*clérigos*).

Up to and past the middle of the nineteenth century, education remained wholly in the hands of the Church, and while the mass of Filipinos received instruction in the parishes in doctrine and catechism, there were practically no educated Filipinos outside of the clergy. In spite of repeated decrees of the king enjoining the use and teaching of Spanish, this language had made no progress among the natives. Travelers in the islands up to 1870 are unanimous that the Filipinos able to speak the Spanish tongue were rarely met.

Meanwhile the increase of commerce, due to the opening of the archipelago and the production of hemp, sugar, and tobacco, largely in the hands of native families of local prominence, had produced a Filipino aristocracy with wealth and ambition. Knowledge of Spanish was a great distinction, and education for their sons was eagerly sought by men of means.

About 1862 began a movement of young men abroad for study. This practice continued, many being driven to study abroad because of the obstacles presented in the Philippines and the danger of being marked as a separatist or *filibustero*. At the end of Spanish rule some hundreds of young Filipinos had roamed the countries of Europe gratifying their curiosity and their thirst for knowledge. Many of these young men bore dramatic parts in the period of Revolution.

The education of the Filipino was greatly advanced by the return in 1859 of the Jesuits. In 1866 they established the Ateneo Municipal, a secondary school supported by the city of Manila, reorganized since the American occupation as a private college. In 1863 the Spanish government resolved to establish a system of public instruction. It was an important step in the Spanish program to reform and modernize the Philippine administration. The important decree of December 20, 1863, was issued by the colonial minister, José de la Concha. It decreed a normal school in Manila under the Jesuits; a school of primary instruction for boys and

one for girls in each town of the islands, the instruction to be gratuitous and attendance obligatory, expenses of the schools to be charged on the local budgets, school teachers to be exempt from the personal service tax and after five years' service to become "*principales*" or local aristocrats. Government clerical positions were to be filled by preference from the ranks of experienced teachers; a Superior Commission of Primary Instruction was to consist of the Civil Governor of the islands, the Archbishop of Manila, and seven others, the parish priests were to be "local inspectors" and direct instruction in Christian doctrine and morals. Fifty years ago so comprehensive a scheme of native enlightenment was more of a novelty in colonial administration than it would be to-day. Despite the defects and limitations of the plan, it must take place as a pioneer scheme in the modern education of backward peoples.

The plan thus inaugurated found slow realization, nevertheless, at the close of Spanish rule some 2100 schools were reported to be in operation, and most towns had buildings for boys and for girls. The teaching, however, was far from satisfactory, the methods poor, and the instruction was usually confined to the native dialect of the locality. In spite of these drawbacks, it is surprising how considerable a number of natives gained at least a slight knowledge of Spanish and the rudiments of education. Such was the educational situation when, in 1898, the Philippines passed from the sovereignty of Spain to the United States.

**Present System** — The American army occupied Manila August 13, 1898, and on September 1 the public schools of the city were reopened. Little attempt was made at first to change the teaching or discipline, but American teachers were engaged to commence instruction in English. A year later, as the occupation of the islands advanced, schools were opened generally, army officers were charged with their oversight, and teaching of English was begun by enlisted men. Probably a thousand schools were in this way conducted by the army, even during the period of warfare. The Military Governor urged on the school work as a measure "calculated to pacify the people and to procure and expedite the restoration of tranquillity." These highly commendable efforts opened the way for the educational work established by the Philippine Commission.

The above Commission, under instructions from President McKinley to organize a civil government for the archipelago, reached the Philippines in June, 1900, and commenced its labors as a legislative body on September 1. Before reaching the islands, it engaged Dr. Fred W. Atkinson of Springfield, Mass., as a general superintendent of education. A broad survey of the educational needs was



made, qualified soldiers discharged from the volunteers were engaged as teachers, and new schools were opened with the cooperation of army officers.

On January 21, 1901, the Commission enacted an organic school law (Act 74, subsequently amended by act 477 and other acts) which centralized the administration of all public schools in a Bureau of Education. It was provided that instruction should be free and secular, that the English language should be the basis of instruction, that religious instruction might be given in public schools on certain days by priests or other qualified persons but not by teachers. The education of both sexes together, while not provided for by law, was assumed. A normal school and a trade school were authorized. Authority was given to the General Superintendent to engage 1000 American teachers and bring them to the islands, assigning them to towns where conditions were most favorable. These teachers were promptly secured, and by October, 1901, 765 were at work in nearly all parts of the islands. In 1902 the number increased to 926, the largest number ever at once in the field. This pioneer work was greatly embarrassed by difficulties of communication, disturbances due to bandits or *ladrones*, the disorganization of local government, upon which the maintenance of primary schools depended, and especially by a severe epidemic of cholera which swept over the archipelago in 1902-1903. In spite of extreme disadvantages, some 2000 schools were conducted, the naturalization of the English language was begun, and a considerable number of promising young people were brought under the personal influence of high-minded American teachers. These young natives were the nucleus of the new clerical and teaching force indispensable to the purposes of the government. Night schools for adults were early established in Manila and, proving popular, night classes were authorized and conducted by American teachers in many towns. They were gradually discontinued after 1904, except in Manila.

The first work was of a primary character, the aim being to lay a broad basis for popular enlightenment. But the demand for higher instruction in English was soon felt, and by Act 372 (March 6, 1902) secondary schools were authorized to give normal training, agriculture, and manual training, besides academic and commercial instruction.

At the end of 1902 Professor Bernard Moses, first Secretary of Public Instruction and Philippine Commissioner, resigned and was succeeded by General J. F. Smith. Dr. Atkinson resigned at the same time, and was succeeded by Dr. E. E. Bryan, Superintendent of the Normal School. He was followed in August, 1903, by Dr. D. P. Barrows, who had been for two years Chief of the Ethnological

Survey. Dr. Barrows continued at the head of school work until November, 1909, when he was succeeded by Mr. Frank R. White, who had entered the teaching service in 1901.

During 1903 and 1904 improved conditions made possible a rapid building up of school work and considerable improvement in administration. The administration is highly centralized. The Director of Education (formerly General Superintendent) appoints and promotes superintendents and teachers, prescribes the courses of study, authorizes the opening of new schools, selects and purchases all textbooks and supplies, which are furnished free to public school pupils, and approves building plans. The Director is responsible to the Secretary of Public Instruction, who is a member of the Commission and who has in his department five other bureaus besides Education. The number of division superintendents originally provided (ten) was inadequate, and the number was increased until one was appointed for each province. The provinces were divided into some 400 "districts," and an American teacher was designated as "supervisor" of each. Under these active men new primary schools were established, and many young Filipino teachers engaged and set to work. The aim was to extend the public school advantages to the people of the "barrios." This aim has been kept constantly in view and has been nearly realized.

The expenses of all instruction are divided between the insular, provincial, and municipal governments, the expenditures for 1911 being \$1,765,958, \$104,643, and \$1,258,230, respectively, a total of \$3,128,831.

*Elementary Education* — In the school year ending March, 1909, 4194 primary schools were conducted and attended by no less than 570,502 pupils, about two fifths being girls. In 1904 the complete program of studies was issued. It represents a departure from American school curricula. It provides for three sorts of public schools: primary, 3 years (extended to four years in 1906), intermediate, three years, and secondary, four years. The subjects taught in the primary schools are reading, language, arithmetic, geography, hygiene and sanitation, municipal government, music, drawing, and industrial work. All instruction is in English, and all teaching at the present time in primary schools is done by Filipino teachers. Industrial teaching has received much emphasis. The Filipino is a deft and artistic worker. The varied and useful native manufactures, such as basketry, mat and hat braiding, were selected in 1904 for teaching in primary schools. Loom weaving, lace working, and embroidery have been added, and by the diffusion of these arts remunerative household occupations are being created and extended. Gardening is also taught as a primary school subject, and thereby new vegetables and food plants are introduced.

into many parts of the islands. Since 1909, industrial teaching has been standardized, and nearly 400,000 pupils are now engaged in some sort of industrial work. The primary and intermediate textbooks have been written especially for Philippine schools and are models of good methods and of the publisher's art.

The intermediate schools were from the first vocational as well as academic. Six specialized intermediate courses were fixed upon in 1909; namely, general, teaching, farming, tool work, business, and housekeeping and household arts. There were 245 intermediate schools in 1911 attended by 25,000 pupils.

*Secondary Education* — Secondary schools in 1904 were limited to one for each province. Comprehensive plans were framed for their development and the aid of provincial governments was secured for obtaining lands and buildings. These schools have become the intellectual centers of the provinces, and many possess large tracts of land for athletics and for farming, and groups of buildings including shops, domestic science buildings, and dormitories.

Attendance at all schools is voluntary. Compulsory attendance, though frequently urged, has never been authorized by law.

The school system is closely coordinated with the public service, and the examinations given by the Civil Service Bureau are taken by hundreds of intermediate and high school graduates who thereby become eligible for public appointment. The Bureau of Education has also provided courses of training for producing skilled assistants in several branches of the Government: nurses for the Bureau of Health, apprentice surveyors for the Bureau of Lands, and rangers for the Bureau of Forestry, besides training clerks, stenographers, and a teaching force of over 8000 men and women.

In 1903 the Government provided a plan of sending selected students to the United States. Some 209 have been appointed, usually for four years, but the plan has been discontinued, as University facilities have been provided in the Philippines.

*Schoolhouses* — The rapid growth of the system of schools made necessary the use of hundreds of rude schoolhouses of native construction, but notable progress is now being made in erecting permanent school buildings of concrete. The first Philippine legislature, on its organization in 1907, passed, as its first act, a bill providing \$500,000 for barrio school buildings. It has since duplicated this sum. There have been other important insular appropriations for school buildings and numerous private donations.

*Athletics*. — A most important part of school work is athletics. American sports are coming to exert great physical and moral

influence. Field meets are held in all provinces, and there are four interprovincial meets, besides the insular meet at the annual carnival in Manila. In 1911, 482 competing baseball teams played 1201 official games, while a single province had 110 organized school teams. Basket ball is played by girls.

*Teachers* — From the beginning great attention has been given to training the native teacher, without whom education must have continued on narrow lines and without a permanent foothold. This is accomplished by "training classes" conducted by the supervisors for their corps of primary teachers, by "vacation normal schools" held in each province for four weeks each year, and by "vacation assemblies" at Manila and a few other important places. Correspondence courses for teachers are conducted by the central office of the bureau. All native teachers are carefully graded in respect to attainments, and encouraged to keep constantly advancing.

The American teachers, who now amount to over 700, come from all parts of the United States. Those first appointed in 1901-1902 were selected by the General Superintendent without examination test. In 1903 some 125 were selected, under authority of the Civil Governor, by the Catholic Church in the United States. Since that date all appointments have been under the civil service of the islands, and eligibility is obtainable only by passing examinations. There is an agent in the United States for meeting prospective teachers, and the Bureau of Insular Affairs at Washington gives assistance. Each year an average of 100 new teachers, mostly men, are appointed. A vacation assembly for American teachers was established at Baguio, the summer capital, in 1908. The region is a cool, elevated plateau covered with pines. Courses are given by lecturers from American Universities and conferences on school work are held.

*Special Schools* — There are several "insular schools." The Normal School at Manila provides an advanced course for training teachers and, previous to the opening of the university, prepared pupils for college, medical studies, and study of the law. The trade school at Manila is equipped for teaching mechanical drawing, woodwork, machine shop, motor repair, wheelwrighting, wood carving, ceramics, textiles, and minor industries. In addition to this central trade school, each provincial secondary school has woodworking shops and a mechanical drawing department, while several have machine shops also. Altogether 358 manual training shops in the schools are reported. In Manila are also a higher School of Commerce and the School for the Deaf and Blind. The Nautical School inherited from the Spanish régime was closed in 1907.

*Results*. — The results of this wide attempt

at education are becoming manifest. English is spoken by young people and children in practically every village, and the door to useful and enlightened life has been opened to thousands of young men and women. The Bureau aims to abolish illiteracy and give the entire population the basis of an education. If the present efforts are sustained, this end will be nearly attained for the youthful population in the course of another decade.

The school effort among non-Christian peoples, numbering about one million, is not as extensive, but significant results have been secured. Central schools, with provision for boarding pupils, are placed at the largest centers of the pagan population and an industrial and literary education is given. Such are the Igorot schools in the Mountain Province of Luzon, schools for Ifugao and Ibalao in Nueva Vizcaya, for the Bukidnon and Manobo on the Island of Mindanao and for the Tagbanwa of Palawan. Over 12,000 pagan children are being thus educated.

The schools of the Moro Province are not under the Bureau of Education, but are conducted by a superintendent who is an official of that government. Mohammedan prejudice and opposition have hindered the development of schools among these peoples, but some sixty schools are conducted, including a secondary school at Samboanga.

**Higher Education** -- The Philippine Legislature by Act of June 18, 1908, established the University of the Philippines. It is a corporation composed of six *ex officio* and five appointed members called "regents." The following colleges have been established: Medicine, organized in 1906, Liberal Arts, Agriculture, Veterinary Science, Engineering, Law, and Fine Arts. The College of Agriculture is located at Los Baños, Laguna Province, the other colleges are at Manila. These colleges, except Fine Arts, receive only graduates of high or secondary schools. The College of Liberal Arts is divided into the junior college, bachelor degree, two years, and senior college, master degree, three additional years. The other University courses are from three to five years' duration. The six colleges were attended during the school year 1911-1912 by 599 students, the School of Fine Arts by 801 students.

The freedom of instruction made possible by American sovereignty has resulted in a large increase in private institutions and the general prosperity of such schools. In 1902 the Liceo de Manila was established, almost the first Philippine secondary school under secular management. Many of the provincial towns now have private secondary schools. Until recently their courses of study were modeled after that of San Juan de Letran, the Ateneo, or other Spanish schools, and embraced no more than five years, following the primary school of three or four years. The bachelor's

degree was conferred. The desirability of raising the standard of secondary work in all these institutions being clear, the Secretary of Public Instruction began in 1908 to urge such reforms, promising therefor government recognition of their degrees. In 1910 a special examiner was appointed. All together seven institutions, not including Santo Tomas, have had their bachelor degrees recognized. These are Ateneo, San Juan de Letran, San Beda, Assumption College (women) in Manila, Silliman Institute at Dumaguete, San Vicente de Ferrer, near Iloilo, and the Colegio Seminario at Bigan, Ilokos Sur. D. P. B.

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**PHILIPPINES, UNIVERSITY OF, MANILA** -- See PHILIPPINES, EDUCATION IN

#### PHILLIPS ACADEMY, ANDOVER, MASS.

— Founded in 1778 by Samuel Phillips (*qv*), then Lieutenant Governor of the commonwealth. It was designed to prepare boys for the higher institutions and to fit them for the largest civic usefulness. The school, which was founded on broad democratic lines, early acquired a national reputation and prestige. It was visited by President Washington, who later sent nine of his nephews and grand-nephews to enjoy its benefits. The Academy was incorporated in the last act of the "Great and General Court" just prior to the formation of the new state government. Phillips Academy has grown steadily in numbers, in material equipment, in efficiency and influence. Its enrollment in 1911-1912 was 571 boys. Its equipment consists of 35 buildings. Its faculty numbers thirty-three men. Its students come from practically every state in the Union, and from many foreign countries, and its graduates are accustomed to enter annually a score or more of the higher institutions of learning. The school prides itself on its democracy, boys who are compelled to work their way mingling and competing on equal terms with those of generous wealth.

#### PHILLIPS ACADEMY, EXETER, N. H.

— Founded in 1781 by John Phillips (*qv*), the chief benefactor of the institution for the purpose of "promoting Piety and Virtue, and for the education of Youth, etc." William

Woodbridge (*qv*) was the first principal. Instruction is offered in all the studies required for admission to the leading colleges and scientific schools. By the constitution of John Phillips the academy is "equally open to youth of requisite qualifications from every quarter." The school enjoys a great reputation throughout the country and trains students from all parts of the Union. The students are divided into four classes or years. The enrollment in 1911-1912 was 522, and the faculty consisted of twenty-six members. The equipment has been gradually augmented, more particularly since 1883. The students are distributed in a number of dormitories, and throughout their stay in the school are under the charge of advisers whom they consult on matters relating to studies and school life.

**PHILLIPS, JOHN** (1719-1795) — Founder of Phillips Academy at Exeter, born at Andover. He graduated from Harvard University in 1735 and for a time taught school. He had some idea of entering the ministry, but decided finally on a mercantile career at Exeter. When his nephew, Samuel Phillips (*qv*), founded Phillips Academy at Andover (*qv*), he contributed to its endowment. Probably influenced by his nephew, he founded Phillips Academy at Exeter in 1783, of which he was the chief benefactor. Phillips was for twenty years a trustee of Dartmouth College, where he endowed a professorship, and was also interested in Princeton College, to which he made some donations.

See **ACADEMY**

**Reference** —

BARNARD, H. *American Journal of Education*, Vol. IV, pp. 75-80

**PHILLIPS, SAMUEL** (1752-1802) — Founder of Phillips Academy at Andover (*qv*), born at Andover. He was educated at Dummer Academy and Harvard University, where he graduated in 1771. Two years later he became town clerk and treasurer of Andover. From 1775 to 1779 he was a member of the Provincial Congress, and later of the senate, of which he was president in 1785. In 1801 he was lieutenant governor. From 1782 to 1798 he was judge of the common pleas in Essex County. He was greatly interested in education, was an overseer of Harvard University, and frequently visited the Andover common schools. He was the founder in 1777 of Phillips Academy (*qv*) in his native town and was largely instrumental in securing its endowment. See **ACADEMY**

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**PHILO JUDÆUS** (20 B.C.-c. 40 A.D.)

Hebrew philosopher, a native of Alexandria, Egypt — See **NEO-PLATONISM**, **MYSTICISM**; also **JEWISH EDUCATION**

**PHILOLOGY** — The meaning of the term philology has been different at various times. Historically there are three main periods in which philological studies have flourished, (a) the Classical, (b) the Renaissance, and (c) the Modern period.

**Classical Period** — The earliest use of the word *φιλολογία* is found in Plato, where it has the meaning "lover of dialectic," or "of scientific argument." The corresponding adjective, *φιλόλογος*, bears the sense of "lover of discourse" in contrast to *μισόλογος*, "hater of discourse." The former adjective is used of Athens as a city "fond of conversation," as opposed to Sparta and Crete, according to tradition places where brevity of speech was more highly regarded (Sandys, Vol. I, p. 4, cf. Acts XVII, 21). In general use, however, the word bore a broad significance, both in Greek and in the Latin uses of the word which the Romans derived from the Greeks. In Cicero's letters the word *philologus* means merely "learned" or "literary." In the post-classic poem of Martianus Capella, *De Nuptiis Philologiae et Mercurii*, Jupiter at a meeting of the gods demands the rights of naturalization for one who has hitherto been only a mortal virgin, *i.e.* Philology, the bride of Mercury, who represents wisdom or knowledge. Philology is the goddess of speech or expression, and she is attended by seven bridesmaids, who are none other than the seven divisions of the quadrivium and trivium. The conception of philology which the poem presents is therefore that of systematic learning and its expression in speech or writing. From these uses of the term, it is apparent that *philologus* in Latin and in Greek was a word of both wider and less definite significance than it is in modern usage.

For other and more special aspects of the activity of the philological student, according to the modern understanding of the term, the Greeks and Romans employed two other terms, *γραμματικός*, *grammaticus*, and *κριτικός*, *criticus*. The first of these terms was used chiefly in the Alexandrian period, and like philology, its meaning was broad. It signified generally "student of literature," particularly poetic literature. The kind of study implied by the term is indicated in the six divisions of the subject given by Dionysius Thrax (c. 166 B.C.), in "the earliest treatise on grammar now extant" (Sandys, Vol. I, p. 8). These six parts are (1) accurate reading, (2) explanation of poetic figures of speech, (3) exposition of rare words and of subject matter, (4) etymology, (5) statement of regular grammatical forms, (6) the criticism of poetry. By criticism is meant the attempt to detect

spurious passages or spurious works. The grammarian was one, therefore, who busied himself with the study, the editing, as it would be called in modern times, and the interpretation of poetry. Criticism was the highest function of the grammarian. There were special reasons why the study of grammar and criticism (*i.e.* "the higher criticism") should be cultivated in the Alexandrian period. The work of the Alexandrian scholar consisted mainly in the classification of works, the determination of their authorship, the establishment of pure texts, the study of grammar in the narrower sense in order to determine the relative authority of different manuscript readings, and matters similar to these. A typical Alexandrian scholar was Eratosthenes (*c.* 276-*c.* 196 B.C.), a versatile man, and the first of the Alexandrians to assume the name *φιλόλογος*. He wrote treatises on geography, mathematics, astronomy, and chronology. His greatest work was one on the Old Attic Comedy *περὶ τῆς ἀρχαίας κωμῳδίας*, really a series of monographs on questions of authorship, date, textual criticism, language, etc., in the plays. But he was also a man of literary taste, and himself wrote poems and philosophical prose treatises. On the whole, the Alexandrian conception of philology may be defined as a combination of scholarship and literary versatility.

Besides the three groups of linguistic students represented by the *philologus*, the *grammaticus*, and the *criticus*, in classical times, notice must also be taken of the *philosophus* and of his attitude towards speech and language. The *philosophus* differed from the other three in that he sought for first principles, for the explanations of things, whereas the *philologus*, *grammaticus*, and *criticus* were concerned with specific pieces of literature or with individual phenomena of language. In his search for first causes, the *philosophus* was naturally brought to consider the nature of speech, its origin, and the relation of speech to thought and to the world of concrete objects. These questions were considered by the early Greek philosophers in great detail, some of Plato's most careful thought being given to them. In many respects the linguistic speculations of the philosophers entered the special province of the philologists, as, for example, the philosophers' study of etymology in the endeavor to determine the true meanings of words.

From this brief survey, it will be seen that the classical period never arrived at any unified or, on the whole, any very profound conception of the philological study of language and literature. It attempted to some extent to answer philosophically the question of the origin and nature of language, to interpret and correct the body of its traditional literature, and to a more considerable extent to work out a system of grammatical classifica-

tion and nomenclature. There was, however, no sense of the homogeneity of linguistic and literary studies and there was but slight sense of historical growth and development. On the side of attainment, encyclopedic learning was the ideal. Modern scholarship, in the development of a theory of philology, does not build therefore upon a classical basis. Classical thought on matters linguistic is not introductory to the modern science, but is more important for logic and philosophy than it is for linguistics. The most important linguistic inheritance of the modern period from classical times is to be found in the classifications and terminology of descriptive grammar. These have come down from Plato and Aristotle and the classic grammarians in unbroken transmission.

**Medieval and Renaissance Periods** — The neglect of classical literature in the medieval period implied the decadence of classical scholarship and philology. The extent of this neglect and decay may be inferred from the fact that knowledge of the classic idiom of Latin (and still more of Greek) was so imperfect as to give rise to a new form of the language so different from classic Latin as to require a new name for itself, — middle or medieval Latin. (See MIDDLE AGES, EDUCATION IN). The medieval period was not curious about philosophical or psychological questions concerned with language. It accepted mainly the story of the creation of language by Adam, and hampered by the flat chronology which prevailed, and lacking any clear sense of historical perspective, it was naturally not concerned with questions of change and development. The medieval period was incapable of adding anything to classical theories of the study of language and literature. At its best it was conservative, and even this function was very inadequately performed. A typical scholar of the best type in the medieval period was the English monk, Bede (*qv*). His study of language specifically was entirely practical, and he developed a free, clear, and harmonious Latin style which enables one to read his works with pleasure.

The Renaissance conception of philology is closely bound up with the general movements in thought and culture which deeply affected the life of Europe in the fourteenth and several succeeding centuries. The scholarship of this time was largely a revolt against scholasticism, with its exaggerated sense of the importance of dialectic in all matters concerned with the intellectual life. The Renaissance may be regarded mainly as a humanistic movement, and the study of literature was approached from the æsthetic rather than the intellectual side. Of great importance in the development of Renaissance humanistic studies was the restoration of Greek to its proper place as a learned language, and also the development of

a feeling for the purity of classical Latin idiom and a respect for it which was unknown to the medieval world. Language was studied, however, almost exclusively as an approach to literature. The philosophy of the Renaissance linguists never concerned itself with any questions deeper than that of the relation of a learned to a popular language, as in Dante's *De vulgari eloquio*, and with the consequent question, how a popular language can be elevated to a position on a level with the learned languages. Language and grammar were regarded as handmaidens to literature, and the main purposes of the study of literature were partly higher criticism and partly appreciation but, most of all, imitation. Excellence in literature was to be attained by the imitation of classic models, and the first thing necessary was naturally a knowledge of classic types of literary art. As aids in attaining this knowledge, the Renaissance scholar gave much attention to the writing of grammars, dictionaries, and helps to composition. His persistence and enthusiasm have been effectively and truly presented in Browning's poem, *The Grammarian's Funeral*. So great was the respect which the Renaissance student felt for the classics that language alone was often regarded as sufficient to make a humanist. It was enough, many humanists thought, if one imitated exactly the language of Vergil, or Ovid, or above all, Cicero, regarded by almost universal consent in the Renaissance as the perfect model of eloquence. (See Ciceronianism.) Nevertheless the scholarship of the Renaissance, though sometimes narrow and pedantic, in the hands of its best representatives was enlightened and astonishingly comprehensive. Among typical scholars may be mentioned the Frenchman Budé, or Budaeus (1468-1540), who speaks of philology as his *altera conjux*, and who also declares that he was the first to call himself a philologist (see Delaruelle, *Budé*, p. 215). Another famous Renaissance scholar was Joseph Justus Scaliger (*q v*), whose learning and productivity are indeed occasions for wonder. But the modern student is likely to feel with respect to Scaliger and with respect to Renaissance scholarship in general, that it is disorganized and often smothered under its own accumulation of detail.

**Modern Period** — With the modern development in scholarship, attempts have been made to organize a system of philological study as clearly defined as are modern botany, biology, and astronomy. The beginnings of this movement, which has resulted in the formation of the theory of the science of philology, with clear delimitations of subject matter and of method, were in large measure, like the beginnings of Renaissance scholarship, a protest against the intellectualism of a preceding period. In Germany, where philology was earliest cultivated in modern times, it was at first closely connected with the neo-humanism and romanticism of the

latter half of the eighteenth century, which in turn were largely a reaction against the preceding and contemporary philosophy of the enlightenment (*q v*), with its contented but somewhat narrow *Aufklärung* of the field of human thought. The general philological movement was at first humanistic in that it turned aside from philosophical and rational systems, and attempted to restore past civilizations. It was a study of culture. Later, under the influence of natural sciences, of the historical method, of Darwinian theories of evolution, and of similar developments of modern thought, philology tended to take a broader aspect than that of humanistic study only. There were thus developed the psychological, social, and historical aspects of the modern science of philology. Modern philology may be most fitly regarded as beginning with Friedrich August Wolf (*q v*). The first modern to call himself a philologist, Wolf, described himself in the matriculation book of the University of Göttingen, under date of April 8, 1777, as *studiosus philologiae*. As student and later as teacher of philology, Wolf defines his subject compactly but broadly as the biography of a nation. The purpose of it was to reconstruct all the life of a past period which can be recovered from records. These records include of course not only language, but all other forms of recorded knowledge or experience. Wolf's other name for philology was *Alterthumswissenschaft*, the science of antiquity. But by antiquity Wolf means only Greek and Roman antiquity. The term is so limited for various reasons, *e g.* because these peoples only have left abundant records of their life, because of the importance of the civilization of the Greeks and Romans for modern civilization, etc. But the general theory of philology, as the biography of a nation, does not imply a limitation to the Greek and Latin peoples, and if circumstances permitted, a Hebrew, an Egyptian, and other philologies would be possible. The aim of philology should always be, however, in Wolf's conception, the synthetic presentation of the whole life of a people at a definite period. Wolf was thus interested in language, literature, art, etc., in themselves only as each contributes its share to the unified picture of the life he was attempting to reconstruct. Philology thus becomes, in his mind, the recalling to life of historical Greek and Latin civilization, and it presents an organic conception of the subject lacking in classical and Renaissance scholarly investigation. In the carrying out of this scheme, Wolf makes the following divisions of the subject in his *Fundamentaltheile der Alterthumswissenschaft (Vorlesungen, Inhalt, p. v ff.)*:

(1) Grammar, or the study of language (merely, however, for the practical purpose of acquiring ability to read texts)

(2) Hermeneutics, "Erklärungskunst," defined as

the art of "comprehending the ideas of another just as he would have them comprehended" (*Vorlesungen*, I, 271)

(3) Criticism, the rules by which we determine the age, the genuineness, or the authorship of works, the correctness or incorrectness of words, of passages, etc

(4) The geography of antiquity

(5) The political history of antiquity

(6) *Antiquitates*, "Alterthümer," by which Wolf means allusions to ancient customs, beliefs, and practices

(7) Mythology

(8) Literature, sciences, and arts among the Greeks and Romans

(9) History of Art, *ie* the study of the works of art of the ancients, including archaeology, numismatics, epigraphy, architecture, sculpture, and painting

It will be seen at once that Wolf was a system builder, and so also were his immediate successors in the development of the theory of philological studies. August Boeckh, who lectured on the methodology of philology from 1809 to 1865, proceeded on the basis of Wolf's definitions. His is the broadest possible conception of philology "die eigentliche Aufgabe der Philologie das Erkennen des vom menschlichen Geist Produzirten, d. h., des Erkannten" (*Encyk* p. 10), which translated reads, "the real task of Philology is the restoring to knowledge of that which has been matter of knowledge." The subject is again defined as "die Nachconstruction der Constructionen des menschlichen Geistes in ihrer Gesamtheit" (*Encyk* p. 16), "the putting-together again in its entirety of all that the human spirit has fashioned." Wolf had made philology the reconstruction of the past culture and life of a nation, more specifically of the Greek and Roman nations. Boeckh extends the definition to include the reconstruction of the culture and life of all past existence, so far as that existence may be made known through the records it has left behind. Philology according to this conception comprises all history in the narrow sense of narrative, institutional and social history, all historical linguistics, literature, art, science, etc. It excludes philosophy in so far as philosophy is concerned with first causes, not with the content, meaning, and value of records of thought, it excludes also science in the sense that investigational science endeavors to determine the immediate and the actual, although when science becomes historical and concerns itself with man's activity and self-expression in the past, as, for example in the science of folklore, it falls within the limits of Boeckh's definition. The necessity of subdivision of the great subject is acknowledged by Boeckh, but the theoretical definition is defended on the ground that no science is completely realizable, *eg* the biologist theoretically sets himself the unattainable goal of knowing all about all animal life, and the chemist cannot exhaust all the possibilities of combination among natural elements. It may be pointed out that Boeckh adds to Wolf's conception of philology also in that he assigns

a higher place to linguistics, which he would study not only to gain a practical reading knowledge of language, but he would have languages considered in themselves as expressions of the life of the people who develop them

The difficulties in the way of any practical realization of this general scheme of philology are in certain respects obvious. Any valid criticism of Wolf's theory would apply as well, but with more weight, to Boeckh's theory. Two main difficulties may be noted.

(1) the student who would carry out Wolf's or Boeckh's scheme must possess combined qualities, *ie* the critical faculty for the gathering and preparation of his material, and second the constructive and artistic for its composition. The qualities of mind required by the first half of the task are memory, critical judgment, sense of order, "learning" in the specific sense. The qualities of mind required by the second half of the task are constructive imagination, a sense of the relative importance of parts, and the poetic faculty which gives life to an assemblage of facts. The two groups of characteristics are not necessarily mutually exclusive,—witness Jacob Grimm and Sir Walter Scott,—but actually they are not often found in combination. "As a rule, one has dwarfed the other; either the creative fancy, scorning a solid masonry of facts, builds its castles in Spain without carpenter and architect, or a hesitating exactness may become the fetish to which the children of the imagination are sacrificed" (Oertel, *Lectures*, p. 20). The second fundamental difficulty which obstructs the path of the philologist of Wolf or Boeckh's way of thinking is the vast extent of inherently heterogeneous subject matter which he must command and assimilate. The specialist is necessary for the preparation of the material, but the specialist is manifestly incapable of spreading himself over the whole field. The nearest approach to a realization of the synthetic idea is to be found in the *Grundriss* plan of collaboration, various scholars of supposedly the same general point of view taking each his special part in a harmoniously elaborated scheme of presentation. Thus Paul, *Grundriss* I, 1, joins himself to the school of Boeckh when he expresses the conviction that "die Einzelnen Gebiete in welche man das Kulturleben eines Volkes zu zerlegen pflegt, in der wissenschaftlichen Untersuchung nicht isoliert werden dürfen." And he also extends Boeckh's formula, "das Erkennen des Erkannten," in that he insists that the philologist must not only know again what was in the clear consciousness of individuals in past times, but also must be able to see into forces and streams of tendency which were not clearly perceived, he must see relations of cause and effect, and follow out lines of historical development. In practice Paul's *Grundriss* is the fullest attempt made to realize the

broad conception of a philology of the Germanic peoples. This work was planned and executed under the general supervision of Hermann Paul, assisted by special students, such as Sievers, Kluge, Noreen, Wright, Brandl, Luick, R. Kogel, and others. The work as it was finally executed consists of fifteen parts, not indeed arranged in any strictly systematic method so as to give a philosophically unified interpretation of Germanic civilization. The various parts are as follows: (1) the meaning and purpose of Germanic philology, a theoretical discussion and definition of the subject by Paul, (2) history of Germanic philology, also by Paul, (3) methods of Germanic philology by Paul, (4) history of Germanic alphabets and of writing by Sievers and Arndt, (5) *Sprachgeschichte*, the history of the various Germanic languages, by different scholars, (6) *Literaturgeschichte*, the history of the various Germanic literatures, each treated separately, as the languages are, by a specialist, (7) historical and theoretical discussion of Germanic meter, (8) ethnography (Bremer), (9) *Wirtschaft*, i.e. the practical arts of agriculture, etc., (10) *Recht*, i.e. law and legal custom, (11) *Kriegswesen*, war and its traditions, (12) Mythology, (13) *Heldensage*, i.e. heroic traditions, (14) *Sitte*, i.e. social custom and formalities, (15) *Kunst*, (a) *bildende Kunst*, painting, architecture, and sculpture, (b) music.

**Specialized Use** — Although the broad philosophic definition of philology as elaborated by the theorizers of the school of Wolf and Boeckh will be generally accepted by philological students as true to the underlying purpose and methods of their investigations, popularly the subject is more narrowly conceived as equivalent to linguistics. "Philology," says the *Encyclopædia Britannica*, "is the generally accepted comprehensive name for the study of the word; it designates that branch of knowledge which deals with human speech, and with all that speech discloses as to the nature and history of man." Two main definitions are given in the *New English Dictionary*: (1) "Love of learning and literature, the study of literature in a wide sense, including grammar, literary criticism and interpretation, the relation of literature and written records to history, etc., literary or classical scholarship; polite learning. Now *rare* in general sense", (2) a special sense, the usual one in modern use, "the study of the structure and development of language, the science of language, linguistics." The second sense is really one branch of the first, which represents in some respects the classical conception of philology, with additions from the broad synthetic definitions of the Wolfian school.

These narrow popular conceptions of philology are to some extent forced upon the serious student by the practical exigencies of subject matter. Obviously the Wolf-Boeckh theory,

though valuable as an ideal from which to draw inspiration, is not one to be applied in detailed practice. Perhaps the definition which most nearly describes the actual work of philologists might run as follows: Philology is the study of culture as it is recorded in language. This definition implies that language itself is an object of study for itself, since it is one of the expressions of the cultural development of the people that employ it. It implies also that the study of literature is a branch of philology when such study is concerned with the interpretation of the text of literary monuments, and with their history and value as illustrating civilization. If philology be defined as the restoration to knowledge of past thought through the medium of the word, it is apparent that no study of literature, however simple and however approximately contemporary the literary monuments may be, can be carried on without the employment in some degree of philological methods. The so-called philological approach to the study of literature has been at times not without its unwise advocates. To parse through the whole of *Paradise Lost* and to examine the etymology of every word may be philological study of a kind, but it can scarcely be called literary. Philology must serve as a handmaiden to literature in the interpretation and elucidation of texts, but there is no immediate way of entry into the processes of literature through the study of individual words. Among other practical uses of philology regarded as linguistics may be mentioned that of seeing that the historical records of the speech and literature preserved in manuscripts and in texts, often few in number and difficult of access, are brought to light and secured against the accidents of time by publication. The reediting of texts in the light of fuller modern scholarship is also a duty of the philologists not to be evaded. Sound philological principles are manifestly as important in the editing of a modern text as of one of medieval or ancient times. Philology may also be of service in the daily practical use of language, especially in determining questions of propriety and conduct in language. (See article on ENGLISH USAGE.) A still larger field of practical philology is to be found in the whole province of rhetoric. Rhetoric attempts to teach an art of language, and instruction in this art is greatly assisted by the ability of the teacher and student to analyze and to comprehend the principles of the art. Rhetoric consequently, if it means anything at all as a systematic discipline, means the application of the methods of observation and analysis to the processes of language expression upon which the science of philology rests. Other practical applications of philological science, e.g. the production of descriptive grammar for the use of the students of a language who are seeking to acquire a practical control over it,



the analysis of speech sounds as an aid in the teaching of spoken language, etc., are too obvious to require mention

The present academic status of the study of philology has been implicitly indicated in part in the description which has been given of the subject. A more detailed account of the courses will be found in the articles on MODERN LANGUAGES AND LITERATURE, also in those on GREEK LANGUAGES AND LITERATURE, LATIN LANGUAGES AND LITERATURE, SEMITIC LANGUAGES AND LITERATURE G P K

See GRAMMAR, for comparative philology, LANGUAGE, ENGLISH, LANGUAGE, PSYCHOLOGY OF, MODERN LANGUAGES AND LITERATURES

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**PHILOSOPHICAL SYMBOLISM** — See SYMBOLISM IN EDUCATION

**PHILOSOPHY — Definition and Scope** — The term philosophy (in the form of the verb *φιλοσοφείν*) seems first to have been used by Herodotus and Thucydides in its literal sense, to denote the desire or pursuit of wisdom. The speculative bias of the Greeks made them restrict the term philosophy to theoretic knowledge only, *i.e.* knowledge pursued for its own sake as opposed to that which is technical or immediately practical. The terms science, true knowledge, and philosophy are used almost interchangeably by Plato and Aristotle. The idea that philosophy is not ordinary knowledge but has for its object something of superior worth, to wit, the real as opposed to the phenomenal, is due to the Platonic doctrine that true knowledge can be only of the immutable and the eternal (*Rep*, 480). Aris-

totle also emphasizes the fact that philosophic or scientific knowledge is reasoned or demonstrative, and, therefore, depends on knowledge of causes or principles. Though Aristotle wrote on political and natural history he seems to have clearly distinguished between history and science or philosophy. Both Plato and Aristotle, while setting a high value on mathematics, hesitated to apply the term philosophy to it. Thus Plato put mathematics in the borderland between true science and opinion, and Aristotle, while explicit in his statements that metaphysics, physics, and mathematics are the three parts of theoretic philosophy, and in his reference to metaphysics as the first and to physics as the second philosophy, does not explicitly refer to mathematics as the third philosophy. Nevertheless, mathematics did not become generally dissociated from philosophy until the Alexandrine period (*e.g.* Euclid), and even later we find the book of Sextus Empiricus, *Adversus Math*, directed against the philosophers or metaphysicians.

The distinction between philosophy and the special sciences seems to have been accentuated by the Stoic and the Epicurean philosophes, with their emphasis on ethics as the major portion of philosophy. In the light of the popular use of the term philosopher as synonymous with that of moral teacher or guide, and the prevailing idea of philosophy as a mode of life, pursuits like those of Archimedes could not be referred to as philosophical. At any rate, the Alexandrine period finds a number of special sciences cultivated separately from philosophy.

In medieval times, philosophy seems to have been used to denote all the knowledge which can be acquired by natural reason without the aid of revelation. In practice, thus meant all the subjects treated by "the Philosopher," *i.e.* Aristotle, and as these formed the substance of all arts courses, the faculty of arts became known as the faculty of philosophy. The "three philosophies" denoted moral, natural, and metaphysical philosophy.

As a result of the development of natural philosophy into the independent science of physics, and the emphasis on the problems of thought or consciousness in writers like Locke, the term metaphysics gave way to the term mental science or intellectual philosophy. As a result, also, of the expansion of modern science and its imperative demand for specialization, the parts of moral philosophy known as jurisprudence, law of nature, politics, and economics, — subjects on which an eighteenth century professor of philosophy like Adam Smith was expected to lecture, — soon became objects of study on the part of specialists who did not concern themselves with the rest of philosophy. For the last forty years empirical psychology has been assuming more and more the rôle of a special science, as independent of philosophy as the science of optics. In our

own day there is a strong tendency for investigators in the field of logic to regard their subject as a branch of either psychology or mathematics; and an increasing number now view the field of ethics as part of sociology or anthropology.

After the special sciences have thus been carved out of it, what, if anything, is left of philosophy itself? The typical answers to this question may be arranged in three groups, between which hard and fast lines cannot be drawn —

(A) Those that deny that there is any peculiar subject matter or method in philosophy. This is the view of the agnostic and positivist schools. To both Spencer and Comte philosophy consists simply in the unification or coordination of the various sciences. In Spencer this unity is a mere juxtaposition, — the only bond uniting the various sciences being the fact that they all have certain vague general laws of evolution in common. In Comte the unity is one of end. In constituting the positive philosophy the various sciences are subordinated to each other in accordance with the needs of the positive polity. In harmony with the above is the popular view, supported in some respects by Paulsen, that philosophy is simply the sum of the general portions of the different sciences.

(B) Those that insist that philosophy still has a subject matter distinct from that of the special sciences, viz the real or the rational. This group includes representatives of most diverse schools of philosophic thought, who, of course, conceive this subject matter in different ways. Thus, the Hegelian school conceives the subject matter of all philosophy to be the ultimately real, or absolute Idea, a knowledge of which we obtain by a system of reasoning. The mystic schools all conceive the real, which is the quest of philosophy, to be in the ineffable One attained in certain experiences, called feeling or intuition. Between these two schools may be placed an influential group of thinkers like Munsterberg, Duhem, and Bergson, having little in common save the view that the special sciences all deal, not with reality, but with systems of useful constructions of the mind, and that it is, therefore, left to philosophy to deal with reality itself, by intuition (Bergson), by dialectic reasoning (Munsterberg), or by faith and reason (Duhem).

(C) Mediating between (A) and (B) is the view that philosophy has a distinct subject matter of its own, but that this subject matter is no other than the system of the special sciences, that is, that philosophy is itself a special science, viz the science of the sciences. This science may be conceived in quite naturalistic fashion. "Sciences, then, are as real things as facts themselves. We can analyze them as we analyze facts, investigate their elements, composition, order, and sub-

ject" (Taine). The view, however, which has, owing to the influence of Herbart, Wundt, and the Neo-Kantians, prevailed for the last generation has been a more critical one. It is supposed to be the business of philosophy to analyze and criticize the fundamental concepts and assumptions of the special sciences, and to build up a *consistent* world view on the basis of this critical work.

The greater intimacy, however, between philosophy and the special sciences during the past decade has brought to light the following considerations: (1) that the criticism of the assumptions of the various sciences can be made only by those who are already in possession of a certain definite *Weltanschauung*, (2) that there are no contradictions infesting the special sciences to such an extent that the scientists are helpless and need the aid of philosophers, and (3) that the fundamental concepts of the different sciences can be analyzed only in the light of the special content of these sciences, and that the specialist is, if he undertakes it, the best qualified to make this analysis.

The feeling has also arisen recently that the function of philosophy is obscured by a too close assimilation of it to science, and that its nature is in many respects akin to art and poetry (see *Journal of Philosophy*, vol 7, p 406).

In spite, however, of all these diverse views as to the nature of philosophy, all are substantially agreed that its aim is to give us a coherent view, or outline chart, of the universe and the place in it of man, the external world, and the higher Reality, if there be any. There is also a practical agreement that a department of philosophy in a college or university should teach metaphysics (including philosophy of mind, and philosophy of religion), logic, ethics, aesthetics, and the history of philosophy. Professor Fullerton has made the interesting attempt to show that these apparently diverse disciplines (including psychology) have not been grouped together by mere accident, but that they all have something fundamental in common, viz that they all raise problems of reflective thought, *i.e.* problems involving the critical examination of the meaning of our ideas (*Intro to Phil.*, pp 223-260).

Metaphysics, logic, ethics, and the history of philosophy, then, represent the irreducible minimum of a department of philosophy. Though many philosophers emphasize the primacy of psychology as a philosophical discipline, psychologists as a rule are anxious to have their science free from all philosophic entanglements. In many of our universities psychology now forms an independent department, and at the St. Louis Congress of Arts and Sciences (1904) the psychologists were grouped not with the philosophers but with the other students of natural science. In France lectures on sociology are still given by

professors of philosophy and this is also true of other Latin countries, especially Spanish America where French positivism has been very influential. No one, however, doubts that the specialization of the social sciences is inevitable. In the United States courses in education are often given by the department of philosophy, but though philosophy must always play a prominent part in educational theory, it is only for administrative reasons that the two departments are united. In many American colleges courses in the history of mathematics, chemistry, etc., are given by the departments concerned, but in the very few instances where courses in the general history of science are given, this is done by the department of philosophy. In European institutions even the history of special sciences is given by the department of philosophy, and when a physicist like Mach begins to lecture of the history of his own science, it is thought proper to transfer him to the department of philosophy. The history of science is, however, a very much neglected field in any case. For the individual philosophic disciplines, see *ÆSTHETICS*, *ETHICS*, *LOGIC*, and *METAPHYSICS*. For schools of philosophic thought, see *MATERIALISM*, *SPIRITUALISM*, *IDEALISM*, *REALISM*, *PHENOMENALISM*, *RATIONALISM*, *MYSTICISM*, *EMPIRICISM*, *SCPTICISM*, *CRITICISM*, *POSITIVISM*, *INTELLECTUALISM*, *VOLUNTARISM*, *PRAGMATISM*, *MONISM*, and *PLURATISM*.

**History of the Teaching of Philosophy** — *Among the Ancients* — India and China seem to be the only Oriental countries that independently developed definite schools of philosophy, *z. e.* bodies of doctrine more or less systematically and continuously taught from generation to generation. Thus we have in China the speculative school of Lao-tze, Lieus (Lieh-tzi) and Tschuang-tze, and the moralistic school of Confucius and Mencius beginning in the sixth century B.C. and continued into the Christian era. In India we have six great historical schools of which the Sankhya, Vedanta, and Yoga are best known in the West.

The earliest form of teaching took place under the form of voluntary discipleship, the disciple attended the master and learned from him in the course of ordinary conversation or whenever the spirit moved the master. Such a life frequently involved celibacy. The typical Hindu teachers of philosophy live apart on a mountain or in a grove in simple abstemious fashion, spending the time "in listening to serious discourse and imparting their knowledge to such as will listen to them" (Max Müller, *Six Systems of Indian Philosophy*, p. 35). We also hear of philosophic and religious congresses and of philosophic disputations at kings' courts, and, in Buddhist times, of monasteries, famous schools, public lectures, etc.

Before the extensive use of textbooks was possible, instruction was given in the form of short mnemonic aphorisms, easy to hand on unaltered from generation to generation, but so brief and packed with meaning as to need extensive commentary to make them intelligible. Such teaching, therefore, tended to become dogmatic and esoteric.

*The Græco-Roman Period* — The earliest form of philosophic teaching among the Greeks was probably also in the form of aphorisms of Wise Men, and Thales, the founder of the Milesian school of philosophy, was regarded as one of the Seven Wise Men of Greece. Popular philosophic instruction was also given by the wandering bards, of whom Xenophanes, the founder of the Eleatic School, was a remarkable example. The Pythagorean School was definitely organized, and demanded certain modes of life of its members to enable them to pursue its characteristic studies.

The expansion of Greek life and culture in the fifth century B.C. brought into existence the professional teacher or sophist. The wandering sophist was an itinerant university, gathering all sorts of pupils and teaching them all subjects. The various schools which owe their impulse to Socrates were largely influenced in their foundation by their feeling of protest against the introduction of professionalism into the life of culture. Socrates taught by means of his peculiar method of questioning — noteworthy in the history of education as an indication of the complete absence of the authoritative note, and thus characteristic of the spirit of free inquiry among the Greeks. Plato tried hard to avoid the lecture system of the sophists, but Aristotle returned to it. Socrates refused to accept any fees, and Plato was too independent, but Speusippus, Plato's successor in the Academy, found it necessary to accept fees. At the end of the fourth century B.C. we find separate and distinct from the schools of rhetoric four well-established permanent schools of philosophy (the Academic, the Peripatetic, the Stoic, and the Epicurean) which made Athens the world's center for philosophic instruction. These schools continued their existence till closed by Justinian (in 529). The corporate character of these schools (for which see *ATHENS*, *UNIVERSITY OF*, *GREECE*, *EDUCATION IN*, *UNIVERSITIES*, etc.) made them emphasize adherence to traditional doctrine of the school rather than independence of thought.

With the introduction of Greek culture into Roman society, philosophy became a standard form of education coordinate with jurisprudence, rhetoric, and medicine. It became customary for the great families to send their sons to Athens to study philosophy. Philosophic education at Rome, however, was mainly carried on through private tutors who regarded their office as that of a physician to the morals of those whom they instructed.

Disinterested play of the intellect gave way, under this régime, to the inculcation of sound moral maxims or precepts (Seneca, *Ep.*, 49, §5). We have, however, pictures of lecture theaters crowded to hear philosophic orations or debates between rhetorical philosophers. We also hear of philosophic missionaries, like Apolonius of Tyana, exhorting and appealing to the crowds in the market place.

*Alexandrian Schools and Arabic Influence* — In the third century B.C. the great libraries and museums and the liberal policy of the Ptolemies towards scholars made Alexandria (see ALEXANDRIA, SCHOOL OF) an endowed research university, a great center of learning rather than of instruction. It became also the chief meeting place of Greek philosophy and Oriental religion. From it issued Philo's doctrine of the Logos (see PHILO OF JUDÆA), and the chief intellectual moulds for the dogmas of the Christian Church. In the revival of religious and speculative philosophy in the third century (A.D.) Alexandria was also the birthplace of Neo-Platonism (*qv*), which, by claiming to unite and restore the philosophy of Plato and Aristotle, became the rallying ground for those who wanted to maintain the old Hellenistic culture against the rising tide of Christianity. It was also principally at Alexandria that Christianity, under the leadership of men like Clement and Origen (*qqv*), began to yoke Greek philosophy into its service. The catechetical schools (*qv*) of Egypt and Syria were the first to introduce the study of philosophy into Christian schools. From the Syrian schools of Edessa and Nisibis the study of philosophy was carried into Arabic or Saracen culture. The Arabic translations of Aristotle were carried across North Africa into the Moorish centers of learning in Spain, and there they were, together with Arabic commentaries, translated into Latin and brought back to Europe, principally through Hebrew translators.

*The Middle Ages* — In the fifth century, with the barbarian invasions and the decay of Roman culture, philosophic study became practically extinct in Western Europe. Some logic, however, continued to be taught as a part of the cycle of liberal studies, and when the Christian monastic schools took over the elements of the later Græco-Roman system of education, logic remained the only school discipline having any connection with philosophy. (See article on LOGIC.)

Though Porphyry's *Introduction* stated the problem of universals out of which medieval philosophy grew, the regular school teaching of logic was mainly formal. While there were noted examples of philosophic speculation, as John Scot in the ninth and Gerbert in the tenth century, it was not until the end of the eleventh century that philosophic teaching may be said to have been resumed in what had been the Western Empire.

The revival of philosophic study received its

impetus first from the theologic interest in the question of universals, secondly from the recovery of the more important Aristotelian logical writings (the *Analytics*, etc.) either in Boethius' translation or that of Jacob Clericus (1128), and thirdly from the introduction of Aristotle's *Metaphysics*, *Physics*, and *Ethics*, through the Arabic translations and commentaries, at the end of the twelfth century. After 1254 logic and philosophy formed nearly the whole of the curriculum, the old quadrivium being relatively neglected. No uniform or sharp line was at first drawn between the universities and the older monastic schools. The latter continued to teach logic and sometimes one or other of the "three philosophies." As late as 1540 we find Ferrerius publicly lecturing in the chapter house of the Abbey at Kinloss on Aristotle's *Ethics*, *Politics*, *Physics*, *Metaphysics*, *Economics*, and *Psychology*. The growth of the universities, however, led the grammar, bugh, and landschulen to restrict themselves to grammar and logic and sometimes to the former only. (See UNIVERSITIES AND MIDDLE AGES, EDUCATION IN.)

The logic of the syllogism, however, extended its sway over the whole range of higher education. Every study was reduced to a number of "questions" and thus made suitable for syllogistic reasoning. The presence of a large body of authoritative doctrines in the form of unquestioned self-evident principles, sentences from the Bible, the Christian Fathers, the "Philosopher," and the Doctors of the Church, made this procedure possible. Syllogistic disputation also adapted itself to the strong controversial spirit of the medieval age. The disputes between the nominalists and the realists were carried on with such violence that the king of France had to forbid all disputations on such "inflammatory subjects." In an age devoid of our modern means of publication and dissemination of the news of the intellectual life, the wandering scholar provided a means for intellectual entertainment and popular instruction.

*The Renaissance and Later* — The movement known as the Renaissance brought back to Europe Greek philosophy other than Aristotle, and even Aristotle began to receive a new interpretation in the light of the Greek text and the commentaries of Alexander Aphrodisius instead of the commentaries of Averroes. The spirit of free inquiry led to a questioning of the classic medieval view of the universe based on Aristotle, and brought Plato and Plotinus (*qv*) to the fore. University teaching of philosophy, however, was not profoundly affected by this movement, which was organized in societies or academies like the Florentine and supported by liberal princes. The humanists approached philosophy from the literary rather than from the logical or "scientific" side. The universities substituted the Greek text of Aristotle for the Latin

one, and some of Plato's dialogues were admitted into the orthodox curriculum, but the old methods remained. Logical disputations and the public defense of these continued to be required for graduation, even in the medical faculty, down to the nineteenth century.

Outside of the universities, also, began the mathematical-physical philosophy of Copernicus, Kepler, Descartes, Galileo, and Leibnitz. This new philosophy found its support in the great scientific academies (*q v*) founded in the seventeenth century. To a certain extent this new philosophy also found support from the new liberal culture which began in France under Louis XIV and which was supported by all the liberal courts of Europe. Leibnitz, who disdained to seek a university position, is the typical representative of this new culture and philosophy. Cambridge seems to have been the first university to hear the appeal of men like Barrow to stop speculating about "*entia rationis, materia prima*, and such like scholastic chimeras" and turn (1659) to the mathematical philosophy of Galileo and Descartes. But even here the influence of its own Newton was comparatively slight throughout the eighteenth century. In Germany the scholastic philosophy was replaced, after a struggle in which the authority of the liberal Frederick the Great proved the decisive factor, by the Leibnitz-Wolfian philosophy of "reasonable thoughts." Through the influence of men like Martin Knutzen and his more famous pupil, Kant, the Newtonian view of the physical universe entered into the universities. In France the removal of Church control over the faculty of philosophy in the eighteenth century made possible the introduction of Descartes. The modern scientific, as opposed to the scholastic spirit did not, however, completely triumph in academic philosophy until the second half of the nineteenth century.

Of great importance to the teaching of philosophy was the change of the language of instruction from Latin to the vernacular. This change was begun, in spite of bitter opposition, by Thomasius at Halle, in 1694, and was not completed until the first quarter of the nineteenth century. The poverty of material in the old scholastic philosophy was hidden by the learned language in which it was delivered. When men began to lecture in the vernacular they had to attend more to the substance of their teaching.

**Philosophy in the American College — History** — From the beginning, philosophy was taught by the class tutor on the basis of the scholastic manuals then used in England. Before 1664, when the three-year curriculum prevailed at Harvard, provision was made for logic and physics in the first year, ethics and politics in the second, and philosophic disputations in the third. At the end of the seventeenth century we find logic taught in the first two years from the Latin manuals

of Peter Ramus and Burgerdicius, in the third year Henry More's *Ethics* and Dr. Morton's *Physics and Metaphysics*, and in the fourth year Divinity. At the beginning of the eighteenth century Locke's *Essay on the Human Understanding* was introduced into the curriculum, and remained throughout the eighteenth century the starting point of American philosophy, as can be seen in such different types as Franklin and Jonathan Edwards. Berkeley and Hume had relatively little influence, the former being a Bishop of the Church of England and the latter suspected of being both a sceptic and a Tory. The deistic controversy and the question of free will in relation to Calvinistic theology limited almost entirely the range of philosophic interest. At the end of the eighteenth century new influences began to come in, French materialism as represented by Priestley, and Scotch realism as brought over by President Witherspoon. The former was influential mainly in the South, but the latter swept the country, and in the middle of the nineteenth century was the predominant influence in the philosophy taught in American colleges. Reid, Stewart, and Brown were several times reprinted in America, and in the second third of the nineteenth century Hamilton's lectures went through several American editions and abridgments. Paley's *Moral and Political Philosophy* and his *Evidences of Christianity* also came in at the beginning of the nineteenth century. In the fourth decade of the nineteenth century Cousin and French Eclecticism became influential. Partly through the influence of German immigrants and the St. Louis School of Philosophy, headed by Dr. William T. Harris, and partly through the influence of teachers trained in Germany, Kant and Hegel began to dominate academic philosophy in the last quarter of the nineteenth century. Though Mill and Spencer were widely read, they had little influence on the academic teaching of philosophy.

By the beginning of the nineteenth century separate chairs in mathematical and physical science were established in most American colleges, but so late as 1838 the course in philosophy at Amherst included mechanics, electricity, etc. In the first half of the nineteenth century economics was separated from philosophy in some of the larger colleges, but this separation was not completed in other colleges before the twentieth century. The modern period of the American college with its large field of electives may be said to have begun in the last quarter of the nineteenth century. Previous to that, philosophy was all prescribed and generally crowded into the last year or two, as one of the higher branches calculated not only to train the student in scholarship but to fit him for practical life.

*Aim* — It is agreed by all that the training of specialists in philosophy is beyond the scope

of the American college. Is philosophic training, then, an indispensable element of a liberal education for citizenship in the larger life? In urging an affirmative answer the following points have been made —

(1) Philosophic knowledge is a desirable end in itself. "Just to face these profound problems concerning the being, the origin of, and the destiny of man — just to know that there are such problems, and something of how the soul of man has in thought and feeling responded to them, is of itself no small part of liberal culture." (Ladd, *Educational Review*, X, p. 232.) Even if we regard philosophy as setting or solving no problem, the inspiration which comes from the knowledge of man's search for the thoughts that give value and dignity to human life is one of the best things that a liberal education can offer.

(2) Others emphasize not so much the knowledge itself as the philosophic habit. The philosophic or reflective habit is absolutely essential in order to enable the student to bring together the diverse fragments of knowledge picked up in the different departments, and to organize the contents of his mind into some unity. The need for such unity is especially evident when one reflects on the chasm which generally separates the religious ideas which the student brings to college from the scientific ideas which he gathers in such courses as geology, biology, or psychophysics. The philosophic habit prevents a man from becoming a narrow partisan, and in this way it is one of the finest flowers of culture.

This last aspect of the situation leads some to emphasize the ethical aim in philosophic teaching. More important than a knowledge of philosophic problems past or present is it that the student should be started in the business of philosophizing for himself. Students as a rule come to college slaves of traditional forms of thought and conduct, and to train them to become freemen of the intellectual life is the function of the devoted teacher of philosophy. Just because its results are not so certain as those of mathematics or the natural sciences, the student cannot find the answer before thinking the matter out for himself. Most people doubtless get this training in actual life in the school of experience, but philosophic training accomplishes it at less expense.

*Methods.* — No other teachers have, as a body, given so little attention to the pedagogy of their subject as the American teachers of philosophy; with the result that at least one professor of philosophy confesses, "It is possible that there has been more poor pedagogies in this field throughout the ages than in any other branch of the university" (*Journal of Phil.*, VII, p. 569). The pedagogic principle which has revolutionized modern science teaching, viz. to begin with the concrete

nearest the pupil's own experience rather than with the abstract elements of the subject, has not yet found full recognition in philosophic teaching, though some philosophic teachers have exemplified it beautifully. The philosopher is peculiarly apt to think that he is going from the simple to the complex when he is really proceeding from the abstract to the concrete (*q v*), forgetting that the abstract elements familiar to himself are strange and difficult of apprehension to the beginner.

The peculiar difficulty about philosophic teaching is that it involves on the part of the pupil an apparently different mode of thinking from the one to which he has been accustomed, a peculiar turning back on one's usual ideas, and this undoubtedly appears to the beginner both forbidding and fruitless. The problem, then, is how to make philosophic problems real to the student. How is the student to be seriously interested in philosophic issues and to be trained in the difficult art of philosophic thinking? We must show the vital importance of the subject from the beginning. For unless we succeed in showing the student that philosophy is a matter of life and death, essential to his own intellectual salvation, we cannot generally draw out the best efforts.

The pedagogic means generally used in the teaching of philosophy are the lecture, the quiz, the assigned reading, the essay, the recitation, discussion, and the pamphlet or question syllabus. As a method of philosophic teaching the lecture has, besides the disadvantages incident to it in other subjects, the added one that it must, in order to enable the student to follow it intelligently, necessarily avoid intricate questions or very close reasoning. The philosophic lecturer may have to present examples of reasoning as closely knit as that of the mathematician, but he has not the advantage of making it all visible on the blackboard. To offset this partly, some teachers put an outline syllabus in the hands of the pupils before the lecture. Even so, the lecture seems well adapted only to introduce or open up a topic and to summarize a discussion.

In many of our large colleges the professor gives two lectures a week, and an assistant meets the class, usually in smaller sections, for quizzes on required reading or on the substance of the lectures. The attitude of the students who, judging by the position of the assistant, regard the quiz as of secondary importance, makes this arrangement a more or less perfunctory affair, seldom productive of genuine enthusiasm. It is generally felt that the quiz should give way to the full recitation where the student and instructor can discuss the subject matter at length and not be compelled to take up any new topic before coming to a satisfactory termination of the one in hand.

The objections to discussion, especially

when instructors allow students to discuss with each other in class, are. (1) It is apt to give students the impression that philosophy is all a matter of opinion. (2) The variety of views that come into discussion is apt to be confusing to the beginner. (3) The discussion is apt to run into very minor matters and make students lose sight of the big issues. Discussion frequently degenerates into repetition of opinions, with no advantage except, at best, developing the student's cleverness at finding arguments. (4) Discussion or Socratic questionings must be profitless if students have not some previous knowledge of the subject to be discussed, and have "no method of ordering their thoughts in truth-giving directions."

In answer to these it may be maintained (1) that philosophy must begin with opinions, but opinions have to be made systematic and consistent with the whole of experience. The age of dogmatic manuals of absolutely certain truths is past, and those who sigh for them, as after the fleshpots of Egypt, do so in vain. (2) A critical attitude to one's opinion is the most effective method of philosophizing. (3) The teacher can correct the shortcomings by actively and critically guiding the discussion without dogmatically asserting his own opinion more than is necessary for effective summaries or searching questions. (4) Discussion has been called by Professor James the philosopher's laboratory, and the mere clash of one's opinion with that of others is an illuminating experience preventing one from returning to previous narrow dogmatism. It must also be maintained that philosophy does not have to start with a clean slate and that it may and must, to be effective, grow out of what the student already knows and thinks.

A device which Professor Garman introduced, and which he considered as much of an invention as printing by movable type, is the pamphlet. In these pamphlets some problem is stated or developed, but without any definite solution. These are loaned to the student, who, thus shut off from the possibility of turning to the next page to find the solution, is compelled before entering the discussion in the classroom to think the matter over and formulate his own answer. The instructor is then in a position to know whether the students are taking serious hold of the subject.

The intensive reading of classical texts forms part of most courses in philosophy. The frequent writing of essays is now recognized as a powerful instrument to bring the student's ideas together and make them clear to himself. For this reason some teachers encourage their students to write on subjects on which the latter have little information, or on topics which have not yet been discussed in the classroom. The essay is thus a means to compel the student to think on the subject. The

reading of texts, however, needs elucidation, and both text and essay need to be supplemented by thorough discussion and criticism to make them effective.

Philosophic clubs in many of our colleges frequently increase interest in philosophic studies. In many of our colleges connected with graduate schools senior students also have the privilege of entering the seminar courses.

*Organization of a Department of Philosophy* — Philosophy is usually regarded as a difficult subject requiring some maturity and knowledge of other studies. Hence, it is considered advisable to begin the study of philosophy in the upper classes. This arrangement, however, limits the number of courses that the undergraduate can take, and teachers who are anxious that students should have the advantage of the more advanced courses are in favor of opening the philosophy department to sophomores or even to freshmen.

As so much depends on the starting point in philosophy, the question, "Which course should be given first," is of great importance. There is, however, nothing like agreement in the answer. The historical answer, of course, is logic, which has for over 2000 years served as a propædæutic to philosophy. Even the driest treatise on formal logic raises a number of distinctly philosophical issues. Thus the relation of the universal to the individual, of terms to objects, judgment to reality, etc., all lead to philosophic issues of deepest moment. But the dry and apparently fruitless character of syllogistic exercise seems to postpone rather than introduce the vital issues of philosophy.

A great many colleges now offer psychology as the first course. The plausible argument is made that acquaintance with the workings of the human mind is a prerequisite for philosophy. But the growing disfavor of analytic or non-laboratory psychology raises difficulties in the way of this mode of introduction to philosophy, and raises the doubt whether physiology or physics is not just as much a prerequisite for philosophy as psychology. At any rate, neither logic nor psychology contain enough philosophy.

The main issue seems to be, however, between those who believe in beginning with the history of philosophy and those who believe in beginning with some survey of philosophic problems. The great arguments for the historical introduction are (1) that an approach through a survey of problems is apt to be partial and one-sided, and (2) that the history of philosophy gives one the proper perspective to appreciate the problems. In answer, however, it may be urged (1) that there is nothing pedagogically wrong in starting with a partial and one-sided view, provided we supply the motive power to enable the student to go on to a wider view. As a matter of fact the great historical system grew out of certain

problems. (2) The student cannot get the proper perspective of the history of philosophy without some preliminary appreciation of the problems themselves. The student is too immature to grasp the problems confronting Plato, Aristotle, or Descartes without having done any philosophic thinking on his own account. The effort on the part of teachers to simplify the teachings of the great masters and to make them intelligible to beginners leads to a certain conventionalization of their teaching, amounting to caricature. (See Owen Wister's *Philosophy Four*.)

Among those who urge that we should begin with the study of problems, no general agreement as to the content of these problems exists. Where such courses are given, they generally consist in an excessive simplification of the main problems of metaphysics and epistemology, *i.e.* an elementary treatment of the issues between monism and pluralism, idealism and realism, etc. As an introduction to the technical problems and to show how these problems grow out of real life, the fields of Religion, Science, Literature, History of Civilization, or Ethical and Political Problems have been suggested as supplying the proper material.

*Metaphysics or General Philosophy* — The course in metaphysics in the seventeenth and eighteenth centuries was predominantly one in natural theology, with special reference, in the eighteenth century, to the deistic controversy. The introduction of Locke in the beginning, and of the Scottish philosophy at the end of the eighteenth century, brought psychologic elements into the course and soon led to separate courses in theism and mental or intellectual philosophy. The introduction of German philosophy in the latter part of the nineteenth century brought epistemologic considerations forward, and for a time it seemed as if epistemology would replace metaphysics. This tendency, however, to regard epistemology as independent of metaphysics is now on the wane, but separate courses in epistemology, the theory of knowledge, or philosophy of mind are still given frequently, for epistemologic questions are decidedly in the foreground of current philosophic discussion. In determining the scope and the setting of the problems in the modern course of metaphysics, Lotze's *Metaphysics* has been very influential. Recently Taylor's *Elements of Metaphysics* has become popular with American teachers.

Within the past decade there has been a revival of interest in classical metaphysics, *i.e.* in problems of ontology and cosmology, and courses on the philosophy of nature are increasing. It is urged on behalf of the latter course that its subject matter is concrete and that the student has a feeling of dealing with the actual world. The course in the philosophy of evolution given in several colleges belongs to the same category.

A course which has now almost disappeared

from the curriculum of the American college is the one in the philosophy of history. Under the influence of books like Bunsen's *God in History* and Hegel's *Philosophy of History* this course was frequently given. With the reaction against *a priori* methods in history this course fell into bad repute. Recently, however, several have urged its reintroduction in a form consonant with the spirit of present-day philosophy. Professor Hudson has advocated making it the introductory course in philosophy (*Journal of Phil*, Vol VII, p. 426).

*History of Philosophy* — The course in the history of philosophy is like the study of history itself, a comparatively modern addition to the curriculum of the American college. The history of philosophy acquired the dignity of an academic discipline when Hegel made it appear as a rational system. At any rate, Schwegler's *History of Philosophy* (in Seeley's or Stirling's translation) seems to have been the first widely used textbook in this field in American colleges. One or two terms are usually devoted to this course. When the latter is the case, ancient philosophy is taken up in the first and modern philosophy in the second term. Little attention is given to medieval philosophy, and modern philosophy is usually ended with Hegel or Lotze, if not with Kant. In one or two of the colleges connected with graduate schools students have the opportunity of taking the special course in contemporary philosophy.

Courses in special periods of modern philosophy such as Continental Rationalism (Descartes, Spinoza, and Leibnitz) or British Empiricism (Locke, Berkeley, and Hume), are given in most colleges having a developed department of philosophy. Sometimes we have also special courses in Plato, Aristotle, or Kant. But almost no courses are given in the history of special fields such as logic, epistemology, or ethics.

With the waning of the metaphysical interest in the latter part of the nineteenth century, the history of philosophy threatened to absorb all the vitality of the philosophy department, and in the United States as in Germany the number of courses in the history of philosophy was almost equal to the combined number of all the other philosophic courses; but this historical wave is now receding.

In the teaching of the history of philosophy some emphasize the history and others the philosophy. The former method has been the hitherto prevailing one, — so much so that a recent college textbook in this field includes and emphasizes a great deal of geographic information. The generally recognized danger in the teaching of the history of philosophy is the breeding of a shallow skepticism through the kaleidoscopic picture of the rise and fall of different systems. To offset this, many teachers try to emphasize the historical continuity of philosophic problems. The at-



tempt, however, to minimize philosophic differences or the controversial element tends to exaggerate the conventionalization of the doctrines of the great philosophers. To guard against this, some reading in the sources, Plato, Descartes, Locke, etc., is frequently prescribed, even in the general course on the history of philosophy. To make this reading effective, however, intensive study is needed, and one has to give up the continuity of the historical survey.

Those who would emphasize the philosophy rather than the history in this course are quite willing to leave a great many lacunæ in the history and to select only those problems "which bear a significant relation to the issues and interests of our own time." In expounding a philosopher we should not try unsuccessfully to take the view point of his contemporaries, but should treat his problems and theories frankly from the standpoint of the present."

For the course in *Æsthetics* or *Philosophy of Art*, see article *ÆSTHETICS*.

*Relation of Philosophy to the Other Departments* — The growing specialization in the different fields of human knowledge and in departmental teaching has brought about a strong habit on the part of teachers of philosophy to avoid all issues of fact which are the subject matter of the various sciences. This has tended to eviscerate philosophic teaching and to give it the appearance of a fruitless occupation with empty forms devoid of content. Fortunately, however, the sciences, especially physics and biology, are now outgrowing their juvenile fear of metaphysics, and the philosophic spirit is growing in the various sciences, as well as in the philologic and literary courses. Teachers of philosophy now advise their students to take various courses in other departments in order to make their philosophic study more thorough.

**Philosophy in the Universities** — *The American Graduate School* — The aim of graduate instruction in philosophy is to give the student the technical equipment needed to teach and to advance philosophic knowledge. It terminates with the conferring of the Doctorate of Philosophy. As the requisite philosophic ability is not widely distributed, our best graduate schools make it distinctly understood that this degree will be granted only to those who have distinctive ability in this field.

Graduate students in philosophy are (1) those who intend to teach philosophy, (2) students of divinity, or (3) students of other subjects, such as education, who regard advanced philosophic studies as helpful in the preparation for their special careers. Of these three classes only the first and part of the second try to complete the work necessary for the doctorate in philosophy, the others are usually satisfied with the M.A. in this branch of study, or, where the group system prevails, they choose it as one of their minors for the Ph.D.

Instruction is given mainly through lectures and seminar or research courses. The lecture in the graduate schools can be more frankly the statement of the lecturer's own philosophic views or interpretation of classical doctrines than is possible in the college. The distinctive work of the graduate school, however, consists in the training for research, and this is done principally in seminar courses. The essence of the seminar course is that the student should have the opportunity to report from time to time the result of some research, or his own constructive thinking, and have it subjected to the thorough criticism of his fellow students and of his instructor. Many courses not announced as seminars are practically conducted in this way (practica). The typical seminar is announced as restricted to some one general field, e.g. advanced logic, and the different members report on different topics in this field which they have chosen for the year. Some professors assign only one topic, e.g. the relation of mind and body, as the subject for the year, and various students report either on different aspects of this question or on the different classical views which have been maintained with regard to it. In this latter form of seminar all students report at every session, instead of devoting an entire session to one or two reports.

*Research Courses* — The minimum requirements for the Ph.D. are generally two years' attendance and the thesis. As the topic of the thesis seldom falls within the subject of a regular seminar course, the student misses any direct help in the preparation of his thesis. For this reason, some graduate schools have instituted research courses in which the student individually reports to the professor in charge of his field of inquiry.

In some of our graduate schools, instructors and advanced students meet from time to time to discuss philosophic problems of current interest. More often a journal club is formed in which the different members report on recent publications in the field of philosophy. Many of our universities make provision for the publication of philosophical studies. They are generally devoted to the publication of theses or syllabuses by the professors.

*Philosophy in the German Universities* — The students now entering the university from the gymnasia have had practically no training in philosophy, and the great majority of the courses are, therefore, elementary and, for the most part, historical in character. Nearly all of them are lecture courses, whether public or private, requiring no work on the part of the student except such reading as he chooses to do on his own account. The students taking philosophy belong to different groups besides those who are candidates for the Ph.D. in philosophy. Philosophy is one of the subjects of the state examination which every candidate must pass in order to teach in the

classical gymnasia. A good many of the universities still require philosophy as an additional subject (*Nebenfach*) from all candidates for the Ph.D. in the faculty of philosophy (i.e. Faculty of Arts and Sciences). Besides these, a great many people in Germany regard some university work in philosophy as essential to a liberal education, and even students of medicine, law, or technology attend many of the "public" lectures. The student has his first chance to report on his own work in the seminar which each ordinary professor gives in his field.

Courses in philosophy are either historical or systematic. Logic, epistemology, psychology, philosophy of history, ethics, pedagogy, and aesthetics form the topics of the systematic courses, but even these are largely historical. Philosophy of religion is left to the theological faculty and philosophy of law to the faculty of law. In the reaction against the post-Kantian systems which ruled in Germany in the first half of the nineteenth century, the predominant interests developed were the epistemologic and the historical, and they are still foremost.

The requirements for the doctorate are the oral examination and the thesis, which is also most frequently historical. The fact that a doctorate is given with various grades, *cum laude*, *magna* and *summa cum laude*, makes it rather easy to get the degree with a merely passing mark. The result is that Germany grants more degrees in philosophy than any other country. The doctorate dissertation itself has been the subject of a great deal of criticism on the part of thoughtful German teachers, because, owing to the historical tendency, most students spend all their time in mere reading and senseless amassing of quotations. (See Paulsen's *German Universities*.) A great deal of criticism has also been directed against the extensive use of the lecture system. The appropriateness of the lecture in an age of quick printing has been questioned, especially by non-academic philosophers (E. von Hartmann).

*Philosophy at Oxford and Cambridge* -- Philosophic instruction at Oxford and Cambridge is nearly all undergraduate. At Oxford philosophy is required only of those who take the examination for final honors in *Literæ Humaniores* ("Greats") and at Cambridge of those who prepare for the Moral Science Tripos. Only a little logic is required of passmen.

At Oxford philosophy is viewed simply as part of a classical education in the liberal arts. The content of philosophic study continues the humanistic tradition, and centers itself in Plato's *Republic* and Aristotle's *Ethics*, and the logical, metaphysical, ethical, and political questions they raise. No interest is taken in the history of philosophy, and medieval philosophy is entirely unknown in the University

of Duns Scotus, Roger Bacon, and William of Occam. Of modern English philosophy only Bacon's *Novum Organum* is required. Though Hegelian philosophy has been very influential at Oxford in the persons of T. H. Green, Wallace, and Caird, Hegel has not figured in the official instruction given by the university.

In Cambridge the study of mathematics and physics has absorbed the vitality of philosophy. The Cambridge Platonists, a group of Neo-Platonic philosophers of the latter part of the seventeenth century, seem to have exerted no lasting influence on the University. Locke and Clarke were studied during the eighteenth century, but no importance was attached to such studies. Due largely to Paley, moral philosophy and natural religion were added to the regular examinations in 1779, and Paley's *Moral and Political Philosophy* became a standard textbook. In 1850 the Moral Science Tripos was instituted, largely through the efforts of Whewell, but it did not confer a degree till 1860. The Moral Science Tripos is somewhat more systematic than the philosophic portion of the examination in *Literæ Humaniores*, but success in it does not carry the éclat that goes to the student in the Classical or Mathematical Tripos.

Lectures at the various colleges are given by professors, lecturers, or readers, on the topics covered by the examination papers, but there is no discussion at these lectures, nor is there any task imposed on the student. Indeed, these lecture courses are simply supplemental to the real work of instruction given by the tutor. Students report weekly to their tutor, discuss their difficulties with him, and submit their essays to his criticism. The mode of life at both these universities is also conducive to a great deal of vigorous discussion among the students.

The advantage of the comprehensive final examination in philosophy is that the student cannot pass off his courses one after another (which can be done on the basis of piecemeal knowledge), but, instead, has to keep all his studies together throughout the entire period of study (about two years and a half). This undoubtedly is conducive to a genuine philosophic attitude in which the different portions of the field are compared, coordinated, and synthesized. At the same time Oxford and Cambridge teachers generally recognize that study with constant reference to certain questions to be asked on an examination is bound to be narrow and "calculated to forfeit the native instinct of curiosity of which, as Aristotle says, philosophy was born" (Mark Pattison). "It would be difficult for Aristotle himself to obtain a serious audience of undergraduates unless his teaching was understood to 'pay' in some Tripos" (Professor Sidgwick). The effort to win honors in a final examination is more likely to develop skill in answering

certain questions than genuine philosophic insight.

Graduate study in philosophy may now be pursued at Oxford by those who enroll as candidates for the BSc degree. But the number of such students is very small, and no special courses are given for their benefit. They simply pick out, subject to the approval of the governing committee, a series of courses from those given to undergraduates, and submit a final thesis.

Philosophic instruction in Dublin University is modeled on the Oxford and Cambridge plan.

*The Scotch Universities* — Philosophic instruction in the colleges of the Scotch universities is given in regular classes, somewhat as in the American college. The tendency in the Scotch college, however, is to concentrate the philosophic teaching in one year and not subdivide it into fragmentary courses, except that additional courses are given for honor students. The regent or tutorial system was abolished at the beginning of the eighteenth century (though some of the professors continued to be called regents until the middle of the nineteenth century).

Owing to excessive religious division which, for historical reasons, arose between Catholics and Protestants, Episcopalians and Presbyterians, Established and Free Churches, the Scotch people have developed a keenness for controversy and an ability to trace subtle intellectual distinctions. Philosophy has, therefore, always been a favorite study with them, and they have developed their own national philosophy, which, however, has been profoundly influenced by German idealism. More than any other English-speaking people, they have developed the study of the philosophy of law.

Most of the Canadian, Australian, and even the newer English universities resemble the Scottish universities more than they do Oxford or Cambridge in their organization of philosophic instruction.

*The French Universities* — Elementary instruction in philosophy is given in the last year of the *lycée* or *collège* — corresponding to the American high school. The graduate receives his baccalaureate degree and is then allowed to choose his professional course. Some students, however, attend courses in the faculty of letters or science before entering on their professional studies. In addition to the doctorate in philosophy, the various state examinations for the *licentiate*, and especially for the "*agrégation*," also require a good deal of philosophical knowledge. In the *Ecole Normale* two years of philosophy are required of all intending to qualify as teachers of history and letters, and additional special instruction is given to those who want to teach philosophy in the secondary school.

The French universities are literally and

primarily so many faculties, i.e. groups of professors. The primary duty of the professor is to advance his subject, and for this reason he gives a course or two every year. They generally take the form of lecture orations to which the public is admitted practically free. Seminar courses are given for the benefit of candidates for the Ph.D. The standard for the doctorate is much higher than that of Germany. Not only the thesis but the oral examination before conferring the doctorate is taken very seriously by all concerned and is generally reported in the *Revue de métaphysique et de morale*.

In France, philosophy is closely associated with psychology, sociology, and the philosophy of law. In no other country is there less pedantry or more scientific spirit in the teaching of philosophy, while attention to clearness and logical form is still maintained.

The Neo-Scholastic philosophy is vigorously developed in the Catholic schools and has several notable periodicals for its organs. It is characteristic of the status of French philosophy that in the Institute of France it is represented in two sections of the *Académie des Sciences Morale et Politique*.

*Philosophy in Other Universities* — French positivism is still a vital force in the teaching of philosophy in Italy, Spain, and Spanish America, especially Mexico. In Italy positivism has to meet not only scholasticism and the native Catholic philosophy (Rosmini, Mamiani, etc.), but also adaptations of German idealism. In Spain and Mexico, however, the issue is sharply drawn between positivism and scholasticism, while in countries like Argentina and Chile, French positivism seems to hold the field.

*Philosophy in Secondary Schools* — In Germany — The study of logic, as we saw above, formed part of the curriculum of secondary schools from the very beginning. It was kept in the curriculum of the grammar school by Sturm, Ratke, and Comenius, and Luther, with all his hatred of Aristotle, saw the value of uniting the gospel with the Aristotelian logic as a weapon against the lawless vagaries of the "spiritualists." The *Lehrplan* of Francke (1698) provides for six hours a week of philosophy to prepare students for the university, and in the *selecta* of the Halle *pädagogium*, metaphysics, and natural law were taught in addition to logic. J. A. Ernesti and Gesner lectured on psychology, logic, natural theology, metaphysics, and ethics, and embodied them in their manuals for secondary schools (1736 and 1756). Frederick the Great and his minister of education, Zedlitz, emphasized the value of logic as an aid to independent thinking. In their school for young nobles they introduced the history of philosophy, natural law, and psychology, which were taught four hours per week for the last three semesters. The breakdown of the Wolfian

philosophy through Kant left no settled philosophic doctrines which could be dogmatically taught in secondary schools. Hence philosophy was gradually discontinued, and the original plan of the Prussian gymnasia of 1812 made no provision for it. Repeated complaint, however, was made by the university professors that students coming from gymnasia were entirely unprepared for university lectures on philosophy. In 1825 the minister of education, von Altenstein, after obtaining the opinion of Hegel, issued an order intended to remove this sharp cleft between the gymnasia and the universities. It provided for an introduction to philosophy by means of logic and empirical psychology to be taught two hours per week in the last two years. Systematic philosophy and its history were expressly excluded.

The ministerial order of 1825 did not make the teaching of this philosophic propædæutic obligatory, since teachers were not everywhere available for this purpose. In 1837 the subject was made obligatory on all gymnasia, and it was ordered that teachers of mathematics and physics be assigned to teach it. This last arrangement proved unsatisfactory. Thus the leading and most satisfactory textbook of logic, designed as an introduction to philosophy, was Trendelenberg's *Elementa logices Aristotelica*, which involved difficult Greek. The collapse of the great post-Kantian systems, and the growing contempt for philosophy which characterized the middle of the nineteenth century, caused other studies to crowd out the philosophic instruction. In 1856 the number of hours to be devoted to philosophic propædæutic was reduced to one in each of the last two years, and it was associated with instruction in German. This reduction from the rank of an independent study caused it to be neglected, and in 1882 it was made optional. The official *Lehrplan* of 1891 still considers it important that the student should become familiar with the more important "general concepts and ideas," but German prose readings might serve as the means. The last official order on this point (1901) leaves the situation unchanged. The director may, if he is so inclined and has a suitable teacher, give this course, but the crowding of the curriculum with prescribed work, the general attitude to philosophy, and the difficulty of finding teachers who can teach both German and philosophy has caused the distinctive course in philosophic propædæutic to fall into general disuse in Prussia, Saxony, and other German states.

In Austria, and in some of the southern German states like Baden, philosophic propædæutic is still taught. In Austria it was introduced in 1849 by Exner and Bonitz, who followed Herbart's plan. Psychology, logic, and a little of the history of philosophy are taught two hours per week in the last two

years. In Baden, the same order is followed, but the course is reduced to one hour per week. Hungary and the Scandinavian countries, in the main, follow the Austrian system.

In France — French secondary schools are now no longer regarded simply as preparatory schools, but as schools of liberal culture. Hence philosophy is not taught in them simply as propædæutic, but to provide insight into the problems at the basis of civilization, especially the scientific problems. The basis of the present instruction in philosophy was laid by Cousin, who as minister of public instruction made Eclecticism a sort of state philosophy. The Revolution of 1848 was hostile to this state philosophy, and the reaction which followed was equally so; but Duruy restored it in 1863. Under the Duruy régime philosophy in the lycées included introduction, psychology, logic, ethics, theology, and the history of philosophy.

Under the present arrangement students are divided in the last year into two forms, — the philosophical and the mathematical. The former devotes eight and one half hours per week to philosophy and the latter only three. The official requirements in the former course include (1) introduction to philosophy, (2) analytic psychology, (3) a little of the elements of aesthetics, (4) logic and the methodology of the mathematical, the physical, and the moral and social sciences, (5) ethics, personal and social, and (6) metaphysics, covering the questions of the value and limits of human knowledge, the problems of matter, soul, God, etc. In addition four texts, chosen from a long list of ancient and modern authors, are read and discussed in the classroom, and used as the basis for the exposition of the philosophic systems which they represent.

In the mathematical form, only the logic and the ethics are developed. The close relation between the study of the methodology of the sciences and the student's other scientific studies, makes this course more popular with students than the larger course in the philosophical form. A thesis in philosophy is required for the baccalaureate only in the latter form.

*Philosophy in the Secondary Schools of Other Countries* — In Italy the organic law of 1859 (law of Casati, § 188) made philosophy an essential part of the curriculum of the *licei*. Four hours are now devoted to it in the last year, and the subjects covered are mainly logic and psychology as taught in the French schools. Many, however, are urging its extension. (See *Dizionario di Pedagogia*, art. "l'Insegnamento della Filosofia.") The French system of teaching philosophy as a branch of liberal culture in the secondary schools is followed, on a somewhat reduced scale, in Argentine and Chile. For the philosophic teaching in the Jesuit schools, see article JESUIT EDUCATION.

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**PHILOSOPHY OF EDUCATION — Relation of Philosophy and Education** — A clear conception of the nature of the philosophy of education in distinction from the science and principles of education is not possible without some antecedent conception of the nature of philosophy itself and its relation to life. Is philosophy capable of being generated and developed without any reference to education? Then a philosophy of education will be simply the application to educational ideas of an outside ready-made standard of judgment, with all its dangers of foreing the facts of education so that they conform to and support the philosophy already formed. In this case, we shall have as many philosophies of education as are required to illustrate diverging philosophic systems. The case will stand quite otherwise if there is an intimate and vital relation between the need for philosophy and the necessity for education. In this case the philosophy of education will simply make explicit the reference to the guiding of life needs and purposes which is operative in philosophy itself. It will not be an external application of philosophy, but its development to the point of adequate manifestation of its own inner purpose and motive. While different philosophies of education will still exist, they will not be so many corollaries of divergent pure philosophies, but will make explicit the different conceptions of the value and aims of actual life held by different persons. It will be seen that different philosophies exist because men have in mind different ideals of life and different educational methods for making these ideals prevail. The chief point of this article is to develop the conception of the internal and vital relation of education and philosophy.

Every seriously minded person may be said to have a philosophy. For he has some sort of a working theory of life. He possesses,

in however half-conscious fashion, a standpoint from which weight and importance are attached to the endless flow of detailed happenings and doings. His philosophy is his general scheme and measure of values, his way of estimating the significance that attaches to the various incidents of experience. If pressed to state and justify his working principle, he might reply that while it would not satisfy others, it served its owner and maker. No individual, however, is so eccentric that he invents and builds up his scheme except on general pattern that is socially transmitted to him. The exigencies and the perplexities of life are recurrent. The same generic problems have faced men over and over; by long-continued cooperative effort men have worked out general ideas regarding the meaning of life, including the connections of men with one another and with the world in which they live. These conceptions are embodied not only in the codes of moral principles which men profess and the religions in which they find support and consolation, but in the basic ideas which have become commonplace through their very generality: such ideas as that things hang together to make a world, that events have causes, that things may be brought into classes, the distinctions of animate and inanimate, personal and physical, and so on throughout the warp and woof of our intellectual fabric. Philosophy aims to set forth a conception of the world, or of reality, and of life which will assign to each of these interests its proper and proportionate place. It aims to set forth the distinctive rôle of each in a way that will harmonize its demand with that of other ends.

**Need of a Philosophy of Education** — Three classes of motives, unconsciously blended with one another, usually operate in making the need for systematic and rational ideas felt, and in deciding the point of view from which the need is dealt with. These motives are the conflict of conservative and progressive tendencies, the conflict of scientific conceptions of the world with beliefs hallowed by tradition and giving sanction to morals and religion; and the conflict of institutional demands with that for a freer and fuller expression of individuality. (1) Some philosophies are marked by a reforming, almost revolutionary, spirit. They criticize the world and life as they exist, and set in opposition to them an ideal world into conformity with which the existent scheme of things ought to be brought. Other philosophies tend rather to justify things as they are, pointing out that if we penetrate to their true nature and essential meaning, each class of things is found to serve a necessary purpose and embody a necessary idea. Plato and Aristotle, Fichte and Hegel, for example, are all of them classified as idealists, but the tendency of Plato and Fichte is to set up an ideal over against

the actual, while that of Aristotle and Hegel is to exhibit the rational nature or ideal already embodied in the actual — a difference that clearly corresponds to the ordinary division of men into reformers and conservatives.

(2) Different philosophers interpret their material very differently according to the respective weight they instinctively attribute on the one hand to scientific conceptions of the world, and on the other to ethical tendencies and aspirations. If one takes his departure from the former, he will explain men's moral and religious beliefs on the basis of the principles furnished by contemporary science, and will deny the validity of all ideas, no matter how influential in life, that do not harmonize with these principles. To others, men's moral aims and efforts are the most significant thing in life and are taken as the key to the nature of reality. The results of science are reinterpreted to bring them into line. During the rapid development of natural science since the seventeenth century, many philosophies have thus made it their chief business to provide a view of reality in which the seemingly divergent claims and standpoints of natural science and morals should be reconciled.

(3) The third moving force concerns the value attached to the principle of free individuality — individuality that confers upon each person a distinctive worth not supplied by any other person and not capable of being summed up or exhausted in any general formula or principle. Some thinkers start by natural preference with the standpoint of law or a general order, or a pervasive and unifying force. Strictly individual traits are then brought into line by reduction (or at least approximation) to the universal. If individuality is not deemed as an ultimate reality, it is explained and justified from the standpoint of a comprehensive uniform principle. Such philosophies tend to be deductive in character and to assign greater value to reason, which deals with general conceptions, than to perception, which reveals particulars. Persons with a strong interest in individuality reverse the standard of value and the method of consideration. Specific individuals are taken to be the primary facts, general principles, laws, classes, are derived from comparison of the individuals or are subordinate to them. In method, such philosophies tend to be empirical and inductive, accepting the observations of sense and the particular situations of conduct as the most certain data, and employing rational conceptions only as secondary means of connecting particulars or filling their gaps.

The totality or completeness at which philosophy aims is not quantitative, it is not the greatest possible sum of accurate knowledge. As to this sort of completeness or wholeness, philosophy cannot compete with the special sciences taken in their totality. For all its special facts, philosophy must depend upon

these sciences, and so far as organization of the facts into a larger system of knowledge is concerned it must also walk humbly in the path beaten by science. But there is another kind of unity and wholeness with which science is not concerned, unity of attitude and wholeness of outlook. But wholeness means also balance, interaction, and mutual reinforcement of the various values and interests of life: religion, poetry, industry or the business of making a living, politics or the art of living together, morals, science itself. An account of "experience as a whole" is a conception of experience that shows the special contribution which each of these typical interests makes, and the claim for recognition it may legitimately put forth. The only "experience as a whole" that concerns man is an experience whose parts change continuously, but all change into one another as there is occasion, with ease and flexibility, and so as to enrich one another. Its opposite is not our everyday experience with its fluctuations and its endless running out into the new, but one-sided exaggerations of some phase of this everyday experience, or an isolation of its interests so that they restrict one another, and thus impoverish life.

**Philosophy of Education, Science of Education, and Principles of Education** — Education is such an important interest of life that in any case we should expect to find a philosophy of education, just as there is a philosophy of art and of religion. We should expect, that is, such a treatment of the subject as would show that the nature of existence renders education an integral and indispensable function of life. We should expect an interpretation and criticism of the materials and methods currently used in education, using this necessary function as the standard of value. Such a treatment is usually presented under the title of "Principles of Education." While no rigid line marks off this discussion from what is termed the "Science of Education," there are differences of aim and spirit that are worth noting, because of the light they shed upon the nature of a philosophy of education. It is possible to start with education as an established fact, with education as it is currently practiced, and to describe and analyze the various factors that enter into it, factors of school organization and administration, of management and discipline, of instruction and the various branches of study. So far as the analysis reveals general principles of individual growth and of social grouping which are operative in the degree that teaching and training are effective, its result rises above the level of recounting and cataloguing relevant phenomena. Hence it deserves the name of a science. This science affords the basis for a critical comparison of the various processes that are currently employed. As teachers are put in intelligent possession of it, their own work becomes less

blind and routine, the science, as in other cases, develops a corresponding art which lifts its practitioners from artisans into artists.

Notwithstanding its intellectual and practical value, such an account of education does not cover the whole ground. It works, so to speak, inside of education as a given fact. Another and larger view is possible and desirable, a less professional and a more human view. Education is a concern not merely of school administrators and teachers, of pupils and then parents, but of society. We may have a definite and systematic knowledge of the principles that are at the bottom of the most effective current practice of the day, and may be able to use this knowledge to criticize and correct defective phases of this practice, and yet be thrown back upon mere opinion or mere custom for a judgment as to the value of an educational system as a whole. The general spirit and trend of an established education might be wrong, and yet make possible a scientific account of itself which would be available for rectifying it in details. But the improvement would still be within a scheme which in its main direction and purport was not what it should be.

We have to judge every educational institution and practice from the standpoint of that "whole of experience" which calls it into being and controls its purpose and materials. There exist not merely the principles by which the existing system of education is made effective, but also the principles that animate the entire range of interests of the whole life of the community and that make the existing system what it is. An interpretation and valuation of the educational system in the light of this inclusive social context is the larger and more human view of which we spoke. It utilizes the contributions of science in all its branches to give society an insight into what sort of thing it is undertaking in the training of its members, and it gives society a clearer consciousness of the meaning of the educational office so largely performed by instinct and custom.

**Philosophy is the General Theory of Education** — The connection of education and philosophy is, however, even closer and more vital than this sketch of the principles of education, as distinct from the science of education, would indicate. *Philosophy may be defined as the general theory of education*, the theory of which education is the corresponding art or practice. Three interlinked considerations support this statement: (i) Men's interests manifest their dispositions; (ii) these dispositions are formed by education; (iii) there must be a general idea of the value and relations of these interests if there is to be any guidance of the process of forming the dispositions that lie back of the realization of the interests. (i) If at any time the various values of experience are out of harmony with

one another, the ultimate cause of the difficulty lies in men's habitual attitudes toward life the habits of judging and of emotional appreciation that are embodied in their habits of action. Interests, attitudes, dispositions, fundamental habits of mind are mutually convertible terms.

(ii) If we but consent to extend the term education beyond its narrow limitation to schooling, we shall find that we cannot stop short in this extension till we have broadened it to cover all the agencies and influences that shape disposition. Not merely books and pictures, but the machinery of publication and communication by which these are made accessible must be included — and this means the use made of railway and telegraph as well as of the printing press, the library, and the picture gallery. Ordinary daily intercourse, the exchange of ideas and experiences in conversation, and the contacts of business competition and cooperation are most influential in deciding the objects upon which attention is fixed and the way in which attention is given to them. Every place in which men habitually meet, shop, club, factory, saloon, church, political caucus, is perforce a schoolhouse, even though not so labelled. This intercourse is in turn dependent upon the political organization of society, the relations of classes to one another, the distribution of wealth, the spirit in which family life is conducted, and so on. Public agitations, discussions, propaganda of public meeting and press, political campaigns, legislative deliberations, are in this regard but so many educational agencies. In brief, every condition, arrangement, and institution that forms the emotional and imaginative bent of mind that gives meaning to overt action is educational in character.

(iii) There are but two alternatives. Either these agencies will perform their educational work as an incidental and unregulated by-product, molding men's mind blindly while conscious attention is given to their other more tangible products, or men will have an idea of the results they wish to have attained, will judge existing agencies according as they achieve or come short of these ends, and will use their idea and their estimate as guides in giving the desired direction to the working of these agencies. This brings us, again, to philosophy, which, as we have seen, is the attempt to develop just such an idea. This is what is meant by saying that philosophy is, in its ultimate extent, a general theory of education, or that it is the idea of which a *consciously guided education* is the practical counterpart.

It is, of course, possible to exaggerate the importance of philosophy even when it is conceived in this vital and human sense. Reflection is only one of the forces that move our action, and in the thick of events it gives place to necessities of more urgency. But on the other hand, reflection is the only thing

that takes us out of the immediate pressure and hurly-burly of overt action. It is a temporary turning aside from the immediate scene of action in order to note the course of events, to forecast probable and possible issues, to take stock of difficulties and resources, to bring to explicit consciousness evils that may be remedied, to plan a future course of action. Philosophy cannot create values by thinking about them, by defining and classifying and arranging them. But by thinking about them, it may promote discrimination as to what is genuinely desirable, and thereby contribute to subsequent conduct a clearer and more deliberately settled method of procedure in attaining what is desired.

There is always danger that the student of philosophy will become simply a student of philosophic traditions, of something that is conventionally called philosophy but from which philosophic life has departed because the genuine problem in life which called out the formulation has departed from consciousness. When philosophic distinctions are approached from the standpoint of their bearing upon life through the medium of the educational process in which they take effect, the perplexity, the predicament, of life which generates the issue can never be far from recognition.

**Relation of the History of Philosophy to Education** — The conception of the intimate connection of philosophy with the fundamental theory of education is borne out by reference to the history of philosophic thought. So far as European history is concerned, philosophy originated at Athens from the direct pressure of educational questions. The earlier philosophy, that of the Greek colonies, was really a chapter in the history of science, dealing with the question how things come to be what they are and how they are made. Then the traveling teachers, known as the Sophists, began to apply its results to the conduct of life, and to use the same methods to discuss moral and social matters. Up to their time, men had attained skill and excellence in the various callings of life and in the business of citizenship through apprenticeship in the customs of the community. The Sophist professed to be able to teach "virtue"; that is, ability in the various functions of life. Some limited their claims to ability to teach the arts of poetry and oratory; others gave instruction in the various industrial arts or in military tactics. Others broadened these pretensions, professing ability to convey power in the management of human affairs, private, domestic, and public. It is impossible to exaggerate the historic significance of these claims. They implied that matters which had always been left to practice, and to practice controlled by the habitudes and ideals of the local community, could be set free from their customary provincial setting and be taught on theoretical grounds, on grounds of intellect. Natu-



rally these pretensions evoked violent protests from conservatives, who felt that the life of the community was at stake. This conflict of devotion to social customs with a reliance upon abstract knowledge provoked the first great speculative issues. What is the real basis of social organization and of moral responsibilities? Do these rest upon custom, upon enactment by superiors, or upon universal principles of nature?

At first these questions were discussed, as was natural, in a casual and superficial way. But Socrates, Plato, and others disentangled the basic questions involved. What is the nature of the state and of law? What is the true end of life? How shall man know this end? Can virtue or excellence be taught? Is it a matter of practice and habit, or something intellectual—a kind of knowledge? If so, what kind? What is knowledge? What is its standard? If virtue can be learned, how is learning related to knowledge?

These questions might be multiplied almost indefinitely, but it is more profitable to note that they tended to group themselves into three main problems. (i) What is the relation of knowledge, of reason, to practice, custom, and the opinions that go with custom? (ii) What is the relation of human life, especially of social organization and its virtues and responsibilities, to the nature of the universe, of reality itself? (iii) What is the relation of change, and of the particular things that change, to the universal and permanent? In a generation or two these questions were largely cut loose from their original connection with education. Their discussion developed into distinct disciplines, often isolated from reference to practical or social matters. into logic, as a theory of knowledge, into metaphysics, as a definition of the nature of things, into cosmology, or a general account of the constitution of nature. But the fact that the stream of European philosophic thought arose out of the discussion of educational ends and means, remains an eloquent witness to the ulterior motive and purport of philosophic reflection. If philosophy is to be other than an idle and unverifiable speculation, it must be animated by the conviction that its theory of experience is a hypothesis that is realized only as experience is actually shaped in accord with it. And this realization demands that man's dispositions be made such as to desire and strive for that kind of experience. The philosophy of education is not the external application to educational affairs of a conception of reality ready made independently of education, it is just the philosophic conception of a balanced and articulated experience stated so as to be available for shaping intellectual and emotional disposition, so that the existence it describes may become a living fact, not the dream of a philosopher's brain.

#### Problems of Philosophy and of Education

**the Same.**—Since upon education falls the burden of securing the practical realizing and balancing of the various interests of life, the educator faces, if only in half-conscious, unsystematic form, precisely the same questions that philosophy discusses in the abstract. In the attitude taken to matters of hygiene, physical training, manual training, corporal punishment, etc., there will be expressed, for example, some idea of the connection, or lack of connection, of mind and body, an idea that, made explicit and fitted in with other beliefs, corresponds to some typical philosophical theory of the relation of bodily and mental action. Some practices imply that man is an external compound of body and soul, in themselves two independent forces. Others proceed on the assumption that the body is a temporary shell in which mind is housed, or that the body is a clog upon the development of spirit. Other projects imply that only through the adequate functioning of the bodily organs can there be realized a symmetrical and sound mental life. The various theories held by philosophers as to the relation of knowledge to practice are paralleled in educational procedure. Some assume that contemplative knowledge is an end in itself, others, that knowledge is a mere external prerequisite for successful action, success being measured on the basis of material possessions and power, others that knowledge is an intrinsic condition of a practice that is free and full of meaning. In educational discussion, one or other of these ideas appears in some disguised form in every dispute about cultural *versus* professional or vocational education, and shows itself in most debates concerning the relation of the acquisition of knowledge to the formation of character. The old (almost the first) philosophic question as to the relation of the individual to the established objective order appears in instruction as the question of individual initiative and choice over against the accumulated body of organized knowledge which forms the ready-made subject matter of teaching. The philosophical controversy as to the method of knowledge, with its division of camps into sensationalist and rationalist, has a counterpart in the different methods of learning that are encouraged in schools. The philosophic split between mind and physical nature corresponds to the educational antagonism of humanistic and scientific studies, which also has a genuine, even if indirect, bearing upon the philosophic issue of idealism *versus* realism.

To sum up. Various partial tendencies and interests of life are reflected in native home-spun intellectual schemes possessed of strong emotional coloring. These are traditionalized; they float, so to speak, upon the institutions of a society, giving them their sanction and explanation. Philosophies in the formal and technical intellectual sense are generated when these traditional systems are sub-

jected to independent intellectual examination with a view to their rational criticism and supplementation. As the more popular schemes express the standard and the subject matter of the educational procedures of a community, since they naturally aim to shape disposition in the continued acceptance of the customary beliefs and ideals,—so the more conscious philosophies can be tested and objectively embodied only as they are made the working bases of educational processes that develop an experience in harmony with themselves. To convince a small number of the theoretical soundness of the philosophy, while men's lives are still ordered in the mass upon quite another basis, furnishes such a contradiction of the claim of the philosophy to evaluate "experience as a whole" as to place the latter in a ludicrous position.

**Character of the New Philosophy of Education**—Every generation and period has its own special problems which decide where the emphasis is thrown. When social conditions and scientific conceptions and methods are both in a state of rapid alteration, the tendency to philosophic reconstruction is especially marked, and the need of working out the newer point of view so that it will throw light upon the spirit and aims of education is especially urgent. The present time is characterized by at least three great movements, of which education must take account in the most radical way if it is to bear any relation to the needs and opportunities of contemporary life—and otherwise intellectual and moral chaos must be the result. These movements are: (i) the rapid growth of democratic ideals and institutions, (ii) the transformation of industrial life—the economic revolution that began in the later eighteenth century with the application of steam to manufacturing and commerce, (iii) the development of *experimental science*, culminating in the idea of evolution and the thoroughgoing modification of older beliefs about the processes and organs of life.

(i) The democratic movement radically influences education if only because it inevitably produces the demand for universal education. It is impossible that the type of education adapted to the small class in aristocratic and feudal societies, that alone had an opportunity for an intellectual culture, should be adapted to the needs of a democratic society which demands the development of all. By no possibility could the education of a class become the education of all, for a class education is made what it is by the exclusion of most of the people from the opportunities for which it prepares. A democracy, moreover, signifies a social organization which is maintained, upon the whole, by the voluntary wish of the mass of the people, and which is responsive to changes in their purposes. This implies a much greater dependence upon the

intelligence and sympathetic good will of all the members of society than is required in communities where authority and precedent are the mainstays of social arrangements. A distinct type of education is demanded to meet the need for individual freedom and initiative combined with respect for others and an instinct for social unity.

(ii) The industrial revolution, with the changes it brought about in modes of association, habits of mind, and increase of commodities, is both cause and effect of the democratic development. From every standpoint it exacts modifications of educational ideas and practices. The importance of labor which it proclaims is a note new in the world's history. The effect of the new inventions in eliminating distance and bringing all mankind within the same circle makes interdependence, which had been preached as an ideal, an operative fact. Since the new industrial régime depends upon the application of science to the control of natural forces, men's best and truest knowledge of nature is put in effective circulation. Men's actions are servile or intelligent according as men do or do not have an appreciation of the ideas which govern their occupations. The extreme specialization and division of labor tend to make men simply small parts of the machines they tend, and only the forethought and oversight of education can avert this menace. The multiplication of material goods makes necessary a higher æsthetic taste to prevent general vulgarization. It also affords new opportunities to the masses which they must be educated to take advantage of. Conversely, the luxury and kind of leisure that had been tolerable or even graceful in past régimes becomes a social menace when the social mechanism makes the responsibilities of production and consumption more and more important.

(iii) Philosophers have debated concerning the nature and method of knowledge. It is hardly cynical to say that positiveness of assertion on those points has been in proportion to the lack of any assured method of knowing in actual operation. The whole idea and scope of knowledge-getting in education has reflected the absence of such a method, so that learning has meant, upon the whole, piling up, worshiping, and holding fast to what is handed down from the past with the title of knowledge. But the *actual practice of knowing* has finally reached a point where learning means discovery, not memorizing traditions, where knowledge is actively constructed, not passively absorbed, and where men's beliefs must be openly recognized to be experimental in nature, involving hypothesis and testing through being set at work. Upon the side of subject matter, the ideas of energy, process, growth, and evolutionary change have become supreme at the expense of the older notions of permanent substance, rigid fixity,

and uniformity. The basic conceptions which form men's standards of interpretation and valuation have thus undergone radical alteration.

Even this bare sketch should suggest the new forces at work in education, and the need of a theory corresponding to the new attitudes and tendencies of our times, if the present situation is to be approached in a spirit of clear intelligence. We need to know the difference that the democratic ideal makes in our moral aims and methods, we need to come to consciousness of the changed conception of the nature of existence that its spread imports. We must reckon intelligently with the new and gigantic industrial forces that have come into being, securing by education a disposition to subordinate them to general welfare and to equality of opportunity so that they may not plunge us into class hatreds, intellectual deadness, and artistic vulgarity. Unless our science is to become as specialized and isolated a thing as was ever any scholastic scheme whose elaborate futility we ridicule, we must make the experimental attitude the pervasive ideal of all our intellectual undertakings, and learn to think habitually in terms of dynamic processes and genetic evolution. Clearness upon the issues, problems, and aims which our own period has brought to the foreground is a necessity for free and deliberate participation in the tasks that present-day education has to perform. Attaining this clearness, with whatever revision of stock notions it may entail, is the peculiar problem of a contemporary philosophy of education. J. D.

For the actual plan of the study of the Philosophy of Education, in the modern curriculum, see EDUCATION, ACADEMIC STUDY OF.

See also ART OF EDUCATION, COURSE OF STUDY, THEORY OF, CULTURE, DEMOCRACY AND EDUCATION, EDUCATION, EXPERIENCE, INDIVIDUALITY, KNOWLEDGE, etc., and the references there given.

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**PHOBIA** — A fear, of the nature of a delusion (*qv*), a fixed idea (*qv*), or an obsession (*qv*). The more common phobias are: pyrophobia (fear of fire), claustrophobia (of closed places), agoraphobia (of open places), and mysophobia (of dirt). S. I. F.

**PHONETIC METHODS** — See READING, TEACHING BEGINNERS, SPELLING, TEACHING OF.

**PHONETICS** — Judged by its derivation, the word "phonetics" should mean the science of sound. Among teachers of languages, however, it is restricted to the science of speech sounds of human beings. Considered in this manner, phonetics is usually divided into two main divisions — the acoustic and the organic. The former is generally classed with physics, since it concerns the sounds of speech as sounds, independently of their origin or mode of formation. The latter could be classed with physiology (*qv*), though it is, generally speaking, given over to students of languages and philology (*qv*). It will appear later, however, that experimental phonetics, the most recent of the branches of the science to develop, overlaps these divisions, and is at the same time "physical," physiological, and philological.

**Historical** — The earliest studies of phonetics of which we have any knowledge were theoretical. The Sanscrit grammarians seem to have been remarkable phoneticians, as were later the grammarians of Alexandria. It is to the desire of the latter to represent accurately the Greek vowels that we owe the introduction of the accents which enable foreigners to pronounce Greek with less difficulty. The Roman phoneticians, though probably inferior to their predecessors, brought to bear, none the less, on the study of foreign languages, especially Greek, a fund of close observations. These observations, like others by ancient grammarians and phoneticians, frequently enable us to understand just how certain letters were pronounced. Indeed, without these data, philology could not have developed so rapidly and certainly as it has, bringing with it a flood of light concerning the ancient monuments of literature and history, whose country, age, dialect and authorship (single or composite) we are able to establish. This often overlooked side of phonetics — its power to vitalize, to give a soul to, the dead symbol or letter — has led some scholars to divide phonetics into two great divisions — the historical (which we have just mentioned), and the descriptive

or modern. History and geography, according to a remark of Louis Havet, bear somewhat the same relation to each other as these two branches of phonetics. Since the latter branch — the descriptive — is for teachers by far the more important, the present article will be devoted in the main to a consideration of this

**Descriptive Phonetics** — The descriptive branch of phonetics involves a minute study of the manner in which the sounds of living languages are produced, the nature of these sounds, and their relation to one another. This minute study makes clear to us, first, the sounds of our own language, secondly, those of other languages. We learn, for example, what distinguishes the *b* of Spanish or French from the *b* of English. By carrying this study through all the sounds of a given foreign language, we are able to pronounce it better and more intelligently, — to speak it with as little "accent" as possible. This being the case, it is evident that descriptive phonetics is of great value to scholars, teachers, students of dialectics, philologists, missionaries, diplomats, interpreters, as well as to the increasing number of persons who realize that, to appreciate the literary beauties of a foreign language, one must be able to read it aloud with a very considerable degree of correct utterance.

Descriptive phonetics is one of the few strictly modern developments of science which are due to the English nation. In fact, the "English school" of phonetics is now the dominant one the world over (leaving aside experimental phonetics, of which more presently). We may therefore omit all further mention of the history of phonetics, and pass immediately to the inception of the "English school," which may be said to have begun with Alexander Melville Bell (the father of Alexander Graham Bell), who published in London, in 1867, a work called *Visible Speech* (second edition, London, 1882). Bell made what may be called an organic study of phonetics, that is, a study of the action of the organs of speech (especially of the tongue) in the production of vowels and consonants. This had of course been done many times before. The originality of Bell lay in his constructing an alphabet in which the form of the symbol should bear some indication of the position of the organs of speech. The mere appearance of the symbol was to tell how the sound was produced. The alphabet which resulted was exceedingly cumbersome, and the scholars who have ever learned to read it or write it are few in number. The importance of Bell's work lay in the impetus which it gave to succeeding scholars. His work suffers from being too theoretical. The name *Visible Speech* is in itself an instance of colossal exaggeration. Fortunately, Bell counted among his immediate followers a few men of practical sense and of sound philological knowledge, the chief of whom was Henry Sweet, professor at Oxford. Sweet and others

perfected Bell's alphabet, and carried to a very high point the minute observation of the spoken word. Their study of the tongue positions for the vowels was especially close, for these scholars were Englishmen, and in English the tongue is relatively of great importance while the lip action is reduced to a minimum. Bell, Sweet, and others of the English school established an elaborate system of nomenclature. They spoke of vowels as round or unround, as front, mixed, or back; as high, mid, or low; as narrow or wide. Space is lacking here to explain this terminology.

For a while, there was considerable opposition on the continent to the adoption of the English system. Germany was especially rebellious and scornful. The advance in France was rapid, largely because of the early conversion of Paul Passy. He adopted the English system, with slight modifications, but saw clearly the impossible nature of the Bell-Sweet alphabet. His wide linguistic knowledge (he has spoken from childhood four or five languages) gave him unusual advantages. His most important reform lay in the alphabet. Adopting several letters from A. J. Ellis, the author of *On Early English Pronunciation* (London, 1869), and taking some hints from Bell and Sweet, he perfected little by little what is now called the international phonetic alphabet. As the editor of the *Phonetik Titeer* (founded in 1885), which became the *Maître Phonétique* in 1889, he was in a position to offer an increasing publicity to the new alphabet. The *Maître Phonétique* is the organ of the Association Internationale Phonétique, the most powerful and widely diffused linguistic society in existence. As for the alphabet founded by Passy, it is rapidly becoming the phonetic alphabet of the world, and hundreds of treatises employ it. Even Germany has adopted (unofficially, of course) this alphabet for work in phonetics and modern languages.

The following table gives the phonetic symbols and their explanation according to the International Phonetic Association:—

#### CONSONANTS

The following letters have their usual values **b, d, f, g** (as in *go*), **h, k, l, m, n, p, r** (rolled as in Scotland), **s, t, v, w, z**

- j is the sound of *y* in *yes*
- ŋ is the sound of *ng* in *song*
- θ is the sound of *th* in *thin*
- ð is the sound of *th* in *then*
- ʃ is the sound of *sh* in *show*
- ʧ is a weakened form of the *ch* in German *ach*
- ʤ is a weakened form of the *ch* in German *ich*
- ʒ is the sound of *s* in *measure*

#### VOWELS

- i is the vowel in Modern English *see*, but pure as in the North of England, not diphthongized as frequently in the South
- ɪ is the vowel in Modern English *lip*
- ɛ is the vowel in Modern English *get*
- æ is the vowel in Modern English *get* lengthened
- æ̃ is the vowel in Modern English *hat* lengthened

- a is the vowel in French *patte*
- ɑ. is the vowel in the first syllable of *father*, as pronounced in London dialect
- ɔ is the vowel in French *bonne*
- ɔ. is the vowel in French *port* (i.e. ɔ lengthened)
- u: is the vowel in Modern English *too*, but pure as in the North of England, not diphthongized as frequently in the South
- u is the vowel in Modern English *put*

When unstressed, the vowels *ε*, *a*, *ɔ* are somewhat obscured, that is, they tend towards the neutral vowel heard in the unstressed syllables of *about*, *sofa* (modern pronunciation)

#### DIPHTHONGS

- iu The sound *i* followed by the sound *u* the first element being stressed
- ei The diphthong heard in Modern English *day* as pronounced in the North of England
- eu The sound *ε* followed by the sound *u*
- ai The sound *a* followed by the sound *i*
- ou The sound *ɔ* followed by the sound *u*
- ou The diphthong heard in Modern English *go* as pronounced in the North of England
- oi The first element of the diphthong *ou* followed by the sound *i*

The Scandinavian countries were among the first to accept the English school of phonetics. In this connection the celebrated Norwegian scholar Johan Storm, and Otto Jespersen of Denmark, one of the keenest and most original of living phoneticians, deserve special mention. In Germany there are at present probably only one or two phoneticians who refuse to accept the main tenets of the English school. This is largely due to Wilhelm Viëtor, who, like Passy in France, has been a potent influence of popularization of the new ideas. The English school, with its terminology, has also spread through the remainder of Europe, and has from the first been virtually the only form of instruction in America (leaving aside, of course, experimental phonetics, as will appear later). If an examination were to be made of the courses now being conducted in phonetics in this country, it would doubtless be found that, except in experimental phonetics, all of the literature used involves an acceptance of the English school. There are, none the less, many teachers of the subject both here and elsewhere who modify considerably the teachings of Sweet and his closest followers, and who do not believe that their system is a finality, because of such considerations as these: like everything of English origin the system is "insular" and lop-sided, it bears the birthmark of claiming too much for itself; it is suspiciously regular and schematic, vowels, for example, to the number of seventy-two appear in perfect regularity, like so many pigeon-holes in an enormous case; the system seems to have been laid out on paper, so much so that a scientist would declare it an admirable example of un-science.

**Sound Production** — Before discussing experimental phonetics it will be well to mention briefly the manner in which speech sounds are produced. Speech is the conveyance of

thought through sounds produced by modifications of the stream of air which passes from the lungs to the outer air. It is a system of signals which have been agreed upon. If we imagine a person shut up in a windowless tower, but having access to a rubber tube through which water continuously flows from a spring in the tower to the open air outside, it will be apparent that he can devise a system of signals which can convey messages to those without. He can devise a succession of pressures and of stoppages of the tube, and his problem is not unlike that of Morse when he contrived his telegraphic code. Human speech is built on this model. In our case, however, the channel through which the air passes has fortunately a number of stops, of bifurcations, of crooks and corners. These enable us to vary to a large degree the sounds to be produced, so that we dispose of a clear, highly developed code of signals.

**Speech Organs** — The main places where the column of air emitted from the lungs is modified in speech are as follows. (The column, of course, moves from within outwards,—towards the listener,—which facilitates the conveyance of signals.) The first modification of the column of air may be produced in the larynx, which is at the enlargement known as the Adam's apple. In this enlargement are two muscles, named erroneously the vocal cords, which can be held apart, as in ordinary breathing, or made to approach each other to any desired degree, even to the point of complete closure. When these muscles are touching loosely, the air may be forced between them by pressure from the diaphragm in such manner that a buzzing, which we call *voice*, is produced. If the buzzing or vibrating column of air meets no appreciable obstruction in its progress to the outer air, the sound is called a vowel, if it meets one or more obstructions, it is called a consonant. There is perhaps no briefer statement possible of the generic difference between vowels and consonants. If we limit ourselves to the ordinary European languages, there is no other place of stoppage or stricture in the passage towards the outer air, until we reach the lower fringe or edge of the soft palate. It is evident that the back of the tongue can rise against this fringe, and, by jerking away just at the instant when the air pressure is at the right degree, cause a consonant sound, or, that the tongue remaining against the fringe, the uvula (the hanging end of the soft palate) may be made to vibrate, as when children "trill" or "gargle." Again, the soft palate itself may be pressed against the wall of the throat back of it, which will close the channel into the nasal passage, or it may hang down somewhat, leaving that passage free. The former is the position of the soft palate for vowels (except, of course, nasal vowels, such as exist in French, Portuguese, and American English), and for the oral

(that is, non-nasal) consonants. If now we consider the vault of the mouth, beginning just above the fringe of the soft palate and extending to the front upper teeth, we realize that the tongue can touch any part of this surface. In fact, the majority of consonants are produced against this vault. It is unnecessary to name these consonants, since any one can experiment for himself. It should, however, be remarked that the tongue is able to execute quite a varied system of "signals." It can stop the passage entirely, as in *g, k, d, t*, or nearly stop it, as in the initial consonant of *yes*, in that of *she*, in the consonant of the German word *ich*, etc. It can make its tip vibrate, as in a lingual *r*. Again, it is clear that the upper teeth offer a convenient place of partial stoppage, as in *th, f, v*, and, finally, that the lips can offer stoppage, as in *p, b, m*.

**Experimental Phonetics** — Such being briefly the physical facts, phoneticians attempted to contrive instruments which would record the movement or action of the various organs. The result is the most recent development of the subject, — namely, experimental phonetics. This branch of phonetics arose in France, in a committee appointed in 1874 to examine into the possibility of employing instruments in phonetic research. The committee received encouragement from Etienne Marey, the ingenious physiologist of the Collège de France, some of whose apparatus proved of great value. One member of the committee, Dr Rosapelly, a physician of Paris, invented several instruments of the highest utility, such as the *trembleur*, which records, by means of an electrical connection, the vibrations of the larynx, instruments for registering the vertical movement of the larynx in speaking or singing, for recording the passage of air through the nose, for the vertical movements of the lips. Dr Rosapelly, however, forced to give most of his time to the practice of medicine, did not long continue his career as a phonetician. His work was taken up in 1885 by the Abbé Rousselot, who then made the acquaintance of Rosapelly, Marey, and of the skillful constructor, Charles Verdin. From that time to this, Rousselot has not ceased to devote himself with enthusiasm and patience to the new science, and is considered its founder. His laboratory at the Collège de France has been and still is the best in the world, and his publications, which began in 1890, have been numerous. He has perfected several inventions of others and contrived some of his own. His pupils are numbered by hundreds and have carried his principles into many countries. His most brilliant pupil in France has been A Zund-Burguet, who has invented several ingenious and valuable instruments. The largest courses in experimental phonetics (general phonetics as well) are those conducted by Professor Rosset in the summer school at the University of

Grenoble. Hundreds of students from a score of nationalities gather here every summer for the subject. The first instrument having an application to phonetics which was invented by an American was the phonograph of Edison (1877), an instrument which is simply a perfection of the phonautograph of a French printer, Scott de Ménilville (1859). The first work in experimental phonetics as such appears to have been done by Professor C. H. Grandgent, who published in 1890 an article on *Vowel Measurements* (*Publications of the Modern Language Association*). Professor Raymond Weeks contrived in 1890 an artificial vowel rounder, and later an instrument for recording the movements of the soft palate, an instrument for the vibrations of the larynx, the spiograph (which writes the varying pressure of the air in the mouth during speech), and a perfected apparatus for the movements of the lips. Professor F. M. Josselyn published, beginning in 1899, some valuable work on Italian phonetics. Professor E. W. Scripture has done exhaustive work in the tracing and study of speech curves.

There is great need of an extension of the teaching of phonetics in American institutions of learning. Not only would this aid in making philology more vital, but it would prove of the utmost value to teachers of elementary English. Strong courses should be established in all summer schools, where the eager and conscientious public school teachers would assimilate rapidly the new and vivifying knowledge of phonetics. R. W.

See MODERN LANGUAGES, TEACHING OF, PHILOLOGY

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The best constructors of instruments for phonetics are G. Boulitte, 7, Rue Linné, Paris, and R. Montalbetti, 28, Rue Gay-Lussac, Paris.

**PHONIC METHOD** — See PHONETIC METHOD

**PHONOGRAMMIC METHOD** — See READING, TEACHING BEGINNERS; also PHONETIC METHOD, SPELLING, TEACHING OF.

**PHONOGRAPH** — See MUSICAL INSTRUMENTS, MECHANICAL, IN THE SCHOOL

## PHONOGRAPHY

**PHONOGRAPHY** — See **COMMERCIAL EDUCATION**; **SECRETARIAL PROFESSION**, **EDUCATION FOR**

**PHRASE BOOK** — See **COMMONPLACE BOOK**; **DICTIONARIES**, **LATIN GRAMMAR**, **TEACHING APPARATUS**.

**PHRASE METHOD** — See **READING**

**PHRENOLOGY** -- A pseudo-science which attempts to discover the mental characteristics of the individual through an examination of the external configuration of the skull. This science was first suggested by F G Gall (1758-1828). It was afterwards developed by Spurzheim and others. Gall examined a large number of persons and noted their special mental characteristics as well as the configuration of their heads. His attention was especially drawn to persons of marked characteristics, such as he found in the prisons and hospitals. A man who had been confined because of his tendency to steal was evidently an interesting character for Gall, because his mental traits were clearly defined by his misdemeanors. Comparison of a number of individuals who were of this marked type led to a mapping of the outside of the skull and the designation of the various regions of the brain to which certain mental faculties were supposed to be related.

There can be no doubt that such investigations as these stimulated a discussion of the relation between mental characteristics and the development of the central nervous system. Indeed, certain enthusiastic writers have regarded Gall as the father of the modern science of cerebral localization. Gall undoubtedly suggested the possibilities of such a science, but he is in no wise responsible for the technique which was later developed and which put the whole matter on a definite scientific basis. In the form in which Gall projected the science, it was hopelessly involved in two fundamental errors. In the first place, his subdivision of mind into certain faculties was grossly inadequate. To assume that discrimination of color is a separate mental faculty, or that the faculty of reverence or veneration can be distinguished as a separate mental characteristic, shows the crudity of the psychological analysis on which phrenology is based. As a matter of fact, each of these functions is a composite including certain forms of perception, and certain forms of ideation. With the development of modern psychology, the classification of faculties proposed by phrenology has come to be entirely untenable. In the second place, it has been shown conclusively that the external configuration of the skull is no indication of the internal form of the cerebrum. Furthermore, the cerebrum has been mapped out by thoroughgoing scientific methods in such a way as to show that

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the localization of functions depends upon an entirely different physiological structure from that which is assumed in the phrenological system. We may therefore say in general that with the advance of physiological knowledge the anatomical assumptions of the phrenologists have also become entirely untenable.

The pseudo-science, as cultivated to-day, is commonly employed for charlatan purposes. The practitioner announces that he is able to describe to the individual his capacities for future training and occupation. Such guesses as he is able to make with regard to the individual's characteristics are derived from a general inspection of the individual rather than from reference to the external configuration of the skull. C H J

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**PHYLOGENY** — The term employed to designate the evolution of a race or species. It is distinguished from ontogeny, which refers to individual development as contrasted with racial development. C H J

**PHYSICAL DIRECTOR** — See **PHYSICAL EDUCATION**

**PHYSICAL EDUCATION** — **Historical** — In time past and in our own time physical education has been exalted, tolerated, neglected, or denounced, according to the prevailing conceptions as to the nature of the human body and of its relations to the human mind. The character of these conceptions has depended chiefly on the ideals of human excellence held at different periods in the history of education. Those ideals, according to Hartwell, may be characterized as the Greek or æsthetic, the monkish or ascetic, the military or knightly, and the modern or scientific.

The Greek ideal recognized the unity or symmetry of body and mind as expressed by Plato in the *Timæus*. "Everything that is good is fair, and the fair is not without measure. Now, we perceive lesser symmetries and comprehend them, but about the highest and greatest we have no understanding, for there is no symmetry greater than that of the

soul to the body. This, however, we do not perceive, nor do we allow ourselves to reflect that when a weaker or lesser frame is the vehicle of a great and mighty soul, or, conversely, when a little soul is incased in a large body, then the whole animal is not fair, for it is defective in the most important of all symmetries; but the fair mind in the fair body will be the fairest and loveliest of all sights to him who has the seeing eye." Gymnastics were accorded a large and important place in the educational program of Greek youths. The teaching of gymnastics afforded positions of honor and emolument to distinguished and ambitious men. Bodily training furnished themes for poets, philosophers, and historians, sculptors and painters sought models in the gymnasium, and Greek physicians studied and adopted exercises and procedures originated by teachers and gymnasts. In the breadth and sanity of its aims, the completeness of its development as a national institution, and its abiding influence upon succeeding generations, Greek physical education has no parallel (See GREECE, ANCIENT, EDUCATION IN.)

The ascetic ideals of the monks, which after the first few centuries of the Christian era exercised a profound influence upon European thought and life, was the antithesis of the Greek ideals of education. The conception that the soul and the body are independent and mutually antagonistic entities was responsible for the complete abandonment of physical education by the monks. They believed that all flesh was the creation of Satan and that spiritual health was best subserved by self-torture and bodily weakness. The influence of the monks continued to antagonize and retard bodily training in education until the beginning of the nineteenth century (See MONASTICISM AND EDUCATION; MIDDLE AGES, EDUCATION IN.)

The military or knightly ideal of human excellence existed side by side with the ascetic ideal of the monks. It played a conspicuous and important part in the education of the sons of noblemen and gentle folk. The young knight was trained to ride, draw the bow, use weapons, and hunt, some attention was given to manners, but very little to letters. The aim was the development of efficient soldiers and gentlemen. This form of education was popular in England and the Continent until the seventeenth century (See CHIVALRIC EDUCATION, GENTRY AND NOBLES, EDUCATION OF.)

**Modern Views** — The modern or scientific ideal of physical education owes its origin to the belief "that to work the mind is also to work a number of the bodily organs, that not a feeling can arise, not a thought pass, without a set of concurring bodily processes." The sciences of biology, physiology, and psychology have furnished a basis for the study and application of the laws governing the growth,

development, and education of the body and mind. Man's knowledge of himself has been immensely increased and his conception of nature and his place in nature radically changed. One of the most prominent results of the progress made in these sciences is a deeper appreciation of the vital importance of motor training in education.

The modern or scientific ideal of physical education recognizes two chief aims: (1) health, normal growth and development of the body as an efficient organism, (2) psychomotor education, with emphasis on bodily control and the expression of personality or character of the individuals.

These ideals are based on the sciences of biology, physiology, psychology, and education, but physical education itself has not yet attained the dignity of a definite science. Since the somewhat crude attempt of Ling (*qv*) early in the nineteenth century to devise a system of gymnastics based on physiology and coordinated with educational procedure, much progress has been made in placing physical education on a scientific basis. During the period of evolution from crude empiricism to scientific principles, physical education has passed through many phases.

Three distinct systems originated in Europe and developed simultaneously, the Swedish system of educational, military, and medical gymnastics devised by Ling and his followers, the German system of gymnastics developed by Guts Muth, Jahn, and Spiess (*qqv*), and the British scheme of athletics and games fostered and developed in the universities and public schools (See ATHLETICS, GYMNASICS.) The Swedish and German systems had for their chief aim the training of strong, self-reliant, and patriotic citizens. The athletics and games of England developed naturally in response to the normal play instinct of English boys and young men.

These well-defined national schemes for physical education have survived to the present day and spread to many lands. The Delsarte system of exercises was devised by François Delsarte (*qv*) in Paris, about 1840, to train actors in dramatic expression. The Delsarte plan had such a limited scope that it could not gain recognition as a system of physical education.

**In Colleges and Universities** — In the United States physical education had no place in our schools and colleges until the latter part of the last century. Before 1860 the population was very largely rural, the school terms were short, and a large proportion of the children obtained physical vigor and psycho-motor training from participation in the varied activities of the rural home. The need for systematic bodily training in the schools was small and its importance not recognized. A few sporadic attempts were made by educational reformers to arouse interest in some phase or other of



physical education, but without success. One of these attempts, the introduction of German gymnastics by Dr Charles Beck, at the Round Hill School Northampton, Mass., in 1823, attracted considerable attention for a few years. The New York High School and the colleges of Harvard, Yale, Amherst, Williams, and Brown followed in 1825, 1826, and 1827. Dr Follen (*q v.*) and, later, Dr Francis Lieber had charge of gymnastic instruction at Harvard College and the Boston Gymnasium. The enthusiasm then aroused by the new movement was not permanent; by 1830 physical education had been discarded as a passing fad.

During the period 1830-1850 physical education was completely neglected. The decade 1850-1860 marks the beginning of the modern revival of interest in athletics, gymnastics, and hygiene, which after twenty-five years of slow growth has since developed into a large and important phase of modern education. The nascent interest in gymnastic and athletic forms of exercise during this decade was promoted by the newly established inter-collegiate contests in rowing; the organization of gymnastic societies (*Turnvereine*) by political refugees from Germany who came to this country after the revolution of 1848; the lectures and exhibitions of Dr G. B. Windship, who advocated heavy lifting, the introduction of calisthenics (*q v.*) by Dr Dio Lewis, and the prominence given to topics relating to physical education by speakers at teachers' conventions and institutes, by editors of educational journals, and by public school officials.

Gymnasiums were built at Harvard, Yale, and Amherst colleges in 1860, and in the same year. Amherst organized the first college department of hygiene and physical education, with gymnastics as a compulsory branch of college work. The example of Amherst was not followed to any extent by other colleges until after 1885, but since that time the extension of the movement has been very marked, as shown by the following figures for 124 of the leading colleges in 1910 —

	PER CENT
Colleges having organized departments of Physical education	84.3
Colleges having gymnasiums	48.2
Colleges having swimming pools	36.6
Colleges having athletic fields	95.8
Colleges having tennis courts	97.6
Colleges having regular instruction in gymnastics	94.7
Colleges having prescribed courses in physical education	87.1
Colleges giving credit towards bachelor's degree for courses in physical education	58.2
<i>Title of Officer in Charge of Department of Physical Education</i>	
Professor	21
Associate or Assistant Professor	4
Director of Gymnasium	38
Physical Director	20
Instructor	17
Colleges in which officer in charge of department of physical education has a seat in the faculty	75.7

Courses in physical education are prescribed for freshmen only in about one fourth of the colleges, for freshmen and sophomores in about one half of the colleges, and in about one fourth of the colleges the prescription is for three or four years. The usual credit for each year is two units or about one sixtieth of the total required credits for the bachelor's degree.

The following description of the course prescribed for freshmen in Columbia College shows in a general way what is usually taught in a college physical education course meeting two hours a week for one year: —

(1) Physical and medical examination, 1 hour, (2) instruction in track and field athletics (outdoors), 12 hours, (3) instruction in marching and gymnastics, 34 hours, (4) instruction in hygiene (lectures, etc.), 6 hours, (5) instruction in swimming, until qualified. Examinations are held and students graded as in other subjects.

The typical department of physical education in the American college includes three distinct lines of activity: (1) The gymnasium and accessories, such as swimming pool, rooms for handball, boxing, fencing, wrestling, etc., in which physical education courses are conducted and the mass of students meet for general exercise, (2) the care of the students' health, which includes medical examinations, consultations, medical and surgical treatment, and instruction in hygiene and sanitation; (3) organized athletics, including intracollegiate and intercollegiate contests in the various games and sports. The forms of organization and methods of administration vary over wide limits in the colleges, but there is a marked tendency towards concentration of all the physical education, athletic and health supervision activities in one department, under the direct control of the college authorities. In this respect American colleges and universities are far in advance of similar institutions in other countries where the health, physical education, and recreations of the students are not regarded as matters for which the institutions are responsible.

**In Schools.** — In the private secondary and preparatory schools, physical education is organized much the same as in the colleges. The importance of motor education, health supervision, and moral education during the adolescent period is generally recognized by educators in the secondary schools. All the large schools and most of the smaller ones have well-organized departments of physical education in charge of professionally trained directors. The first attempt to include physical education in the program of the public schools was during the decade 1860-1870, when the calisthenics advocated by Dr Dio Lewis had a wave of popularity. The interest lasted only a few years and physical education was again neglected until the decade 1880-1890, when a number of Western cities with a

large German population introduced light gymnastics of the German type in the public schools. The growth of cities, industrial development, and the rapid expansion during this period were factors in arousing the interest of educators and the public to the importance of providing physical training for the children in the schools. The city homes could not furnish the necessary environment for the normal physical development and motor training of the growing generation, and the need of modifying the school curriculum to meet the new conditions was recognized. In 1889 a conference in the interest of physical education took place in Boston. The conference was presided over by United States Commissioner of Education William T. Harris, and addresses were made by prominent educators, physicians, and specialists in physical education. The purpose of the conference was to "place before educators different systems of gymnastics and to secure discussion of the same, with a view to ascertaining clearly the needs of schools, and determining how they may best be met." A direct result of the Boston conference was the organization of a department of hygiene and physical training and the adoption of the Swedish system of gymnastics in the public schools of Boston. New York and many other cities soon followed, with the result that by 1900 nearly all the cities in the East, Middle West, and West had some form of physical education in the school program. The most common system of gymnastics in use in the school is the Swedish, or some modification of this system. A few large cities, particularly in the Middle West and Southwest, have adopted the German system.

Special directors and teachers are employed for physical training in about half of the cities where this subject is taught. The most common form of organization is a department with a director of physical training for the city, special teachers in the high schools, and supervisors in the elementary schools, who visit each class once or twice each month to criticize and help the grade teacher. The athletic activities of the school boys were developed by the boys in many cities without direction or supervision from the school authorities. Since the organization of the Public Schools Athletic League the school authorities in many cities have taken control of this important phase of physical and moral education.

**Training of Physical Instructors** — The rapid growth of physical education in the schools and colleges since 1885 has been due in large measure to the development of professional schools for the training of teachers and directors of this branch of education. Between 1880 and 1900 six normal schools and as many summer schools were established for the training of physical education teachers. The course of study in the normal schools extended over two years,

including courses in anatomy, physiology, histology, kinesiology, anthropometry, hygiene, history of physical education, methods and practical work in gymnastics, athletics, and dancing. Since 1900 three of the normal schools have lengthened the course to three years, and in two of them the course leads to the bachelor's degree.

The rapidly increasing demand for teachers and directors of physical education with a good general education and professional training has led a number of colleges and universities to establish professional courses in physical education. These courses are usually open to students who have completed two years of college work. The professional courses extend over two years and lead to the A.B. or B.S. degree.

In addition to a good general education and professional training, a medical education is considered essential for directors of physical education in colleges, secondary schools, and the public school systems of large cities. The character and personality of the teacher or director are even more important than his education and professional training. He comes in closer contact with a larger number of students than any other school or college officer. He advises students in matters of exercise and hygienic habits. He influences the ethical and moral standards of the students in games and athletic contests. Only men and women of high ideals and deep human sympathy are qualified to assume the responsibilities of directing the physical education of school and college students. G. L. M.

Other aspects of the subject are treated in greater detail under **ATHLETICS**, **EDUCATIONAL**, and the various articles on **HYGIENE**. See also the articles on the various educational games and sports.

**PHYSICAL EXAMINATION.** — See **MEDICAL INSPECTION OF SCHOOLS**.

**PHYSICAL GEOGRAPHY.** — See **GEOLOGY**, **GEOGRAPHY**.

**PHYSICAL SCIENCE.** — See **CHEMISTRY**, **PHYSICS**, etc.

**PHYSICAL TESTS AND EXAMINATION** — See **MEDICAL INSPECTION**.

**PHYSICIAN, SCHOOL** — See **MEDICAL INSPECTION OF SCHOOLS**.

**PHYSICS — Historical Development** — Physics has been a subject of study in universities ever since their rise in the thirteenth century. Before 1600, however, the official text was the *Physics* of Aristotle, and work in the classes consisted mainly of scholastic disputations on the contents of that work.

During the two centuries (1450–1650) in

which the experimental method of investigation was slowly winning recognition, the nature of the university study of physics gradually changed. The magnitude of this change may be measured by comparing the physics of Aristotle with that of Galileo (*qv*). The former is static, seeks final causes, and finds them by classifying phenomena by genera and species, using in this classification not the whole phenomena with its progressive changes, but some one of its static aspects which has been arbitrarily selected as expressing the nature of things. For Aristotle the stone falls because it belongs to the class of objects whose natural condition is one of rest on the earth. The physics of Galileo makes no effort to study final causes, but merely recognizes that the longer the stone falls the faster it moves, and seeks by measurement to determine whether there is any constant relationship between the time of fall and the velocity acquired. This method is dynamic, since it takes account of the constant changes of phenomena and enables us to control and to predict them.

Because modern physics consists of two parts, namely, (1) mathematical discussion based on (2) observation and measurement, these two have of necessity developed side by side in the growth of the science. They have not, however, always been equally emphasized. In the early stages of growth the experimental side has been more prominent, while in the later stages the mathematical analysis has assumed the more prominent position. Thus in static electricity, Gilbert (1600), Gray (1730), Von Kliest (1745), Franklin (1747)—all observers and experimenters—preceded Cavendish (1773) and Coulomb (1785), who put the science on a mathematical basis. In current electricity, Galvani (1780) and Volta (1800) discovered how to make electricity and sought to find out what it would do before Ohm's law (1827) and the Wheatstone Bridge (1843) ushered in the quantitative treatment. Galileo made thermometers (1593), Watt patented his steam engine (1769), and Rumford (1798), Mayer, and Joule (1842) published their celebrated observations before Kelvin (1848), Clausius (1850), and Rankine (1850) traced the mathematical consequences. The observations and measurements of Oersted (1819) preceded the mathematical treatment of electromagnetism by Ampère (1823), and Faraday, the keen observer (1831), preceded Maxwell (1873), the mathematician.

As in the growth of the science itself, so in the teaching of physics in the universities, the emphasis has fluctuated between the mathematical and the experimental aspects. At the time of Newton and for some time thereafter, the mathematical treatment was most prominent. Mersenne's *Opera* (1644), Barrow's *Lectiones Opticarum* (1669), Keill's *Introductio in veram Physicam* (1739), and New-

ton's *Principia* itself are evidence of this. For there was at that time no chance for students to work in laboratories, and even class experiments were practically unknown.

During the latter half of the eighteenth century demonstration lectures at the French Academy became very popular in Paris, and, as is well known, the popular demonstration lectures of Sir Humphry Davy at the Royal Institution in London (*qv*) were the inspiration of Faraday (*qv*) and started him on his great career. Thus while experimental work necessarily precedes mathematical discussion in the early growth of the science, it seems to have been introduced into teaching because of a popular demand for it.

**In Universities and Colleges**—In the university teaching, the emphasis remained on the observational and experimental side from the end of the eighteenth century nearly to the end of the nineteenth century (1890), as is shown by the common use of such books as those of Ganot and Deschanel as texts,—books in the early editions of which there is practically no mathematical work. Since 1890 mathematical work has been rapidly introduced into the teaching. This was a necessary result of the introduction into the courses of individual laboratory work by the students, and of the development of the spirit of research at universities. At present the emphasis, both in the laboratory work and in the theoretical discussions, is very decidedly on the mathematical side. No one can advance beyond the first year of college work in physics unless he has mastered the calculus. In many of the current courses in mechanics, thermodynamics, and optics it is often hard to realize that there ever was an observational and experimental side.

In America the first laboratory teaching of physics to college students was done by E. C. Pickering at the Massachusetts Institute of Technology in 1869. Since that time it has been gradually introduced into all college courses. These courses have also been expanded enormously, owing to the very rapid growth of the science itself. The result of this has been that students who wish to become specialists in physics now have to pass through four or five years of formal training in the technique of laboratory manipulation before they are admitted to original research. The great physicists of to-day were submitted to no such formal training. Whether the present formal system will produce greater scientists than did the rather informal training of the past, remains to be seen.

The changes that have taken place during the last fifty years in the methods of teaching physics in colleges and universities are the necessary accompaniment of the development just presented. For college work the standard texts at the beginning of this period were books like those of Arnott, Ganot, and Des-

channel. These are largely descriptive of phenomena and processes. At present the college texts, like those of Hastings and Beach, Carhart, and Watson, bristle with algebraic symbols and geometrical diagrams. In the older books phenomena usually preceded explanation, while at present definitions, axioms, and laws generally come first, with phenomena dragged in reluctantly at the end in the rôle of applications. Then men were engaged in solving the problems of nature, and students were interested in learning about it, now the student must first learn the man-made definitions and laws and then be shown that nature observes them. The most recent texts show a marked tendency to treat phenomena before laws, and to justify definitions by facts before stating them.

The philosophy of physics has changed much in the past century, but the teaching of it has been slow to follow. In the early part of the past century matter and motion were the controlling ideas; hence all courses began with "properties of matter" and discussions of motion. This is still the customary order, although the doctrine of energy is now the central idea in physics. Physicists have, during this last century, known that laws are but statements of constant relations among measured quantities, and that these laws are true only in so far as further measurements verify them. The majority of college students seem, however, still to get the impression that the laws of physics are true in the absolute sense, — that they express truths that are absolutely true beyond and outside of human experience. This fallacy persists among the students because the current emphasis on mathematical treatment gives to the subject an air of finality which is not properly its own.

In the European universities physics is now taught mainly by demonstration lectures. The type of lectures given is well shown in books like Kundt's *Vorlesungen über Experimentalphysik*, or Pellat's *Cours de Physique*. It does not differ materially from that given in American colleges in their first courses in physics. The time devoted to the course is usually one hour daily for two semesters.

Laboratory work is required only of those who are specializing in physics, medicine, or engineering. The laboratory course or *practicum* for these specialists usually takes two three-hour periods a week for two semesters. The grade of work done is well set forth in the well known manual of Kohlrausch. After completing these one-year lecture and laboratory courses, the student of physics is at once admitted to research work.

**In Secondary Schools — The United States** — In the secondary schools of America physics, under the name of natural philosophy, was one of the subjects included in the course of study from the very beginning. Since both

the academies and the public high schools were founded to meet a public need for an education of a more practical kind than that given by the colleges, natural philosophy was taught in them for the value of its information. The people were living in the beginnings of the age of steam and machinery, and they were eager to know something about physics. The early books and courses, therefore, contained no mathematics and much discussion of everyday phenomena and experience.

The early work from 1780 down to 1825 usually consisted in the study of and recitation from a text. In 1827 the city of Boston equipped its schools with some "philosophical apparatus" for experiments by the teacher or by teacher and class together. Laboratory work by the pupils was practically unknown until after 1865. In 1880 the United States Bureau of Education reported but four schools that were giving a full year of physics with laboratory work by the pupils; 53 that were giving experiments by the teacher, and 113 that were giving mere textbook instruction.

In 1872 physics came on the list of subjects accepted for admission to Harvard College, but no laboratory work was required. Arnot was mentioned as the book defining the requirement. The Harvard *Descriptive List* of laboratory experiments required for entrance credit in physics at Harvard appeared in 1887. The influence of this list was strengthened by the report of the Committee of Ten (1895), and by that of the Committee on College Entrance Requirements (1899) of the National Education Association. Following the adoption of this latter report, several apparatus companies put on the market relatively inexpensive sets of apparatus with which all the experiments called for by the report might be made. As a result of all this, the introduction of laboratory work into high school physics has continually progressed until such work is now given in practically every school where physics is taught at all.

While this development of laboratory instruction in physics was taking place, the methods of treating the subject changed rapidly. In 1882 Gage issued his book which bore the motto, "Read Nature in the Language of Experiment." This book is typical of the work done at that time. In the introduction to the Harvard *Descriptive List* (1887) it is stated that the experiments therein described were selected with a view to their having the greatest practical utility in the thought and actions of educated men. In the report of the Committee on College Entrance Requirements (1899) the same set of exercises is said to be designed to give the pupil a "comprehensive and connected view of the facts and laws of elementary physics." Thus it was during this period that "utility to men" was eclipsed by "the logical development of the laws of physics."

This general change in the point of view is evident from a study of the changes that have taken place in the content of the texts intended for school use. The descriptions of machines, daily experiences, and familiar processes, which were plentiful in the days of Natural Philosophy, now give place to more quantitative material, like Newton's laws of motion, the absolute system of units, and instruments for accurate measurement. The 1882 edition of Gage makes no mention of the dyne and the erg as units of force and work. In the edition of 1888 these units are introduced in fine print. In the older books we find many statements like this: A cannon ball that weighs 10 pounds and is moving with a velocity of 100 feet per second has a momentum of  $10 \times 100 = 1000$ . No units of momentum are specified. This sort of vagueness as to units has largely disappeared, though there are still books which say that the acceleration of gravity is 980 centimeters.

The increasing recognition of the importance of quantitative work in physics has been a mark of real progress. It was, however, carried too far, with the result that in most schools a pupil was introduced into physics through micrometer calipers and the absolute system units. It was the logical method to proceed from the simple to the complex, and what simpler beginning could be found than the gram mass, the centimeter, and the second. Under the desire for logical rigor, the subject matter was organized about the system of absolute units and the effort made to teach physics in this way.

This eclipse of the needs of youth by the science of physics was coordinate with and dependent upon the similar changes that took place in the college world, as described above. While Ganot gave way in the colleges to the *University Physics* of Carhart and the like, Gage yielded in the high schools to texts claiming logical order, mathematical treatment, and up-to-dateness as their chief virtue. The inevitable result has followed. Physics is generally regarded by the high school pupils as a subject to be avoided if possible. In 1900 most of the colleges specified physics as a subject that must be presented for college entrance. Now few, if any, make this a specified subject. It was dropped from the list of specified subjects largely because the number of students who were conditioned in physics at entrance to college became large, owing to a decrease in the number of students who took it in the high schools.

**Present Movement** — During the past ten years a decided reaction has been developing against the so-called logical methods of treating physics in high schools. This reaction took an organized form in the National Commission on the Teaching of Physics (1906), which was appointed by the cooperative action of a number of associations of science

teachers. The work of this commission culminated in the definition of the unit in physics adopted by the North Central Association of Colleges and Secondary Schools in 1907. This definition is noteworthy for its brevity and for the complete absence from it of all demand for abstract mathematical work. In 1909 the College Entrance Examination Board adopted a new definition of its requirement in physics. This definition was framed by a committee of six secondary school teachers without assistance from the colleges, and warns teachers against the disguise of unfamiliar units.

Physics teachers are now working, through several committees, on the problem of bringing their work close to the pupils by using in their classes problems and apparatus such as the pupils meet in their daily lives. This is a complete reversal of the methods of a few years back. Then it was considered necessary to present definitions and general principles first, and to bring in the home experiences and familiar machines only by way of illustration or application. Now the pupil begins by a study of some particular familiar thing, — a water motor, a hoisting crane, a gas stove, an electric bell, — and is led thence to the formulation of the principles involved.

**Europe** — In the secondary schools of France and Germany physics is taught in small doses extending over a long period. The pupils in the scientific courses carry the subject during the last five years of their work, — two hours a week for three years, and then three hours a week for two years. This is equivalent to a little more than two units in the American system, but its extension over five years has obvious advantages in the way of allowing the difficult concepts of physics to develop slowly in the pupils' minds. Outlines of the work done in these five years are given for Germany in Gutzmer, *Die Tätigkeit der Unterrichtskommission der Gesellschaft deutscher Naturforscher und Aerzte* (Teybner, 1907), and for France in the *Plan d'Études et Programmes d'Enseignement* (Paris, Hachette). The total ground covered in these courses is a little more extended, but not very different from that which many American high schools attempt to cover in the time of one unit.

It has been noted that students abroad enter research after the equivalent of three units of training in physics. This again raises the question whether the four or five years of preliminary training required in America is a benefit to the students or not.

The foreign secondary schools are considerably behind the schools of the United States in the development of individual laboratory work in physics. It is only during the last eight years that serious attention has been given to this matter. Much progress has been made in this short period, and at present

laboratory work by the pupils is being rapidly introduced everywhere. The kind of work done is practically the same as that done in America under the standardized system of the national physics course. A reaction against this formal and logical method is also well under way in Germany. From many sides the demand for more practical and vital work is heard. The term *Arbeitsunterricht* has there come into prominence of late.

**Elementary Schools** — In the elementary schools physics has received relatively little attention. During the early years of their development (1820–1870) some little work of a descriptive character was attempted, but from 1870 to 1900 very little effort was made to teach physics in any form in the grades. In 1895 the Committee of Fifteen on Elementary Education recommended to the National Education Association that *one full hour a week* be devoted to science during the whole eight years of the course, and that in the seventh and eighth grades the time be devoted to physics and chemistry. This recommendation, as far as physics was concerned, was not followed eagerly by the schools as a whole. The nature study movement was just beginning to develop, and its emphasis was on physical geography and the biological sciences.

In some few places, notably in New York City, a serious attempt has been made to develop a course in physical science in the seventh and eighth grades. In that city in 1903 a new plan of nature study was adopted. A syllabus was issued according to which the work of the seventh and eighth grades was to be a complete course in elementary physics. The aim of this course is not only to acquaint the pupil with the fundamental laws and principles of physics, but also to train him in habits of close observation, accurate thinking, and correct expression; in short, the emphasis is on physics as a well-organized mass of knowledge and on mental discipline, rather than on the need of the child. This course occupies two forty-minute periods a week. Laboratory work has been introduced, in which the pupil does set experiments and writes them up in his notebook. The method of presentation recommended is (1) presentation or demonstration by the teacher, (2) individual laboratory work by the pupils, (3) recitations on the demonstration and the laboratory work. The kind of laboratory experiments recommended are (1) those that verify laws demonstrated by the teacher, (2) those that are wholly or largely quantitative in character, (3) those that will impart a certain degree of mechanical skill. It is claimed that this work also fosters in the pupils the scientific habit of mind. Notwithstanding this effort in New York City and elsewhere, the teaching of physical science in grade schools has not made much progress in the country at large.

Another type of work in physical science in the seventh and eighth grades has recently been developed in experimental schools like that of the Teachers College in New York and that of the College of Education of the University of Chicago. A practical problem is presented to the class, such as: Is it cheaper to make a still and distill water on a gas stove than it is to buy distilled water from the druggist? The pupils construct stills, measure the gas consumed in distilling a measured quantity of water, and compute the cost per gallon. This type of work creates a lively interest among the pupils. It makes no pretense of logical order or rigorous treatment. Its chief aim is to teach the children to analyze familiar phenomena and to solve by the method of science simple and real problems in physics which yet lie well within the range of their daily experiences. The child and his needs are the center of the course rather than the organized science of physics. Courses of this kind have not yet been organized with sufficient definiteness to make them available for use in city school systems, nor has an adequate supply of teachers competent to carry on work of this kind successfully been forthcoming as yet.

The general lack of work in the physical sciences in the grades has led recently to a demand for a course in "general science" in the first year of the high schools. Physiography is usually given in the first year in the secondary schools, and many claim that it serves the purpose of opening the eyes of the pupils to the importance and the interest of further scientific study. In many cases, however, physiography has become too much specialized to serve the purpose of a general introduction to science. Courses in general science have, therefore, been organized in numerous places, which usually consist of a series of topics and problems such as: How are grease spots most easily removed from clothes? What are the conditions for making good pictures with a pinhole camera? How do spectacles improve eyesight? Which kind of gas burner is most economical? What are the traps on the waste pipes of sinks for? How is water purified? Numerous first-year courses of this general type have been developed in secondary schools. In most of the places where the experiment has been tried, it is pronounced a great success in increasing the general interest of the pupils in science and in swelling the numbers of those who take the later more advanced courses in physics. The courses that have been arranged differ widely as to content. There is as yet no general agreement either as to content or as to the organization of it. The entire movement is still in the experimental stage, but it shows very clearly an effort to develop a type of science teaching which shall make the needs of the pupils rather than

## PHYSIOGNOMY

logical organization the controlling element in the work

The justification of the new methods of treating physics is readily found in the history of physics, in the recent analysis by the psychologists of the doctrine of formal discipline, in the present demands of the people for the development of social and industrial efficiency in education, and in the recent developments of the philosophy of science

C. R. M

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**PHYSIOGNOMY** — See LAVATER, J. K

**PHYSIOGRAPHY** — See GEOLOGY, GEOGRAPHY

**PHYSIOLOGICAL AGE** — A term which refers to stages of development and is, therefore, to be distinguished from chronological age, which refers to the calendar of years and months. The succession of the stages of development, maturity, and senescence form the calendar to which any living individual may be referred for designation as to physiological age. It is held that the statement of the stage of development is more fully descriptive of the individual than is a statement of years and months of age, alone, for the former gives information as to structural condition, physical and mental abilities, characteristic of the stage, while the latter refers only to

## PHYSIOLOGICAL AGE

length of life. Owing to different rates of development, chronological age gives imperfect information as to actual mental or physical status

The physiological calendar of developmental stages is a series of anatomical, physiological, and mental signs which serve as data for reference. This has given rise to the additional terms "anatomical" and "psychological" age, depending upon the nature of the sign noted for reference. Of the former, Rotch has presented a series of developmental epochs based upon the appearance of the ossification centers of the bones of the wrist; of the latter Binet and his followers have presented a series of tests of mental abilities. These signs vary in significance as to the number and closeness of their correlations with other important features of development. Of the least importance at present are the anatomical signs of earlier tooth appearance and the development of the bones of the wrist, for with them little correlation with other features of maturation has been determined. Of greater importance are the signs of puberty and menopause with which many significant qualities are closely correlated. At puberty, of which pubic pubescence is the sign, the voice changes, a growth acceleration begins, physical proportions change, many mental abilities wax and wane, and the whole social attitude changes.

*Strength of grip, right hand. Stage of pubescence of a group of 662 high school boys between 14.5 and 15 years of age*

1. Prepubescents
2. Pubescents
3. Postpubescents

KILOS	PHYSIOLOGICAL AGE		
	1	2	3
15-19	3	2	2
20-24	17	22	16
25-29	34	52	41
30-34	26	49	79
35-39	15	22	113
40-44	1	7	78
45-49		1	43
50-54			21
55-59			12
60-64			2
65-69			2
70-74			0
75-79			1
80-84			1
Number	96	155	411
Average kilos	29.37	30.79	38.80
Variability	4.96	5.66	8.46

Since puberty may occur at any age between six and twenty, and commonly from eleven to sixteen, the mere statement of a chronological age, as, for instance, thirteen years, gives no information as to whether or not these

most significant changes have or have not occurred; while the statement of physiological stage with reference to pubescence will more accurately describe the individual

We divide children from eleven to sixteen into three classes — prepubescents, pubescents, and postpubescents, according to the absence, first appearance, and evident presence of pubic hair. The preceding table illustrates the fact that postpubescents are much stronger than prepubescents. Similar investigations determine that they are proportionately taller and heavier, and that their success in school and their growth rates are also very different.

Owing to the fact that this thesis is new, the physiological calendar is incomplete, and the significance of each of its data of reference has not been fully stated. The importance of basing education upon the observed succession of developmental stages, instead of the chronological basis, has become apparent, and efforts have been made to bring about the change. The recognition of the fact that the neuromuscular abilities of the postpubescent boy are superior to those of the prepubescent boy has led to a classification for purposes of athletic competition upon the basis of weight, which is closely correlated with pubescence, and in many cases the division is made upon the actual observation of pubescence.

The following table, taken mainly from Boas, exhibits the anatomic and physiological development calendar as it is at present formulated. The corresponding psychological calendar is at present unformulated.

OBJECTIVE SIGN		AVERAGE DATE	VARIABILITY (SIGMA)
Pregnancy	♂ ♀	0 0	04
First incisors	♂ ♀	0 6	21
First molars	♂ ♀	1 6	31
Inner permanent incisors	♀	7	1 6
Inner permanent incisors	♂	7 5	1 4
Outer permanent incisors	♀	8 9	2 1
Bicuspid	♀	9	2 8
Outer permanent incisors	♂	9 5	2 1
Bicuspid	♂	9 8	1 6
Permanent canines	♂	11 2	1 4
Permanent canines	♀	11 3	1
Second molars	♀	12 8	1 6
Second molars	♂	13 2	2
First stage pubescence	♂	13 5	1 6
Second stage pubescence	♂	14 7	1 7
Puberty	♀	14 9	2 01
Wisdom teeth	♂	19 3	2 1
Wisdom teeth	♀	22	1 8
Menopause	♀	44 5	5 3
Death due to arterial diseases	♂ ♀	62 5	13 2

♂ male, ♀ female

C W C

**PHYSIOLOGICAL PSYCHOLOGY.** — See PSYCHOLOGY.

**PHYSIOLOGY** — That phase of biology which treats of the functions or life activities

of animals and plants. General physiology deals with fundamental processes which are common to all organisms. The terms animal physiology and plant or vegetable physiology are commonly applied to the subdivisions which treat of life processes in animals or plants, respectively. (See BIOLOGY; BOTANY.) Human physiology in the strict sense is the science of human functions; and it is chiefly a division of animal physiology, for the comparative study of animal life has contributed numerous facts and principles applicable to the human aspect of the science. Human physiology is popularly more or less confused with hygiene, probably because personal hygiene is largely an application of physiology supplemented by some applied bacteriology. Public hygiene, on the other hand, depends primarily upon applied chemistry and bacteriology in the public control of conditions which affect the health of communities. Having now defined the field of physiology as a subscience of biology, an outline of its various relations to education will be more intelligible.

**In Universities and Medical Schools** — Only in advanced courses in some universities and medical schools is human physiology presented as a separate branch of science, while the necessary facts of anatomy and histology are taught in prerequisite courses. More commonly, college courses and large textbooks which are designated "physiology" contain a large admixture of anatomy, chiefly microscopic, but sometimes gross also. Moreover, in some colleges there are no announced courses of physiology, but the human side of physiology is presented as a culmination of general biology.

**In Schools** — With reference to schools of secondary and elementary grade the term "physiology" has been very loosely used, especially in America, and has been applied to various courses of study of the human body, some of them based on textbooks with less than 10 per cent of their pages devoted to physiological topics. In defense of the use of the word "physiology" for such elementary studies of the human body, it has been urged that the whole study revolves around functions, and the same kind of argument might also justify the more recent use of "hygiene," for such studies as are of value chiefly with reference to health. Numerous authors of elementary textbooks have avoided such unwarranted use of the term physiology by adopting such titles as "human anatomy, physiology, and hygiene," "human mechanism," and "human body and health."

Instruction concerning the human body, and especially aiming at health, is in many states required by law in the six or seven years between the second grade of the primary school and the second year of high school. (See TEMPERANCE, INSTRUCTION IN.) In most cases the laws do not specifically require anat-



omy and physiology, but obviously some fundamental facts in these lines are necessary as a scientific basis for teaching hygiene. The general tendency of recent years has been to reduce the amount of human anatomy and physiology in elementary courses for public schools, in order to make way for more hygiene, particularly the problem of germ diseases. There is excellent authority for teaching in elementary schools only as much physiology as is needed for application in hygiene and only as many facts of anatomy as are useful in physiology.

The most recent movement affecting public school "physiology" is the attempt to make it an integral part of nature study for elementary grades and of general biology, or sometimes zoology, courses of high schools. The elementary school adjustment to nature study has been studied in only a few schools, although advocated by many prominent science teachers. (See NATURE STUDY.) The inclusion of high school physiology and hygiene in biology courses is very common in many high schools, and is officially recognized in courses of study in some states, notably New York. Practically all prominent teachers who have tried presenting human physiology and hygiene in connection with high school biology favor the plan because so much of the usual studies of animals and plants helps to interpret human structure and functions. In fact, the only possibility of teaching physiology and hygiene on the laboratory basis is by making use of illustrative materials selected from the fields of botany and zoology.

In some systems of elementary schools and in a few high schools the teaching concerning the human body has been designated hygiene and placed in the charge of teachers of physical training. The experiment has been far from successful, chiefly because hygiene is best taught by classroom and laboratory methods and with illustrative materials which are quite foreign to the standard physical training. Moreover, there are relatively few possible correlations between hygiene and physical training outside of breathing and muscular activity. Probably most useful of all elementary hygiene is that relating to food and germs, and these certainly have no relation to physical training. On the other hand, they are natural applications of biological nature study and high school biology. M A B

For more detailed presentation of the educational status of the entire subject, see HYGIENE, PERSONAL, HYGIENE, SCHOOL, HYGIENE, TEACHING OF, PHYSICAL EDUCATION; TEMPERANCE, INSTRUCTION IN; also NATURE STUDY; MEDICAL INSPECTION, SANITARY SCIENCE, SEX HYGIENE.

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Longmans, 1904 (contains bibliography). Place of Physiology in Elementary School. *Nature-Study Review*, Vol II, February, 1906, pp 67-72. See also reference lists under Hygiene.

**PIANO PLAYING, HYGIENE OF.**—See DESKS AND SEATING, MANUAL TRAINING, HYGIENE OF, OVERPRESSURE.

**PIARISTS**—A teaching order established by Joseph Calasanzius (1556-1648), a Spanish priest, who was born near Petralta in Arragon and after studying at Lerida, Valencia, and Alcalá proceeded to Rome. Here he was struck by the lack of educational opportunities for the poor, and with the aid of two priests opened a free school in 1597. The work grew rapidly and further assistance was obtained. In 1606 there were 900 pupils under instruction, in 1613 there were 1200. In 1621 Pope Gregory XV permitted the establishment of a teaching congregation—*Congregatio Clericorum regularium pauperum Matris Dei Scholarum piarum*, known also as the *Patres piarum Scholarum*. After much opposition and internal troubles the order was once more confirmed by Pope Clement IX. The members wore a habit much like that of the Jesuits, whose general organization was also copied in the main. The Piarists undertook primary education—*ad majus pietatis incrementum*. From Rome they were soon invited to other parts of Italy and then Spain. In 1631 they took up work in Moravia, in 1640 in Bohemia; in 1642 in Poland; and after the Thirty Years' War in Austria. In the eighteenth century and in the early part of the nineteenth the Piarists were particularly influential in Austria and Hungary, especially after the expulsion of the Jesuits. Besides elementary education they had been allowed by Pope Clement XII in 1731 to give higher education, and they established many higher schools. From 1804 to 1849 they had charge of the *Academia Theresiana* in Vienna. Throughout the latter half of the last century, however, there has been a decline in the activity of the Piarists in Austria. Their chief centers are now in Italy, Spain, and America. While they followed a scheme very similar to the *Ratio* of the Jesuits, they did not adhere to it so rigidly, nor were they so narrowly classical as the Jesuits. They divided the school work into nine classes: reading, writing, ciphering, *schola parva* or *rudimentorum*, *schola principiorum*, *grammatica syntaxis humanitas* or *poesis*, and *rhetorica*. To avoid fatigue school work was never continued beyond periods of three days. The work of the congregation is organized in provinces. At the head stands a *Præpositus generalis* with four assistants and a *Procurator generalis*, all in Rome. The chief authority in each province is the *Dicastrium provinciale*, the head of a college is the *Rector*, of a settlement, the *Superior*. A general chapter takes place at

ROME every six years for the discussion of the larger questions of administration

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**PICCOLOMINI, ÆNEAS SYLVIVS —**  
See ÆNEAS SYLVIVS

**PICO DELLA MIRANDOLA —** See RENAISSANCE AND EDUCATION

**PICTOGRAPHS —** See LANGUAGE, WRITTEN

**PICTORIAL METHOD —** See READING

**PICTURES. —** See VISUAL AIDS

**PIERPONT, JOHN** (1785–1866) — Text-book author, graduated at Yale College in 1804. For five years he was teacher in the academy at Bethlehem, Conn., and private tutor in South Carolina. He studied law at Litchfield, Conn., and practiced a few years at Newburyport, Mass. He then took the course in theology at the Cambridge Divinity School and devoted the remainder of his life to the ministry. He was the author of a series of school readers, including the well-known *American Class Book* (1831). W S M

**PIERSON, ABRAHAM** (1645–1707) — First president of Yale College, graduated from Harvard College in 1668. He was ordained to the ministry, and was assistant pastor (under his father) at Newark, N J., and pastor at Killingsworth, Conn. He was the first rector of Yale College (1701–1707). He published an Indian catechism and a work on natural philosophy, which was studied in the college for many years. "He was an excellent scholar, a great divine, a faithful preacher, and wise and judicious in all his conduct." W S M

See YALE UNIVERSITY.

**PIETISM —** A movement which occurred within the Lutheran Church in the seventeenth century, stimulated by the opposition to the formalism and intolerance in the dogma and practice of the church. The result of the Thirty Years' War had been to establish a number of "little popes," each with his own official clergy to protect an intolerant creed. Theological quibbling on questions of doctrine, a cold, logical, and intellectual religion, had sprung up, and close adherence in forms was demanded. Against this condition came a movement for practical Christianity, pious conduct, and faith, the heart rather than the intellect was the seat of religious beliefs. Philip Jacob Spener (1625–1705) is generally regarded as the leader in the movement. He had, how-

ever, several predecessors whose work tended in the same direction. Among these may be mentioned Johann Arndt, Johann Valentin Andreas (*q v.*), and Balthasar Schuppis.

Pietism was a demand for the expression of piety and devotion in individual action, conduct was to be inspired by inner light, deep reverence, and true conception of religion. Hence there followed naturally love of God and love of man; the spiritual and the social went together. To pietism in no small measure was due the humanitarian and philanthropic activity of the eighteenth century.

Strong as the influence of pietism was in religion, it was even more powerful in education. Both Spener and Francke held that the faults of the age were due to bad upbringing of children in home and school, and to poor teaching. They recognized the evil of allowing the memory to run ahead of intelligent comprehension, and further they saw the defects of an education which stressed verbalism and neglected the real and practical. As in religion the chief cause of prevailing conditions was a divorce between doctrine and practice, so the remedy in education was to be found in a combination of the word and the thing. But the leaders of the movement also realized that the benefits of education were confined to only a few. The lower classes, the poor and destitute, were almost entirely neglected. Accepting the theory of the total depravity of children, the pietists were compelled logically to accept and provide education as a discipline for the conduct of life. The result of the two views on the function of education was to relate knowledge to the needs of life, a life directed to higher ends — love of God and human sympathy. Thus a change in the curriculum in the direction of the modern and practical was no longer impossible. From the social-philanthropic aspect a new movement began for the provision of schools for orphans. As Spener was the leading influence on the religious side, so Francke (*q v.*) was the moving spirit on the educational. All the implications which flowed from the pietistic movement were realized in the great *Stiftungen* of Francke at Halle (1695). Throughout Germany this influence was felt almost immediately, and led to the establishment of schools for the poor and to the foundation of orphanages. Connected with these went the training of teachers, also in imitation of Francke's system. At Halle, too, was established the first "real" school by Semler in 1706, based on the principle *non scholæ sed vitæ discendum*. Although this school did not meet with success, it was the prototype of the "real" school established by J. J. Hecker in Berlin in 1747 and so of the "real" schools of Germany. Through Hecker the stamp of pietism was also laid upon Prussian elementary education, for he was in large part responsible for the *Generallandschulreglement*

of 1763 But the influence of pietism which thus emphasized the value of the vernacular did not end with the elementary and secondary schools. Through Spener, Francke, and Thomasius (*qv*), after the failure of the two latter to introduce the use of the vernacular at the University of Leipzig, the University of Halle (*qv*), probably the first modern university, was established

As a religious movement pietism, like other similar movements, at times degenerated into fanaticism, and while it had originated to vindicate human values, it ended in decriing every thought and action in the slightest degree worldly In education, however, it laid the foundations of modern ideas an increased importance was attached to the vernacular, the "real" studies were encouraged, practical needs were not disregarded, better methods replaced the old emphasis on discipline and memory, schools were provided for the lower classes; "real" schools were introduced; and teachers began to be trained Nor were these influences confined to Germany The Moravians (*qv*), a direct offshoot of the pietist movement, established schools as soon as they were organized In England the charity school movement (see CHARITY SCHOOLS) was due to similar influences, in England and America the Quakers were an equally important factor in the development of education (see BRITISH AND FOREIGN SCHOOL SOCIETY, FRIENDS, EDUCATION OF SOCIETY OF, LANCASTER, JOSEPH, etc.); while similar movements, almost contemporaneous with pietism, led to educational reforms in France (See CHRISTIAN BROTHERS, LA SALLE, ST JOHN BAPTIST DE, PORT ROYALISTS)

See FRANCKE, AUGUST HERMANN, and the references there given

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**PIKE, NICHOLAS** (1743-1819) — Author of one of the earliest popular American arithmetics, was graduated at Harvard College in 1766 He taught for several years and in 1788 published his *New and Complete System of Arithmetic*, which for nearly half a century was in general use in America

W S M

**PILLANS, JAMES** (1778-1864) — Scotch educator, born and educated in Edinburgh He graduated M A at the Edinburgh University in 1801, for several years he was a private tutor at Eton, and from 1810 to 1820 he was Rector of the Edinburgh High School As Rector he met with considerable success, increased the number of pupils, and introduced the monitorial system for the first time in a secondary school He was especially interested in the teaching of Latin, Greek, and ancient geography His experiment at the high school attracted much attention, particularly in France, where he was made a member of the *Société pour l'Enseignement élémentaire* In 1820 he was appointed to the chair of Humanities and Laws, a position held by him until 1863 Professor Pillans had an intimate acquaintance with all types of school in England, Scotland, Prussia, France, Switzerland, and Ireland In 1856 he published a volume containing most of his writings on education under the title *Contributions to the Cause of Education* The speeches and essays are characterized by breadth of view and are the fruit of wide educational experience Professor Pillans was a warm supporter of the professional education of teachers and of the improvement of their social status Professional education he did not consider to be in higher education or a training in devices and methods, but in principles and psychological foundations of education He urged the establishment of chairs of education in Scotland as early as 1828, and continued advocating these to the end of his career

See EDUCATION, ACADEMIC STUDY OF

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*Dictionary of National Biography*

**PISA, UNIVERSITY OF** — See ITALY, EDUCATION IN

**PITCH** — The quality of a tone The tonal range of the normal ear extends from the lowest audible tone, about twelve vibrations per second, to the highest audible tone, about fifty thousand vibrations per second The lower limit is usually determined by means of large tuning forks, and the upper limit by means of a Galton whistle The range is greatest in early youth The upper limit is lowered with age to such an extent that at sixty a person may not have more than about two thirds of the range he had at sixteen Sometimes gaps occur within the tonal range, i e a person is incapable of hearing tones of a certain pitch, although he may hear both higher and lower This is analogous to color blindness C. E. S.

See EAR, SOUND.

**PITTSBURGH, UNIVERSITY OF, PITTSBURGH, PA** — The oldest existing institution of learning west of the Alleghenies. It was

first chartered on February 28, 1787, as Pittsburgh Academy; later, in 1819, as the Western University of Pennsylvania. In 1908 the title was changed to University of Pittsburgh. In 1822 the first college faculty was installed. By state appropriation the first college building was erected. Fires in 1845 and 1849 destroyed the buildings. In 1866 the University acquired the Allegheny Observatory, and new buildings upon the observatory site in Allegheny were completed in 1890. In 1908 a new site was chosen, consisting of forty-three acres in the Oakland district. By 1912 five buildings had been completed on this site. The Chancellors of the University, at first called principals, have been as follows: Robert Bruce, 1819-1843; Heman Dyer, 1843-1849; D. H. Riddle, 1849-1855; John F. McLaren, 1855-1858; George Woods, 1858-1880; Henry M. MacCracken, 1881-1884; Milton B. Goff, 1884-1890; William Jacob Holland, 1890-1900; John Alfred Brashear, 1901-1904; Samuel Black McCormick, 1904-. The purpose of the second charter, to create in western Pennsylvania a university similar to the University of Pennsylvania in the east, was partially carried out from 1840 onward, in the establishment of courses in law, in advanced English, in engineering, in astronomy, and in medicine. In 1892, under the chancellorship of Dr. Holland, this purpose was fully realized in the establishment of schools of medicine, law, dentistry, pharmacy, and mines. All these are now located on the university site, with the exception of the observatory (situated permanently in River-view Park), and the schools of law and pharmacy, which will shortly be transferred.

The University of Pittsburgh now consists of eleven schools, as follows: college, engineering, astronomy, graduate, mining, economics, education, medicine, law, dentistry, and pharmacy. It is managed by a self-perpetuating Board of Trustees, consisting of thirty members, together with the Chancellor and the mayor of the city. The entrance requirements are the usual fifteen units. The school of medicine requires two years of college work. Entrance to the law school is determined by the rigorous requirements in that profession in Pennsylvania, the student body for the most part holding bachelor's degrees. In the year 1911-1912 the faculty of the University consisted of 271 members. The students numbered 2258, distributed as follows: graduate school, 68; college, 345; engineering, 176; mines, 46; economics, 425; education, 502; law, 170; medicine, 190; pharmacy, 200; dentistry, 165. The University has (April 1, 1912) assets amounting to more than two million dollars. Its support comes from private endowments, individual gifts, and biennial appropriations from the state.

The location of the University in the world's

greatest industrial center gives prominence to certain of its departments. Among these are medicine, with the splendid hospital facilities, engineering, with its unrivaled laboratories in the mills and manufactories, which make possible the new coöperative system whereby engineering students gain practical experience while engaged in study; research work in industrial chemistry, with the system of industrial fellowships, which are rapidly multiplying, economics, sociology, etc., courses in which are extending with rapidity and effectiveness, education, with its plans for cooperating with the public school system in western Pennsylvania. S. B. M.

**PLACE, FRANCIS** (1771-1854) — Publicist and educationist. He was born in a "sponging house," or private debtor's prison, in Vinegar Yard near Drury Lane, London, his father, Simon Place, being a bailiff to the Marshalsea Court. Afterwards the father took a tavern, and Francis was brought up with arab-like street life out of school, and actually taught other pupils in school. From 1784 to 1789 he was apprenticed to a leather-breeches worker. In 1791 he married Elizabeth Chadd, when their joint earnings amounted to seventeen shillings a week. With a period of unemployment in 1793 he became overseer of parish scavengers, but notwithstanding every discouragement he gave himself up to intellectual improvement by borrowing books on loan. By 1796 he had become an agnostic, and took part in publishing Tom Paine's *Age of Reason*. In 1799 he opened a shop as a tailor, determined not to exercise the ordinary tricks of tradesmen. Place came into contact with Joseph Lancaster (*qv*), sent a son to one of his schools, and endeavored to make the movement, not only a charitable plan for the children of the poor, but the basis of an organization of a complete system of primary and secondary education, at least for London, and was one of the pioneers in the movement of "Schools for All." One of Place's distinctive suggestions was a system of higher schools in connection with the Lancaster Society, so as to help the middle classes as well as the poor. He was particularly anxious, like Ellis (*qv*) later, that systematic courses of morals should be included in the curriculum. Bentham offered a site for such a school, and the proposed curriculum was founded on the *Chrestomathia* of Bentham (*qv*). James Mill joined Place in drawing up the proposed plan in 1815, but the scheme finally failed in 1820. In 1823 Place was instrumental in founding a London Mechanics Institute (*qv*), which was further developed by Dr. Birkbeck (*qv*), and which with day classes attached has become one of the most important recognized "schools" of the University of London. Place advocated, at the beginning of the nineteenth cen-

ture, schools for all, buildings to be erected at the cost of public authorities, compulsory rates for education, and good teaching on a strictly non-sectarian basis. He was a leader against the laws forbidding combinations of workmen, and was an important source of information on social questions for the first half of the nineteenth century, having left seventy-one volumes of manuscript and materials, largely autographical, now placed in the British Museum Library F W.

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**PLAMANN, JOHANN ERNST** (1771-1834) — German educator, born in Berlin and there educated at the Royal Real School and the Joachimsthal Gymnasium. After studying theology and pedagogy at Halle, he was private tutor for a time, until he became so full of enthusiasm for Pestalozzi's work that he decided to visit him in Switzerland. He remained at Burgdorf from May to October of 1803 and was in intimate touch with Pestalozzi. On his return he opened a Pestalozzian institute in Berlin with royal authority. The first effort failed, owing to trouble with the school authorities. In 1805 Plamann opened another school on Pestalozzian lines and met with great success. This institute became the center of Pestalozzianism in Prussia. The authorities encouraged young teachers from all parts of Prussia to visit Plamann, and Von Humboldt sent his son to the school, through which he was converted to Pestalozzianism. Among the future educational leaders who received their training through Plamann may be mentioned Harnisch, Jahn, Kawerau, and Dreist. Plamann visited Pestalozzi a second time in 1812. Plamann was the author of several books on the Pestalozzian system: *Einzige Grundregel der Unterrichtskunst nach Pestalozzi's Methode, angewandt in der Naturgeschichte, Geographie und Sprache* (Some Principles of the Art of Instruction according to Pestalozzi's Method applied to Natural History, Geography, and Language, 1805), *Anordnung des Unterrichts für ein Pestalozzische Knabenschule* (Course of Instruction for a Pestalozzian School for Boys, 1806); *Elementarformen, Sprach- und wissenschaftlichen Unterrichtskunst* (Elementary Methods of Instruction in Language and Science, 1906), *Beiträge zur pädagogischen Kritik, zur Vertheidigung der Pestalozzischen Methode* (Contributions to Educational Criticism, in Defense of the Pestalozzian Method, 1815).

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**PLANCHETTE** — See MUSCLE READING; AUTOMATOGRAPH

**PLANS, LESSON** — In order to train teachers to anticipate and prepare for all the essential demands that will be made by the conditions of the classroom and the standards of effective teaching, it is customary to require the preparation of lesson plans by students of the teaching process. At first such plans are usually for a single lesson period; later, they may cover a group of lessons; later still, with more experienced teachers, a scheme of procedure for the work of a month or a term. A common type of lesson plan makes a preliminary statement of aims (for both teacher and pupils), and then in parallel columns suggests the *subject matter* and the *method of procedure* to be utilized in developing the lesson.

The advantage of the lesson plan lies in its usefulness as a device — (1) in anticipating the situations which are to be used in controlling the experiences of children, (2) in stimulating the teacher to an adequate gathering of the materials which are the basis of instruction, and (3) in defining the teacher's activities so as to avoid discursiveness. Mechanically used, the lesson plan tends to make teaching formal and inflexible. It should be used as a guide (rather than as a fixed plan), elastic enough to be modified to meet the unforeseen situations and spontaneous interests that constantly appear in every classroom. Fullness of detail in such careful advance planning is requisite for beginners in order to clarify the teacher's thinking and to give a basis for advance criticism on the part of the supervisor. More schematic planning covering wider units is more profitable for experienced teachers in service, inasmuch as they have in large degree perfected their scholarly and pedagogical resources, and have attained an easy self-command in the classroom. For trained teachers, a demand for detailed written plans may prove wasteful of time and energy.

H S.

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**PLANTA, MARTIN** (1727-1772) — Swiss educator born, at Sûs in the Grisons and educated by his brother. After studying theology at Zurich, he was tutor for a time in Germany and then (1750) pastor of a German congregation in London. Here he also studied mathematics and physics, to which he contributed several inventions. Returning to Switzerland, he became pastor at Zizers in 1754. In 1761, after consulting the French Minister Ulysse de Salis-Marschlins, the diet of Grisons, and members of the *Société Helvétique*, he with a friend, J. Peter Nesemann, a former pupil

of the Franckesche Stiftungen, opened a school, the *Séminaire* or *Séminar*. This was soon transferred to Haldenstein and met with great success, attracting foreign as well as native pupils. The aim of the school was "first to give a Christian education, and secondly to prepare pupils for the various careers, political, administrative, military, and commercial." The curriculum was broad and included Latin, French, German, history, geography, law, natural law, practical mathematics, bookkeeping, design, music, and drawing. Mechanical methods were replaced by attention to individuality, appeal to the intelligence, and independence. Ulysse de Salis-Marschlins in a tribute to Planta referred to the following features in the school: "Self-government of the pupils as a stimulus to ambition and preparation for a republican life, the Socratic method, and the religious foundation." The school was organized on the model of the Roman republic. Emphasis was placed upon physical exercise, including gymnastics and excursions. The pupils were encouraged to make collections of minerals, plants, and insects, and were also taught manual work of different kinds. In 1771 the school, having now ninety-six pupils, was once more moved to the castle of Marschlins. About this time, too, Planta designed to open a free school for poor pupils of ability. On Planta's death in 1772, K. Fr. Bahrdt, a disciple of Basedow (*qv*), was given charge of the school, now known as a *Philanthropinum*. But Bahrdt did not have the personality to carry on the school with success, and it was closed in 1776.

See PHILANTHROPINISM

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**PLANTS, PROTECTION OF** — See GARDENS, SCHOOL, NATURE STUDY, also HUMANE EDUCATION

**PLANUDES** — See MAXIMUS PLANUDES

**PLASTICITY** — Modifiability. That property of living organisms which enables them to adapt their behavior to changes in their environment. The term may also be applied widely to cells of which the organism is composed or even to non-living matter that retains the modifications which result as a consequence of action upon it. The term is generally used, however, in connection with those changes which are clearly adaptive.

Under the condition of rapid changes in environment any animal species which is plastic will have an advantage over those which are not capable of modifying their behavior to suit the new conditions. According to the theory of organic selection the presence of plasticity serves to modify the influence of

natural selection by enabling the animal possessing it to form new habits suitable to the changing environment, which promote the survival of the animal until natural selection has time to secure more fundamental adaptation.

According to this view, therefore, in a species which survives because of its plasticity, each individual will require education in order that it may be brought into harmony with its environment. Man's nervous system is preeminently the most plastic of all animals' by virtue of the comparatively large size of his cerebral hemispheres. Corresponding to this fact we have the lengthened period of infancy, which is the period devoted to the learning of new modes of behavior. Man is, therefore, comparatively much less dependent upon instincts and reflexes than the lower animals and much more dependent on habit, making education a virtual necessity. The human nervous system becomes much less plastic in middle and old age, as shown in the relative difficulty in learning new habits both of thought and action.

E. H. C.

See ACQUIRED CHARACTERISTICS, INFANCY AND EDUCATION, HEREDITY

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**PLATEAU** — See HABIT, also LEARNING; PRACTICE CURVE

**PLATO** — The educational influence of Plato is so all-pervasive that it is impossible to give an adequate statement of it, even had the subject not been treated under a variety of other topics. In the general article on GREEK EDUCATION it is the ideas and influence of Plato that are expressed for the most part in the discussion on the THEORY OF GREEK EDUCATION (Vol. III, pp. 153-155). Again, in the article on IDEALISM AND REALISM IN EDUCATION (Vol. III, pp. 371-375) it is chiefly Plato's influence which is discussed. In the article on ETHICS, on LOGIC, on PHILOSOPHY, and especially in PHILOSOPHY OF EDUCATION, it is again Plato's influence which is stressed as fundamental. In the articles on MYSTICISM AND NEOPLATONISM his influence during the late classical and medieval periods is considered. Throughout the entire list of topics relating to the philosophy of education (see ANALYTICAL INDEX in the last volume), Plato's influence is to be noted, especially in such articles as those on KNOWLEDGE, IDEA, LAW, etc. The following article, therefore, is limited to a brief statement of the chief points of Plato's influence on education. The Platonic schools of education, as worked out in an ideal system, are found in their most

systematic form in *The Republic*. As stated above, these accord in general with the most advanced educational theory of the Greek people. In a similar way, Plato's most concrete statement of educational practices, as found in *The Laws*, is in general a transcript of contemporary Greek practices. Both are therefore given in substance in the general article on GREEK EDUCATION.

Higher education in Plato's scheme was almost exclusively mathematical, though we know that he encouraged grown men, like his nephew, Speusippus, and Aristotle, to study other branches of science, such as geology, botany, and zoology. That, however, belongs to the history of scientific research rather than to that of education, and it is clear that Plato insisted upon a preliminary training in mathematics for all his students. The whole scheme is really the development of a single thought, which he owed in great measure to the Pythagoreans. The earlier education was directed to the inculcation through time and tune of an instinct for order and harmony. An ordered and harmonious soul is the first requirement of a good citizen, but, besides that, the Greeks felt that the intervals of the octave had their counterpart on a larger scale in the ordering of the heavenly bodies, and that the great universe itself was tuned like a lyre. The aim of education is, therefore, to put the soul in tune with the world and with God. That is why it is mathematical throughout.

It is becoming more and more clear that Plato's *Laws* had a very great influence in the age which immediately succeeded him. Already in his own lifetime the Academy was recognized as a school of politics, and especially of constitutional law. Many cities applied to it for legislators, and in this way the theories of *The Laws* came to be realized in the codes of actual states. This seems to have been the case with the educational principles contained in the work also. It is generally recognized that, by founding the Academy, Plato became the real author of the university system; it is not always noticed that he was also the inventor of the school as we understand it. At Athens in the classical period there were no schools at all, if we mean by a school a public institution with a regular curriculum. Parents sent their sons to one teacher to learn reading and writing, to another to learn music, and so forth, but all these teachers were private tutors, as it were, and quite independent of one another.

In recent times, much attention has been paid to Plato's theory of education, but this has been almost entirely confined to the discussion of the subject in *The Republic*. As has been said, the guiding principles are to be found there, and they are rather assumed than established in *The Laws*. It is from *The Republic* that we learn his view that education is above all a sort of conversion, a turning of

the eye of the soul to the light. It is also from *The Republic* that we learn the psychological basis of the system. It is not correct to say, as people usually say, that music is the education of the soul and gymnastics that of the body. Rather these are the education of two different "parts" or elements in the soul, and the excess of either produces an ill-balanced and inharmonious character.

It is also from *The Republic* that we get a fuller knowledge of the higher education in its four main branches of arithmetic, geometry, astronomy, and music, which long survived in the medieval *quadrivium*. But, on the whole, what we chiefly owe to Plato is the idea of an organized school with a definite curriculum, and that is derived from *The Laws*.

**Platonic Philosophy of Education** — Plato's treatment of education is a closely interwoven fabric of interpretation of the social and moral conditions of his own day, with principles and problems having a perennial import. His most important contributions to a permanent philosophy of education may be enumerated as follows —

1. The problem of education is an inherent portion of the philosophic question, and conversely education is treated as the social and moral art through which the theoretical results of philosophy shall be made effective in life (See PHILOSOPHY OF EDUCATION). It is no accident that his two chief treatises on the right organization of social life (*The Republic* and *The Laws*) are also chief authorities for his ethics, metaphysics, and educational theory. He retains and continues the Socratic notions that right conduct presupposes true knowledge, and that the theory of true knowledge (logic or dialectic) is of practical or moral importance since it is a necessary instrument in bringing men to a consciousness of ignorance and opinion, with their attending evils, and in providing them with the means of attaining the knowledge that leads to the good. The genuine practice of dialectic as distinct from the spurious (eristic and sophistic) is thus an integral part of right living. Philosophy is thus no merely theoretical exercise, but defines the method of education, that is, of the conversion of the soul to the good and of the latter's progressive realization. Plato, in avoiding the sharp antithesis of knowledge and practice, also avoids the error, so common in subsequent thought, of making educational theory a mere external annex of philosophy.

2. Plato adds a distinctly new factor to the Socratic conception, in his conviction that knowledge is relative to social organization. That is to say, ignorance and mere opinion are inevitable in the degree in which self-seeking and division infect society, whether these are expressed in despotisms or in anarchic democracies. Such societies involve exclusive "particularity" of knowledge as the counterpart of the division of classes and interests.

Instead of affording the universality and permanence which are the patterns upon which true knowledge is modeled, they generate ignorance and casual opinions masquerading as truth. This strict correlation between right knowledge and right social organization involves, as its consequence, the equally strict correlation of educational theory and the theory of politics or sociology — the theory of the organization of the state. So far as the records indicate, Socrates had thought the conversion of the soul to true knowledge might be brought about by personal discipline independently of the action of the social environment.

This interdependence of true knowledge and the right organization of the state is Plato's answer, in anticipation, to the charge brought by Aristotle, and often repeated, that Plato overestimated the importance for right action of a purely theoretical knowledge, and ignored the need of habituation and practice. According to Plato, the attaining of the true theoretical knowledge itself implies and requires a long period of education in a social medium where the individual, acting in accord with principles of unity, balance, and harmony, absorbs into his practical habits the factors which make possible later on an independent theoretical vision. The Platonic social hierarchy, with philosophers at the top as social rulers, follows from his insistence upon social practice as an indispensable prerequisite for genuine knowledge. That Plato is caught in a circle, on the one hand insisting upon true, or philosophic, knowledge as a condition of right social organization and, at other times upon right social organization as an antecedent of philosophic insight, must be freely admitted. Since he had no conception of evolutionary growth, or gradual progress, he could not conceive that the true state should be ushered in otherwise than by a happy conjunction of circumstances, when once hit upon, it must be kept, at all hazards, intact against any further change, even in its minor details.

3 Plato clearly perceives, what later intellectual specialization obscured, that the motive and principle of the organization of the sciences is educational. The various sciences may be literally said, in accord with the Platonic spirit, to be *studies*; their differentiation and coordination is an affair of specifying the subject matter of an adequate education and of designating the proper aim of each branch of knowledge in the educational whole. A purified music and gymnastic (the customary content of Greek education) pave the way for the new studies of nature (astronomy and physics in the form of cosmology); these pass insensibly into mathematics; mathematics into dialectic, dialectic culminates in the apprehension of the final ends, centering in the conception of the Good, whence a reverse, or deductive, movement leads back to the study

of politics and ethics. There is, of course, much in the specific content of this account that subsequent philosophy and science have rendered untenable. But the underlying idea that the distribution and correlation of the various sciences is ultimately an educational matter, not an abstract intellectual one, must be regarded as a permanent contribution.

4 Plato states and treats the problem of the place and relations of the individual in society as an educational problem. Society is a complex unity, it involves the active coöperation of a number of diverse functions. Individuals are born with distinctive capacities. From one standpoint the need is that these various individuals' capacities be distinctively harmonized with a coordinated, unified social unity. From another standpoint, the need is that every individual be trained to intensity and efficiency of action in the particular capacity which distinguishes him by nature. The unity and order of the state suffer when individuals, instead of sticking to the single function for which they are naturally equipped, assume a multitude of activities, thereby encroaching on the sphere of others and introducing conflict into the social whole. Education supplies the means of satisfying the need from whichever side it be regarded. The business of education is to determine the social office for which individuals are fitted by a continuous process of selecting, sifting, and testing, in which the special talents and limitations of each individual are revealed. Practically, there is some truth in the complaint that Plato sacrificed individuality to the supposed requirements of social unity and stability. In theory, however, he held that the discovery of the special capacities of an individual so as to hold him to an occupation that should utilize his powers in the interests of the social whole was the sole method of securing both the true happiness of the individual and the good of the state. The education that discovers and trains the peculiar powers of an individual is at the same time the method by which intrinsic, instead of coerced, harmony is achieved in the state. This conception appears to present a permanent factor in the problem and ideal of education. The limitations in the Platonic treatment are due to the fact that he held the individual variation down to certain fixed limits and types, which corresponded to certain fixed classes in the state. Having the idea of a small number of classes within which variations in individuals fall, he was also led to the notion that the corresponding social classes have to be arranged in an order of inferiority and superiority. Advance since the time of Plato is in the direction of recognizing that individual variations are of the very heart of individuality itself, and that accordingly the development of characteristically individual powers is destructive of the existence of fixed social classes. Variety of social



activities conspiring to a cooperative unity of result has thus been substituted for hierarchical subordination of classes as defining the aim of education

5. The characteristic rôle, already alluded to, of the æsthetic and the artistic in education represents another permanent contribution. The æsthetic and artistic provide the connecting link and the solvent factor with respect to the relation of the practical and the theoretical in education — an idea which is at the basis of Schiller's conception of education. On the one hand there is the need of practice, of repeated exercise, of habituation in education. This, by itself, tends to routine, and thus to a limitation of rational insight. But not so, if it is based upon spontaneous, uncoerced tendencies — upon play instincts. In this case, education, even as habituation, or practice, involves the emotional attitudes of the individual and an æsthetic subject matter which, through its inherent content of proportion, harmony, balance, and nobility, effects an insensible transition to rational insight. The treatment of gymnastic as well as of music is directed by this principle. Plato's well known attack upon poetry and dramatic art is based not upon a depreciation of the educational function of art and æsthetic appreciation, but upon his belief in their supreme educational significance and the consequent need of their supervision and control in the interests of the state. J D

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**PLATTER, THOMAS** (1499–1582) — Swiss scholar, printer, and teacher, chiefly known through his autobiography, which is written in a very quaint and interesting style and forms a valuable document for the history of education in the sixteenth century. He was born at Grenchen, in the canton of Valais, and spent his early youth as a goatherd. Then he was taken out into the world by a cousin and, as traveling scholars, they roamed for years through Saxony, Silesia, and Bavaria. The description of their roving life and their adventures affords a remarkable picture of the times. Platter finally found a home in Zurich, in the house of the schoolmaster Myconius. There he studied Latin, Greek, and Hebrew, but at the same time learned the trade of a ropemaker. In Zurich he also embraced the doctrines of the Reformation, which had been introduced by Zwingli. From there he went to Basel, where he worked at ropemaking and, in his spare time, delivered lectures on Hebrew grammar at the university. Later he established a printing press at Basel. In 1541 he was put in charge of the

Basel school, where he taught for nearly forty years, until he was retired in 1578.

See BACCHANTS

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**PLAY** — A name given to those activities which are not consciously performed for the sake of any result beyond themselves, activities which are enjoyable in their own execution without reference to ulterior purpose. For a long time the theory of play most generally held was that most thoroughly elaborated by Herbert Spencer, namely, that play represents the overflow of superfluous energy, the base line from which to measure excess being the amount of energy required to maintain the level of health and perform imposed tasks. Since children are relieved of most of the duties connected with getting a living, they naturally have a relatively larger amount of excess energy at disposal. Since the channels of the discharge of the superfluous energies are those of necessary and useful works, it is not surprising that plays largely simulate practical activities. The more prolonged study of the plays of animals and savages impressed Groos with the extent to which plays represent acts that are useful in later life. He formulated the idea that the chief thing about play is that it gives preparatory exercise in later necessary functions. This is usually regarded as a rival theory to that of "surplus energy," but it is evident that the theories are framed from different standpoints and have no point where they touch each other. One theory might be correct as an account of the causal conditions of play, and the other as an account of its value.

As a matter of fact, however, the theory of surplus energy seems to be influenced by a survival of the once general conception that individuals are naturally averse to any kind of activity, that complete quiescence is the natural stage of organic beings, and that some fear of pain or hope of pleasure is required in order to stir individuals to effort which in itself is painful. The fact of the case is that from intra-organic stimuli, the organism is in a constant state of action, activity indeed being the very essence of life. When the myth of natural quiescence is surrendered with its accompanying myth of the need of a special premium in order to arouse an inert agent, it ceases to be necessary to search for any special cause or any special object order to account for play. The only thing necessary is to state the conditions under which organic activity takes this or that form. So considered, we find various forms, which are of sufficient importance, educationally at least, to justify differentiation, namely, play, amusement, art, work, labor, drudgery.

In any case the starting point is the active processes in which life manifests itself. As stimuli direct this activity one way or another, some of its modes are peculiarly rewarding. The stimulus not only arouses a certain kind of activity, but the responsive activity returns upon the stimulus so as to maintain it and to vary it. These variations supply the stimuli for keeping up more action. The moving spool draws the organic response of the kitten to itself, this response continues to give the spool the kind of movements which continue to excite organic reactions. There is no difference in kind between the spool as a stimulus and a mouse, save that the latter has peculiar stimuli of the sense of smell and, when crunched by the teeth, of taste, that call out special responses. In like fashion, a baby plays with certain stimuli so as to keep up, with certain variations, a certain mode of action. Seeing a thing in a certain way evokes responses that make further seeings enjoyable.

After such processes have been frequently repeated, they are complicated by the fact that an idea of the result of prior activities is superadded. It may be that the idea of this result as a possible outcome will be a sufficient stimulus to keep the activity going after it has ceased to afford adequate stimuli so far as its direct results are concerned. If the idea of the result operates as a stimulus to renew the otherwise flagging activity, and if, in addition, the accomplishing of the result involves a certain selection and arrangement of acts antecedent to it, we get a type of activity sufficiently contrasted to be termed work. But as action involving the idea of an end grows naturally out of a spontaneous activity, so "work" in this psychological sense is inevitably preceded by play and grows insensibly out of it. The chief point of difference is not the agreeableness of one and the disagreeableness of the other, but that in the case of work the idea of an end enforces reflection on the relation of means to end, and stimulates a corresponding readjustment of activities originally spontaneous. Not only is the satisfactoriness of the activity not the main differentia, but, with increasing complexity of powers, prior activities are too simple to afford the necessary stimulation (and hence the desired satisfaction) unless they are expanded by a less immediate and more indirect adjustment of means to ends. At one stage of development, the relation between end and means is so close that if the dominating idea is that of playing "set the table," anything will be turned to account for a table and for dishes. With maturity of perception, the activity is not sufficiently complex to be enjoyed unless things can be devised and employed that are objectively adapted to the end. Action requires a greater amount of intellectual control and of practical check in order to be satisfactory, or worth

while. At this point, and not at that of utility *versus* freedom, or of that which is an end for itself *versus* that which is a mere means for something else, lie the differentia between play and work.

Further distinctions are due to social conditions. The stimuli to activity become more social as intelligence develops. The interests and occupations of adults are the points of departure and the directing clews of children's actions. (See IMITATION, and INFANCY.) Certain plays have outcomes and methods that are determined by social conventions; such plays, carried on by rules, are games. But the distinctions of amusement, labor, and drudgery also arise from social conditions.

Labor is a fact of economic origin. Wherever industry is subdivided, as it is beyond the fishing and hunting stage of civilization in greater or less measure, the product of work is not a direct stimulus to the prior process, for this product is not itself enjoyed or consumed, but is exchanged for another object (or for money). This means that the direct end of action is not its adequate stimulus; that something not directly cared for is done for the sake of a more ulterior end. This implies the possibility at least of the direct activity being itself so disagreeable that there is an aversion to it, which is overcome only because of the need for the ultimate object. Under certain conditions of economic life, labor almost inevitably takes on this externally enforced quality, and, as it is intrinsically unskome, becomes drudgery. The notion, referred to earlier in this article, that man is naturally averse to action and hence is moved to it only by fear of evil or love of reward, was taken into psychology from economic theory at a time when industrial life consisted mainly in wage-earning under conditions themselves repulsive. Amusement is differentiated from play by a sort of contrast effect. Children do not normally play for the sake of amusement, any more than for the sake of any end beyond the action itself. They live in their actions, and these actions are called play because of certain qualities they exhibit. But adults (as well as children whose surroundings are socially abnormal) need relief from labor, especially from drudgery. Powers not used at all, or used under enforced and distorted conditions during working hours, need stimulation. The things outside the ordinary routine activity of labor that yield this stimulation constitute amusements. The fact that they are called recreations and are employed for purposes of relief indicates a contrast-effect not normally present in the play of childhood.

It is also desirable to distinguish an attitude of mind as playful. Matthew Arnold, for example, called ability to occupy the imagination fruitfully with a subject, the ability to allow the mind to play freely about the subject, a sign of culture. This attitude of mind is

distinguished from inability to enjoy intellectual activity upon a subject except in the interest of some preconceived theory or some practical utility. This capacity to draw satisfaction from the immediate intellectual development of a topic, irrespective of any ulterior motive, represents a genuine outgrowth of the play attitude—a special form which it may take. Unless play takes this intellectual form, the full spirit of scientific inquiry is never realized, much, if not all, of what is termed the love of truth for truth's sake in scientific inquiry represents the attitude of play carried over into enjoyment of the activities of inquiry for its own sake. The putting forth of observation, reflection, testing, is enjoyed on its own account, irrespective of ulterior by-products, just as in early childhood certain strenuous and even hazardous forms of physical effort may be intrinsically satisfactory.

**Play and Education** — The account that has been given indicates, in outline, the chief educational problems connected with the topic of play. The original discovery of its importance in education, by Plato, and its rediscovery by Froebel, may be said to constitute the basic principles of the method of instruction. The foundation of all later growth is the activity of the earlier period, which, so far as the consciousness of the individual is concerned, is spontaneous or playful. Hence the necessity that the earlier plays be of such a sort as to grow naturally and helpfully into the later more reflective and productive modes of behavior. This means that play should pass insensibly into work (though not necessarily into labor), and that earlier play and work alike be of the kinds which afford exercise in the occupations that are socially useful. For a genuine initiation into them through play means not only that the individual has acquired, under conditions of least resistance and greatest economy, the skill required for efficiency judged from the social standpoint, but that he has done so through the engaging of his own imagination and emotions. In other words, the natural transition of play into work is the means and the only means of reconciling the development of social efficiency with that of individual fullness of life.

Other educational problems arise from the economic conditions under which industry is carried on at present, with its extreme specialization of labor and its control by reference to a medium of exchange instead of by commodities valued on their own account. It is a part of the business of education to fortify and enrich the imagination so that the mechanical phases of industry shall not leave an unformed mind at the mercy of sense, appetite, and trivial fancy. It is a part of its business to come into sufficiently close contact with the conditions of industry so

that those who go from school into industry shall be trained to understand the whole of which their work is a small fraction, and thus to see a meaning in their work which they could not otherwise perceive. Moreover, it is necessary that the plays and games of the school should be so directed as to instil a love for and capacity in wholesome forms of recreation and amusement. Perhaps there is no more neglected aspect of social education at the present time than just here. Because amusement is contrasted with serious things we have forgotten that the function of recreation, of the spending of the hours of leisure, is one of the most serious questions, intellectually and morally, of life, and that any educational system is defective which does not make systematic provision for this as well as for the hours of work.

J D

See ACTIVITY, ARTS IN EDUCATION, COURSE OF STUDY, THEORY OF, FROEBEL, GAMES, INSTINCTS, KINDERGARTEN

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**PLAY CENTERS** — See PLAYGROUNDS

**PLAY, FREE** — In the kindergarten the use of materials to stimulate free response on the part of the child, i. e. to insure self-activity, is an activity of free play. The term is opposed to directed play, where there is selection from the responses of free play for the purpose of increasing the educative value of the activity.

See KINDERGARTEN, PLAY

**PLAY, HYGIENE OF** — See PLAY, PLAYGROUNDS

## PLAYFAIR

**PLAYFAIR, LYON** (1808–1898) — English scientist and politician, responsible in large measure for the introduction and spread of technical education in England. He studied at St Andrews University, the Andersonian Institute at Glasgow, the University of Edinburgh, and at Giessen under Liebig, whose book on applied chemistry he presented at the British Association meeting in 1840. Always interested primarily in applied chemistry, he was appointed by Peel on a commission to inquire into the sanitary conditions in large towns. He played an important part in organizing the Exhibition of 1851 and came into close touch with the Prince Consort, who was interested at the time in promoting technical and scientific education in England. Playfair about this time visited the Continent to study the organization of technical instruction, and on his return lectured on the subject in England. He was largely responsible for the foundation of the Science and Art Department, of which he became one of the secretaries (1853). He also took a large share in establishing the Royal College of Science, the South Kensington Museum, and the 1851 scholarships for science. In 1858 he was appointed professor of chemistry at Edinburgh. In 1868 he entered Parliament as representative of the Universities of St Andrews and Edinburgh, and 1885 as member for South Leeds. He held office several times, and in 1892 was raised to the peerage. Playfair used his influence in Parliament in favor of education and social improvement. Among the many commissions and committees of inquiry on which he served may be mentioned those on the Scottish universities, on endowed schools, and on civil service reforms (Playfair Commission, 1876).

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**PLAYGROUNDS** — Plots of ground set aside for the holding of games, sports, athletic exercises, and amusing activities of various sorts. In the United States the deliberate provision of these areas was begun in 1886 when "three piles of yellow sand were placed in the yards of the Children's Mission," in Boston. The next year this society established eleven sand piles—one being in a school yard,—and special matrons to look after the children enjoying them were employed for the first time. With the growth in the number of the playgrounds they also became larger, new games appeared, and teachers trained in kindergarten methods were put in charge of them. In 1893 two summer playgrounds were started by philanthropic people in Philadelphia. The Children's Kindergarten Association started sand gardens in Providence, R. I., in 1894. About the same

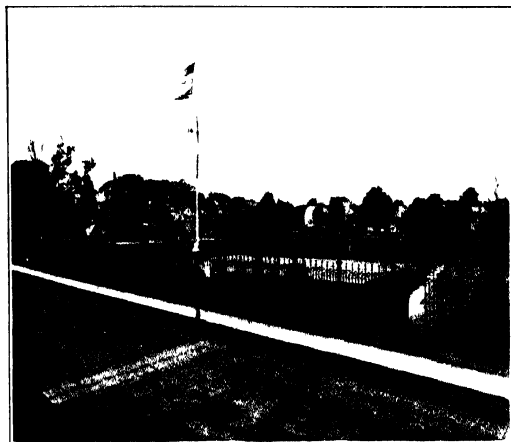
## PLAYGROUNDS

time several private playgrounds were started in New York City, but the movement did not really get under way until 1898, when the board of education, on taking over the vacation schools of the Association for Improving the Condition of the Poor, established twenty school playgrounds or sand gardens. The first summer playground in Chicago was started in 1897 through the efforts of the Associated Charities. Since that time the spread of the playground movement has been rapid. During 1911, according to reports received by the Playground and Recreation Association of America (75 cities known to have playgrounds did not report), playgrounds were maintained in 257 cities of the United States, the total number of such grounds being 1543. On their staffs, not including the caretakers, were 4132 men and women. The total expenditure for maintenance amounted to \$2,736,506 16. In 36 of these cities the playgrounds were kept open throughout the year. Public parks, school yards, and vacant lots are the usual sites, but some of the larger cities conduct playground activities on specially constructed piers along the water front, and in the basements and on the roofs of schools and other large buildings.

**Equipment** — The facilities provided vary greatly in character and quantity in accordance with local conditions. In Chicago, where the playgrounds form integral parts of an extensive park system, the typical layout includes a field large enough for baseball or football, a field house having a refectory, reading, club, and assembly rooms, indoor and outdoor gymnasiums for each sex; a large swimming pool for adults and a wading pool for small children. The latter forms the center of the children's space, which is equipped with sand courts, swings, teeter boards, slides, giant strides, and similar apparatus. The main field can be flooded in the winter for skating, and electric lights make it possible to use the large swimming pool by night as well as day from spring until fall. While such ample facilities are rather unusual, they indicate the kinds of equipment which in varying degrees of completeness are found in the park playgrounds throughout the country.

A typical school-yard equipment consists of several swings and teeters, a sand pit, a frame swing, basket-ball standards, a tether ball equipment, a net for volley ball, a standard for high jumping, a springboard, and a supply of playground balls, also materials for sewing, basket making, and raffia work. In many yards only jumping standards, horizontal bars, and sand piles are to be found, and in general more dependence is placed upon organization than equipment when the playground is managed by school officials.

The principal playground activities have been sufficiently indicated by the description of the equipment. Among those which are



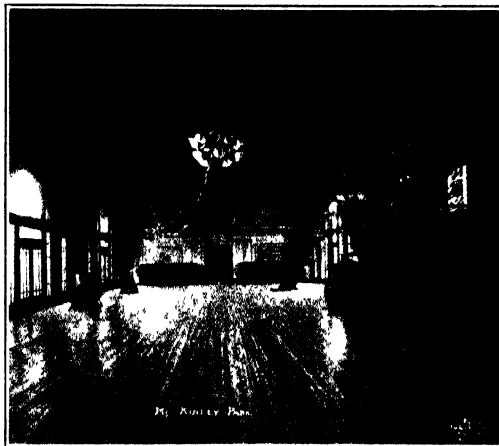
A Public Playground, East Orange, N. J



A School Playground, Detroit, Mich



A Public Playground, Haarlem, Holland



Assembly Hall in the Field House of a Public Playground, Chicago, Ill



A Park Playground, Chicago, Ill



Roof Playground, Public School Building, New York City



## PLAYGROUNDS

also found may be mentioned various kinds of hand work, gardening, story-telling, singing, folk dancing, amateur theatricals, pageants, and club work frequently of the self-governing type. Sometimes the playground is the headquarters of boy scout patrols and camping parties. The nature of the work carried on by the New York Board of Education is shown in the following program —

### NEW YORK DAILY PROGRAM

	Marching
	{ Singing
1 00-1 30 Assembly	{ Salute to the Flag
	{ Talk by the Principal
1 30-2 30 Organized Games	{ Kindergarten
	{ Gymnastic
2 30-3 00 Organized Free Play	
3 00-4 00 Drills	{ Gymnastic
Folk Dancing	{ Military
Apparatus Work	{ Raffia
Occupation Work	{ Clay Modeling
	{ Scrap Books
4 00-4 45 Organized Games	{ Kindergarten
	{ Gymnastic
4 45-5 15 { Basket Ball	
{ Athletics	
{ Good Citizens' Club	
5 15 5 30 Dismissal	{ Marching
	{ Singing

**Roof Playgrounds** — The utilization of the roof as a playground is made possible by paving the surface and erecting light steel trusses over which is spread a coarse wire netting. The schoolhouse roofs in New York City which are used by the boys in this way are equipped with basket-ball hoops and marked off for tennis and indoor baseball. Those for the girls usually have no apparatus, as the principal activity is that of folk dancing. Music is provided by a band of four or five pieces, and sometimes (during the hot summer evenings), as many as 2000 girls assemble on one roof. In the afternoons some of these spaces are enjoyed by the smaller children, who are frequently accompanied by their mothers, and swings, seesaws, sand boxes, and slides are provided. Through the furnishing of seats, flower boxes, hammocks, and pavilions the roofs of some of the more modern tenements, apartment houses, hotels, and other institutions in the large cities are being converted into roof gardens and outdoor play spaces.

The recreation piers, which have been established in several large cities, have the form of huge pavilions, and the activities carried on in them are mainly folk dances, marches, and ring games. Certain of the piers are equipped with hammocks and folding cots for babies and play outfits for very small children, and these, under the management of trained nurses, are effective in reducing infant mortality during the hot season.

**Administration** — The duration of the playground season varies greatly, but in general it

## PLAYGROUNDS

coincides with the warm months. In park systems where there are field houses, it frequently lasts throughout the year, and in a few cities the privileges are open on Sundays as well as week days. School playgrounds are usually open from 1.30 to 5.30 p.m. during six or eight weeks of the summer, but there is also a tendency to make their facilities available after class hours during the regular school term. The staff at some of the larger park playgrounds numbers from fourteen to twenty specially trained play leaders and gymnasium instructors, but in general the number is from four to six. In systems under municipal control the employees are usually selected by civil service methods. The instructors in the Chicago park gymnasiums receive \$1100 a year, while in New York the principals of the school playgrounds receive \$4 a session, and the assistants' rates vary from \$1.75 to \$2.50 per afternoon. Throughout the country the usual rate of pay for a qualified play leader is about \$2 a day. The technique of the work has become so highly elaborated that a special training is now indispensable, and many colleges and normal schools are giving courses in the theory and practice of play and in playground administration.

The administration of about one half of the American playgrounds is still in the hands of the voluntary agencies, principally known as playground associations, through whose initiative they were started. In over one fourth of the cities they are managed by the park department, in one sixth by the school board, while in the remainder they are under the control of municipal playground or recreation commissions. The novel and special character of the problems involved, with the diversity of the recreational resources in the average community, makes it desirable that the administration be in the hands of persons with an enthusiasm and proficiency for its tasks. If they form an independent body they can secure coordination in the management and economy in the use of the various facilities for play possessed by the park, school, dock, and other departments of the municipal government. The prime motive back of the playground movement was to increase the amount of space for play, and accordingly the activity has been greatest in districts congested by population. The reinforcement of this motive by the obvious moral and educational values of directed play has made it relevant to all kinds of population conditions, and the movement is now extending not only to the small cities, but also to the towns and villages and even to the rural districts.

**Results** — Among the more conspicuous effects which have been traced to playground work are a reduction of juvenile delinquency, a lessening of street accidents to children, an improvement in the racial relations in communities largely populated by foreigners, and

a quickening of mental power among school pupils. The popular demand for playgrounds is tending to increase the size of school yards and the provision of bathing and gymnasium facilities in the school buildings.

**European Playgrounds** — Abroad the emphasis has been placed upon the organization of play rather than upon the extension of places for it. The efforts are made almost entirely by voluntary agencies, though these, especially on the Continent, frequently receive considerable financial support from municipalities. In England the education authorities of a score or more of cities grant the use of school grounds, buildings, and public parks to such organizations as boys' and girls' brigades, scouts, Children's Play Centers committees, and Children's Happy Evenings societies. In a few cases the authorities are also giving financial aid, but usually the provision of apparatus and organizing ability comes from the voluntary organizations. On the Continent the most active agents are the Central Committee for the Encouragement of Games in Germany, the Society for the Promotion of Games of Vienna, the German Society for the Promotion of Organized Play at Prague, the *Comité des écoles de garde* of Paris, the Society for Open-air Games of Gothenburg, Sweden, and the Swiss Society for Games and Excursions. C A P

See GAMES, PLAY

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**PLAYS, SCHOOL** — See DRAMA AND EDUCATION; FESTIVALS, SCHOOL

**PLEASURE** — See PAIN AND PLEASURE.

**PLENUM SYSTEM** — See VENTILATION.

**PLOTINUS** — See NEOPLATONISM.

**PLURALISM** — The opposite of monism (*q v*), the theory according to which there are a number of independent ultimate principles of reality or real beings. It includes systems as diverse as the atomism of Democritus, the monadism of Leibnitz and Herbart, and the radical empiricism of William James (*qq v*).

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**PLUTARCH** (c. 46-125 A.D.) — One of the greatest teachers, historians, and moral philosophers of antiquity, who was educated at Athens and traveled extensively. He spent some time at Rome, where he lectured on ethics, acted as tutor of the youthful Hadrian, and collected historical materials. Returning to Greece, he organized a school at Chæronea, his birthplace, where for many years he lectured to the young and composed dialogues after the manner of Plato and Cicero. Here he carried on his historical studies and wrote his *Parallel Lives*. These embodied the results of enormous erudition and research. Their purpose was chiefly ethical, and they exerted a powerful influence in upholding the highest Greek and Roman ideals of conduct. They formed the basis of Roman education in both home and school for many generations and furnished Shakespeare, Milton, Browning, and other modern writers with materials for some of their greatest works. His *Opera Moralia* consists of sixty didactic essays, the first of which, *On the Education of Children*, is an educational classic. It is the oldest extant treatise entirely devoted to education. Plutarch insists upon the importance of heredity and a good example from parents, argues that the schoolmaster must be of blameless life, pure character, and great experience, subordinates all advantages of rank and fortune to education, of which philosophy should be the chief study, but not to the neglect of science; approves of the higher education of women in order that they may help in the education of their children, and recommends that paternal discipline should be long and thorough.

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**POETRY** — See LITERATURE

**POGGIO BRACCIOLINI, GIOVANNI FRANCESCO** — See RENAISSANCE AND EDUCATION.

**POISONS AND POISONING** — See INTOXICATION, INJURED, FIRST AID TO

**POITIERS, UNIVERSITY OF, FRANCE**

— Founded in 1431 by Charles VII to draw students away from the University of Paris, then in the hands of the English. The University constitution was modeled on that of Toulouse (*qv*), a compromise between those of Paris and Bologna. There were originally faculties of law, theology, medicine, and arts. The first mention of statutes appears in 1488, but they were revised in 1553, and remained in force until the Revolution. The University was at no time of great eminence, and it was already in a condition of decadence when it was closed at the time of the Revolution. The law faculty was restored in 1806, followed in 1846 by the faculty of letters, and in 1856 by the faculty of science. In 1841 the *École de Médecine*, now the *École Préparatoire de Médecine et Pharmacie*, was established. The enrollment at the University in 1911 was 1135 students, of whom 875 were in law.

See FRANCE, EDUCATION IN

**POLAND, EDUCATION IN — History —**

The division of the territory of Poland between Russia, Prussia, and Austria, which was accomplished in 1795, ended the independent existence of one of the oldest and, for a time, one of the most powerful kingdoms of Europe. Its history begins to take definite form in the latter part of the tenth century, when Christianity was forced upon the people by King Mieczyslaus I. For centuries following this kingdom served as the bulwark of Europe against Mongolian, Tartar, and Turkish hordes, and eventually as the "Champion of Christendom" against the Moslem power. The early history of education in Poland is a record of clerical and cathedral schools, of monastic schools maintained by the order of the Benedictines, who were invited to establish themselves in the country, in the eleventh century, by King Boleslaus the Great, and of the rise of town schools in the thirteenth and fourteenth centuries,—the result of German migrations into the centers of trade and industry. As in the other European nations the studies of the principal schools were those of the trivium and quadrivium, and the language of instruction was Latin, but the Polish language appears to have been used conjointly with the Latin, and the German language in the schools established by German settlers.

Both the weakness and the strength of Poland and the character of its national education were due to its political structure, which was

that of a feudal aristocracy or aristocratic republic. The nobles from the beginning had absolute power over their serfs, and their restraint upon the authority of the king steadily increased until he became merely their agent. Education was the privilege of the nobles and reflected their spirit. Toward the close of the twelfth century, the sons of the nobility began to frequent the universities of Italy and France. In the thirteenth century they were sufficiently numerous at the University of Paris to form a "nation." Thus intellectual attainments were added to the military prowess for which the nobles were distinguished. The fourteenth century was marked by the extension of the power and the territory of Poland. Wealth increased through the commercial activity of the great towns, two of which, Dantzic in the north and Cracow in the south, at this time the capital, joined the Hanseatic League; Warsaw and other towns on the Vistula sprang into importance. The political constitution of the nation, as an aristocratic republic, was defined by statutes passed during the reign of Casimir III (the Great). The supremacy of the nobles was confirmed by these acts, but their power of life and death over the peasantry was abolished, and a degree of civil independence was assured the towns. The national Diet also assumed form at this time, the nobility and higher clergy having chief representation therein, although merchants and the inferior clergy were admitted; the principle of hereditary succession to the crown was ultimately eliminated, and the sovereign was elected by the Diet.

Education naturally engaged the attention of a lawgiver like Casimir the Great, and in 1364 he laid the foundations of the first university in Poland, at Cracow, having the purpose of creating a great school after the model of Bologna. The statute authorizing the institution was published on Pentecost of that year, but its actual operations were deferred for over twenty-five years. Casimir the Great died in 1370 and, having no direct heir, he was succeeded by his nephew, Louis of Hungary. This event increased the foreign relations of Poland and introduced new ecclesiastic and scholastic influences. After the death of Louis, in 1382, his second daughter, Jadwiga, was elected sovereign, but upon the condition that she should take, for her husband, a prince chosen by the diet. As a consequence of this agreement she was married, in 1386, to Jagiello, prince of Lithuania, thus effecting the union of this principality with Poland. The new territory stretched from the Baltic to the Black Sea and eastward to Moscow. Its religion, that of the Greek Church, and its official language, White Russian, were brought by the union into immediate contact with the Roman Church and the scholastic Latin. In 1402 the University of Cracow (*qv*) was inaugurated with great ceremony and under strong ecclesiastical influences, Paris,

instead of Bologna, being the model Queen Jadwiga, who died in 1399, had left her fortune for the university; and it was richly endowed by the king and the bishop of Cracow. With the introduction of printing, the city became the center of literary activity, in the midst of which the university enjoyed great distinction by reason both of its valuable library and of its learned members. In the sixteenth century it gave to Poland the historian Jan Dlugosz, the mathematician Albert of Brudzen, and his immortal disciple, Copernicus.

The dynasty of the Jagiellos continued with a brief interruption nearly to the seventeenth century, when the throne became entirely elective. Under the successive rulers of this house there were repeated conflicts with the Germans, the Turks, and the Russians, and those hatreds were engendered which eventually proved disastrous to Poland's national life. During the same period the power of the nobles was constantly augmented through their control of the Diets. The elements of discord within the kingdom were increased by the spread of the Lutheran doctrines, which were accepted by the order of the Teutonic knights, and rapidly transformed the German schools. Rival schools increased their activity, and under Sigismund II, who reigned from 1548 to 1572, religious animosity gave rise to fierce persecutions.

The University of Cracow yielded nothing to the new religious doctrines and was unmoved by the spirit of the Renaissance, which was transforming the universities of Western Europe, consequently the Protestants established higher schools of their own. Two of these, created in the sixteenth century by the Calvinists of Lithuania, at Kievdany and Slutsk, respectively, are still in existence. The Bohemian brothers established a higher school at Lissa, which numbered among its directors John Amos Comenius. It was probably to offset this movement that the Bishop of Warmie, in 1564, invited the Jesuits to open colleges in his diocese. From this time to the middle of the eighteenth century the influence of the Jesuits was supreme in educational matters, but eventually they gave place to the Piarists (*q v*), who entered into the field in 1596. The schools of other religious sects, the Lutherans, Greek Church, etc., merely reached their own adherents. Thus through the divergence of ideals the educational provision of the country tended to destroy the sense of national unity. The situation is illustrated by the following summary of schools and higher institutions for 1740 —

<i>Catholic Universities</i>	
(Cracow, Zamosc, Vilna) . . . . .	3
<i>Secondary Schools</i>	
Preparatory to Cracow and Zamosc . . . . .	10
Preparatory to the Jesuit University, Vilna . . . . .	67
Controlled by Piarists . . . . .	27
Controlled by Protestants . . . . .	5
Total . . . . .	112

In the higher and secondary institutions there were 22,400 students and in the 1500 elementary schools above 30,000 pupils.

The great body of the people at this time were in a state of ignorant servitude; only the nobles, the merchants, and a very small proportion of the free peasantry were instructed; the nobles constituted the nation, but a nation broken by religious dissensions and feuds, and menaced by hostile forces on every side. In this crisis the reform of education was undertaken by Stanislas Konarski, a Piarist priest who had been a student in the famous Nazarene college at Rome. After completing his studies he made a tour of France and came into intimate relation with Charles Rollin, who had completely reformed the higher schools of his own country. Encouraged by this example, the Abbé Konarski, on his return to Poland, established a school of a new order for the young nobles, the *Collegium Nobilium*. Its curriculum comprised the exact sciences, physics, astronomy, mathematics, geography, universal history, the history of Poland, and the classics in restricted degree. The influence of the college was supplemented by that of the "school of cadets," which was established by Stanislas-Augustus Poniatowski, soon after his election to the throne in 1764. Although this king appears to have been a mere puppet in the hands of the Empress Catherine of Russia, the military school became a nursery of nationalism. Among its cadets was Kosciusko, chief of the band of patriots who sought to free their country from foreign invaders. The educational reform was opposed by the Jesuits, but the disastrous contests of 1772, in which Prussia and Austria wrested entire provinces from Poland, gave irresistible force to the national movement. It was fostered by Rome as the only check to the encroachments of Russia and the Greek Church, and by Papal Bull of July 21, 1773, the order of the Jesuits was suppressed, and then confiscated properties were turned to the service of the reform movement. A few months after this event, the Diet created a Commission of Public Education and to it committed the charge of all the schools, colleges, and universities in the country. The secretary of the Commission was Gregory Pyramowicz, a Jesuit, but in full sympathy with the reform movement. The measures advocated by this commission anticipated many of the more important provisions of modern systems. The universities were transformed, normal schools established, and laws were enacted (1783-1790) regulating the entire service of public instruction. In the colleges the Polish language replaced Latin as the medium of instruction, the sciences and civil and ethical subjects took the place of the scholastic philosophy and metaphysics, and observation and experiment broke up the old routine of memoriter recitations. A special

committee was appointed to secure a new order of textbooks, and provision was made for the systematic inspection of elementary schools and for supplying them with trained teachers.

Thus, on the eve of its destruction as a nation, Poland bore an important part in the educational reforms of the eighteenth century, and its school law remains a lasting memorial of its awakened national spirit. In 1792 the second partition of the country was effected, and in 1795, the third division, which ended the ancient kingdom of Poland.

**The Divided Kingdom** — Since the division the Prussian government has suppressed the use of the mother tongue in the Polish schools, which have been gradually and completely Germanized. The similar attempt in the Austrian division was abandoned in 1867, and the Polish language was restored as the medium of instruction, and at present the educational conditions in Austrian Poland are comparable to those of Western Europe. In 1910, beside the two universities, Cracow and Lemberg, the polytechnic school and several technical schools of a lower order, there were in this division 84 secondary schools, with 34,853 students, and 5036 primary schools, enrolling 953,500 pupils, for a population of 3,982,033.

**The Grand Duchy of Warsaw** — The Grand Duchy of Warsaw, formed by Napoleon from Polish provinces of Prussia under the treaty of Tilsit, 1807, continued the movement started by the Education Commission of Poland. In 1814 the Grand Duchy was united with Russia, and by the agreement of the Congress of Vienna, 1815, it was organized with other territory as a constitutional kingdom subject to the Czar. To this division of the ancient kingdom the name Poland is still applied. It comprises an area of 49,157 square miles and in 1909 had a population of 11,671,800.

**Russian Poland** — The kingdom of Poland within the Czar's domain was given a separate educational system under the control of a Commission of Worship and Public Instruction. For a few years the former director of education in the Duchy of Warsaw, Stanislas Patocki, was retained as chief of the commission, and the progressive movement continued. During his administration, the University of Warsaw was created, 1816, and the following year it was opened with imposing ceremonies; a higher technical school and several middle technical schools were established, and secondary schools and primary schools multiplied, but reactionary influences set in and the futile revolt of the Poles in 1830 resulted in the reduction of the "Congress kingdom" to the state of a Russian province. From that disastrous year to a very recent date, the history of education in Russian Poland is a history of suppression and conflicts, excepting for a brief respite during the administration of the Marquis Alexander Wielopolski, a

Polish nobleman who was appointed Director of Education in 1861. Moved by his counsels, the Emperor Alexander II issued the decree of May 8, 1862, reestablishing, in a measure, the educational policies of the Duchy of Warsaw. The work thus revived was terminated by the second and fatal revolt of the Poles in 1863.

Officially Poland no longer exists. After the suppression of the second revolt, the Russian division was designated as the territory of the Vistula, and later as the Vistula government. Throughout its whole extent the Russification of Polish institutions has been enforced with relentless severity. The use of the Polish language as the medium of instruction was prohibited in the secondary schools at first, and finally even in the primary schools and the Polish university at Warsaw was transformed into a purely Russian institution. This policy of suppression was embodied in successive ukases and administrative orders which were ruthlessly executed by the Russian teachers and supervisors appointed over the Polish schools. The resistance of the Polish people culminated in 1905, when the whole body of Polish pupils withdrew from the schools. Parents came together in a great public assembly and sustained this action, and finally the entire force of teachers joined in the protest and with one voice petitioned for the right to establish private schools under the control of the Polish society, in which the native language should be employed and the history and geography of Poland included in the curriculum. The Russian government yielded so far as to authorize the maintenance of private schools without the privilege of the government examinations and diplomas. The following year a law was passed which legalized private societies and thus opened the way for the remarkable development of social self-help which has characterized the last few years in Russian Poland.

Most prominent among the societies which sprang into existence was the *Macierz Szkolna* (Mother of Schools), which after vigorous and successful work was dissolved by an order of Dec 15, 1907. The corporation of merchants at Warsaw also established many schools. The chief private schools are models of construction, equipment, and hygienic arrangements, and are provided with systematic medical inspection. Polish gymnastic societies for promoting school plays, school colonies, and manual work in schools, have also achieved excellent results in the last few years.

According to the last issue of the Year Book of Russia (1911) there were 6649 schools in this government in 1909, having an enrollment of 306,185 pupils distributed as follows: high schools, 1743; middle schools, 16,236; special schools, 15,725; primary, 272,481, but as the private schools are not included it is impossible

to form any idea as to the extent of school attendance on the part of the Poles. It is, however, significant that whereas the proportion of illiterates to the population above nine years of age in the other divisions of the Empire ranged from 70 to 93 per cent according to the last estimates (1897), in the Polish section it was only 59 per cent.

**Higher Education** — The survival of the Polish national spirit through the century of dispersion and suppression is one of the most striking facts in modern history. It is a caste spirit intensified by heroic traditions embodied in a noble literature. The extent to which the Polish people attend school under present conditions is a question, therefore, of less significance than that of the institutions which still preserve the language and record of their national distinction. In the number of these must be included the University of Königsberg, established in 1544 by Albert, Duke of Prussia, for the purpose of promoting religious, literary, and scientific culture among the different peoples inhabiting his dominions. Failing in the effort to secure the sanction of the Pope, this Protestant university received a charter in 1561 from King Sigismund II of Poland. The special object of the theological faculty of the university was to train ministers who could teach the scriptures to the Polish and Lithuanian subjects of the duke in their native languages, and with these peoples its history and activities have been identified. The university still maintains a Polish "seminar."

Cracow and Lemberg, in Austrian Poland, are essentially Polish universities. The Imperial Academy of Sciences maintained in connection with the former is the present center of the highest intellectual activity of the Poles without regard to their geographic location. The University of Lemberg was a feature of the educational reform planned by the Empress Maria Theresa, which was not accomplished until 1784, a few years after her death. The university was completed under the present emperor in 1894 by the establishment of the medical faculty. Like the University of Cracow, Lemberg possesses a valuable library. Although the University of Warsaw has been transformed into a Russian institution, its library is especially rich in works of Polish literature, history, and law. The principal archives of the Polish kingdom are also at Warsaw. This city, capital of the Vistula government, is therefore the center of research in respect to a history which on account of interrelations is a matter of equal concern to all Slavonic and Teutonic nations.

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**POLIOMYELITIS** — See INFANTILE PARALYSIS

**POLITICAL ECONOMY** — See ECONOMICS

**POLITICAL EDUCATION** — See CITIZENSHIP, EDUCATION FOR, PATRIOTISM, EDUCATION IN

**POLITICAL SCIENCE** — **Definition, Method, and Relation to Allied Sciences** — Political science (*Staatswissenschaft*) is defined by Bluntschli as "the science which is concerned with the State, which endeavors to understand and comprehend the State in its fundamental conditions, in its essential nature, its various forms or manifestations, its development." Some writers, especially in France, prefer the plural form, "the political sciences" (*sciences politiques*), arguing that there is no single science of the State, but rather a group of related sciences. The term "politics," used by many writers, is open to the objection that in popular usage it denotes the concrete and often partisan art of government, rather than the systematic study of political forms and phenomena. The term politics arose among the Greeks and referred originally to the government of the city (*πόλις*). With the decline of the city States and the development of modern national organizations, the term was correspondingly widened. The State, the institution with which political science deals, may be defined as a population which occupies a definite territory and which is politically organized by means of a government which formulates and administers, in the form of law, a sovereign will over all individuals and associations of individuals within the State, and which maintains a sovereign independence by adjusting the mutual powers and obligations of the State in its dealings with other States.

The scientific investigation of political phenomena is carried on under certain difficulties. The facts of history cannot be reproduced or made the subject of experimentation, and few artificial devices can be used to direct

or increase the observation of facts or the registering of results. Besides, social facts do not recur at regular intervals, nor follow invariable general laws. The influences affecting them are complex and closely interrelated, and the actions of individuals can seldom be accurately predicted. Accordingly, political science employs a variety of methods. Experimentation is carried on whenever the organization or activities of government are consciously modified. The biological method which attributes to the State the qualities of a living organism emphasizes the unity and continuous evolution of political forms. The psychological method, popular among French writers, interprets social phenomena in terms of psychological laws. The juridical method, favored by the Germans, views the State as a legal, rather than a social, institution, and draws its conclusions from an analysis of the State's relations in public law. The historical and comparative method aims to discuss the origin and development of political forms, and the laws of political causation, and by selection, comparison, and elimination to derive general principles from the mass of historical data. This method, probably the most fruitful, is also the most difficult, being especially liable to errors resulting from personal bias or from the omission of elements which invalidate the most important conclusions.

The growing realization of the fact that no science dealing with mankind has special data all to itself, and that political phenomena are not the manifestations of a distinct side of human nature nor of a distinct species of human beings, has emphasized the relations between political science and the other social sciences. Starting with those acts that are specifically governmental, political science works gradually through related acts into the general field of human conduct. From history it draws its data, in sociology it observes the development, structure, and functions of social institutions closely related to the State, in economics it finds that motives and action chiefly concerned with the production, distribution, and consumption of wealth, influence and are influenced by political forms and functions, in ethics it sees a close connection throughout the whole development of morality and of law. Modern thought accentuates relations rather than differences, and by utilizing the mass of materials gathered in allied fields, political science is no longer founded upon shifting speculations, but is possessed of sounder knowledge of the nature and tendencies of the State, can build up more scientific principles of political causation, and can make possible more rapid and rational political progress.

**Historical Development** -- To the historical development of political science two main influences have contributed. Rulers and

statesmen, in the work of practical government, necessarily conceive certain political principles upon which to base their actions. These are embodied in institutions, or are found, expressed or implied, in laws, constitutions, treaties, and state papers, in the writings and speeches of politicians, and in general public opinion. Such principles, often arising unconsciously, are seldom comprehensive or systematic, but are often full of prejudices, legal fictions, and inconsistencies. On the other hand, political philosophers, outside the current of actual government, have frequently attempted to build up theories of the State. Sometimes these have aimed to explain the origin of the State, to justify its authority, or to determine the scope of its activities. Again they arise to uphold or to attack certain existing governmental forms or methods. Sometimes these theories have been purely speculative or idealistic in nature. Again, they have resulted from the observation and analysis of existing or historical governmental institutions. Through a combination and interaction of these influences the science of the State has, in the main, developed.

Political speculation proper scarcely existed before the rise of Greek philosophy. In the Oriental nations thought was based upon tradition and belief rather than upon reason, and sufficient political liberty to permit questioning seldom existed. The Greeks, however, having no powerful priestly class and few fixed dogmas, viewed the State and law as "natural" in origin, as representing the highest form of life, and, in their small city units, developed considerable individual freedom and much keen thinking in politics. In the philosophical idealism of Plato and in the more scientific observations of Aristotle are found the best statements of Greek political theory. While the Romans took their philosophy, with little modification, from the Greeks, they worked out valuable practical principles of government. The ideas of positive law, systematic jurisprudence, sovereignty, citizenship, municipal and colonial administration, and world empire were among their contributions. They also emphasized the value of checks and balances, and of political compromises in securing stable government. Polybius and Cicero best state their theories. After the fall of the Roman Empire, the doctrines of the Christian Church and feudal customs based on landholding furnished the chief political principles, and medieval theory was chiefly concerned with the proper relation of Church and State. The papal party, represented by Gregory VII, Innocent III, and Thomas Aquinas, claimed superiority for spiritual power as more directly conferred by God. But by the fourteenth century the revived study of Roman law furnished principles for the defenders of civil power, and Dante and Occam supported the national monarchies.

then arising. The Renaissance spirit in politics was represented by Machiavelli, who replaced scholastic deductions by actual investigation and comparison, and again brought political theory in touch with actual facts. He also divorced politics from religion, justified conquest, and recognized nationality. After the Reformation, Calvin's doctrine of democracy in church government was applied by his followers in Holland, England, and America as a foundation for political liberty (See CALVIN, CALVINISTS AND EDUCATION). Meanwhile, the existence of a number of well-organized national monarchies, having relations one with another in war and peace, prepared the way for modern political science. Bodin, in the sixteenth century, made the first systematic study of politics since Aristotle, and in the seventeenth century Grotius (*q v*) laid the foundations of international law. In the writings of these men the modern theory of sovereignty as internal supremacy and external independence was established. The growing contest between king and people next influenced political theory. The doctrine of divine right upon which the absolute monarchies were based was upheld by James I and Bossuet, but was attacked by the growing belief in "natural rights" and in the "social contract" as the basis for political authority. Hobbes utilized this theory to support kingship, but in the hands of Locke and Rousseau the new theory paved the way for popular sovereignty. Montesquieu pointed out the influence of physical environment and emphasized the value of the separation of powers in government. In the nineteenth century the growth of historical knowledge and the biologic doctrine of evolution chiefly influenced political science. Modern political science, then, begins with Bodin, Grotius, Pufendorf, Hobbes, Locke, Rousseau, and Montesquieu. During the last century the science has been enriched by the work of numerous scholars, among whom may be mentioned Von Mohl, Wartz, Holtzendorf, and Bluntschli in Germany, De Tocqueville and Laboulaye in France, Lewis, Austin, Maine, Mill, Freeman, Sidgwick, and Seeley in England, and Hamilton, Madison, Lieber, Woolsey, and Burgess in America.

**History of Academic Teaching** — As an academic study, politics arose as a division of practical philosophy, to which the theory of "natural law" was added in the seventeenth century. During the eighteenth century the Cameralistic sciences (see ECONOMICS) developed, and during the nineteenth century the separate political and socio-economic sciences were evolved. The systematic and juristic phase of political science has always been closely connected with the study of law, and considerable impetus, especially from the comparative standpoint, has been given by the recent growth of historical knowledge and interest.

German universities have held the foremost place in the development of political science, Dominicus Arumaus first lecturing on public law at the University of Jena between the years 1605-1637. Between 1661-1668 Pufendorf lectured on the new theory of "natural law" at the University of Heidelberg. During the latter part of the seventeenth and the first half of the eighteenth century the University of Halle, and during the latter half of the eighteenth century the University of Gottingen, were the chief centers of political studies. Beginning with the nineteenth century, political science shifted gradually from a "natural law" to an historical basis, and the political transformations through which Germany was passing gave additional impetus to political studies. Among the teachers of this period were Zacharia and Von Mohl at Heidelberg. By the middle of the nineteenth century the increasing knowledge of political institutions in other parts of the world made possible the comparative method of study. Bluntschli, who followed Von Mohl at Heidelberg and Gneist at Berlin, typified this development. Since the establishment of the German Empire a host of scholars, among whom may be mentioned Laband, Bric, and Jellinek, have emphasized the juridical rather than the historical method, and have paid particular attention to the nature of the federal State. In a few universities, Tübingen for example, studies relating to public affairs are combined in a separate faculty, but in most German universities the courses are grouped under the faculties of law or of philosophy. The first seminar in political science was organized at Jena in 1849. The *Statistische Seminar* at Berlin was founded in 1862, and between 1871-1876 a number of the leading universities established seminars for the investigation of political and economic problems.

The chief influence in the academic development of political science in France came from Laboulaye, a contemporary of Bluntschli in Germany and of Lieber in America. His lectures were given at the *Collège de France* during the third quarter of the last century. At the University of Paris, political science is taught in the faculty of law. Unusually valuable lectures in practical politics are given at the *École libre des sciences politiques*. In England the strong classical and mathematical traditions of Oxford and Cambridge offered considerable resistance to the newer social sciences. To the professorships of civil law established by Henry VIII, chairs of modern history were added at Cambridge in 1724 and at Oxford in 1854. By 1800 English law had been made a separate department in both universities. International law and diplomacy were introduced in 1854 at Oxford and in 1867 at Cambridge, and Oxford added in 1869 a professorship of jurisprudence. At present there is a professor of colonial history at Oxford and a

lecturer in politics at Cambridge. There are, however, no distinct departments of political science, as in the German or American universities, courses in government being incidental to law or to modern history. For example, Austin, Maine, Bryce, Dicey, and Pollock have held chairs of law, Sidgwick was a lecturer in moral science, and Freeman and Seeley taught political science in connection with modern history. Seeley's "conversation-class" at Cambridge was a sort of political science seminar. Separate chairs of political science are found in some of the younger universities, Manchester, for example. Much of the best writing on political subjects in England has been done by men not connected with the universities.

Jefferson's (*q.v.*) influence dominated the first teaching of politics in America. Changes made by him in 1779 at William and Mary College emphasized political and legal studies, and the curriculum which he constructed for the University of Virginia (1825) contained government as one of its main groups. Meanwhile, in the North, crude beginnings in political studies, usually in connection with philosophy, were being made by McVickar at Columbia (1817) and by Bowen at Harvard (1850). A more direct impetus was given by Woolsey, who, as president of Yale in 1847, taught political philosophy and international law. One of his students, Andrew D. White, who studied later in France and Germany, further emphasized political studies, first as professor at Michigan (1857-1862), then as president of Cornell (1868-1885). The most powerful stimulus to the teaching of political science was given by a German, Francis Lieber. In 1857, on the advice of McVickar, a separate professorship of history and political science was established at Columbia, and Lieber, who for twenty years had been teaching and writing at Columbia, S. C., was called to this chair. He introduced German methods and ideals, and began in America the fruitful coordination of political science with history, rather than, as formerly, with metaphysics. Lieber's professorship was abolished in 1865, but was reestablished in 1876 when John Burgess, who had studied in Germany and taught political science and history under Seeley at Amherst (1873-1876), took Lieber's place. In 1880 Burgess organized the School of Political Science at Columbia, Mayo Smith, Goodnow, and Munroe Smith being his first assistants. This school sent many students to study in Germany and has exerted a preponderant influence on the study and teaching of political science in this country. More recent teachers of politics include Hart and Lowell of Harvard, Dunning, Moore, and Beard of Columbia, Wilson of Princeton, Willoughby of Johns Hopkins, Merriam of Chicago, Rowe of Pennsylvania, Reinsch of Wisconsin, and Garner of Illinois.

#### Academic Organization and Method —

American colleges offer a considerable and growing amount of undergraduate instruction in political science. A recent study based on forty representative colleges shows that 72 per cent of these institutions offer courses in general political science or comparative government, 50 per cent teach American government, 45 per cent teach municipal government, and that courses in political theories, American politics, and American diplomacy are given in from 10 to 30 per cent of the number. In addition, fundamental courses in jurisprudence, international law, and American constitutional law are frequently offered. Some of these colleges have distinct departments of political science, but in others the work is organized under the department of history, or, in some cases, in connection with economics or sociology. The usual method of instruction is based upon general textbooks, and consists of lectures and discussions, collateral reading, oral and written reports, and periodical examinations. Clubs for the study of current events are often formed, and, when conditions permit, the operation of actual politics is observed or practical reform work is attempted. Since the courses are usually elective and limited to juniors and seniors, the total proportion of students receiving collegiate instruction in political science is comparatively small.

In the organization of the departments of political science in the leading American universities little uniformity can be found. At Chicago, Johns Hopkins, and Wisconsin there are separate departments of political science, at Harvard, history and government are grouped together; at Yale, the social sciences, law, and history are combined, and at Columbia, the faculty of political science includes the departments of history, economics, sociology, and political science proper. The usual courses include constitutional, administrative, and international law, political theory, comparative government, and certain phases of American government, especially municipal and colonial government, and political parties. The more elementary courses are usually limited to undergraduates; certain other courses are open to both undergraduates and graduates, and the more advanced courses are offered to graduates only. A clear-cut distinction between undergraduate and graduate courses and methods can scarcely be said to exist. However, in graduate courses the lectures are not dogmatic presentations of fundamental principles, but aim rather to open up the literature of the subject and to suggest its problems. In the seminar, instructors and students meet periodically for discussions and reports based on investigation and research. Voluntary clubs are often organized for the purpose of discussing or debating political topics, or listening to lectures on public affairs.

Two especially valuable series of publications, resulting from the investigations of university instructors and students, are the *Johns Hopkins University Studies in Historical and Political Science*, published monthly since 1883; and the *Columbia University Studies in History, Economics, and Public Law*, consisting of over one hundred monographs, issued since 1891. The study of political science is also furthered by associations affiliated with several of the large universities. The Academy of Political Science in the City of New York, organized in 1880 under the direction of the Faculty of Political Science of Columbia University, has, since 1886, published the *Political Science Quarterly*, and, since 1910, issued four volumes of Proceedings each year. The American Academy of Political and Social Science, organized in 1889, is affiliated with the University of Pennsylvania and publishes its *Annals* bimonthly. The American Political Science Association, established in 1903, is a national organization for "the encouragement of the scientific study of Politics, Public Law, Administration, and Diplomacy." It holds annual meetings, usually in conjunction with the American Historical Association, publishes the addresses delivered at such meetings, and controls the quarterly publication of the *American Political Science Review*.

**Political Science and Practical Politics** — The study of political science lies in the border zone between those subjects that are especially of cultural value and those that are more specifically practical and professional. From the standpoint of the former, it brings the student in touch with the historical development of thought and of institutions, and familiarizes him with the issues and problems of modern civilization. From the standpoint of the latter it furnishes a direct foundation for law, government service, journalism, and good citizenship.

The increasing importance of political science in the university is both a cause and a result of the increasing importance of the university in practical politics. The proportion of college graduates in public office is growing each year, men actively engaged in university instruction have recently been candidates for important elective offices, and the influence of the university and its affiliated alumni associations is a valuable political asset. University trained men hold important positions in the civil service, and university teachers are frequently appointed to serve on governmental boards and commissions. The scorn in which the practical politician formerly held the academic teacher of politics is disappearing, and the State tends more and more to apply scientific political methods in actual government. History and present conditions are investigated before action is taken on new questions, and an increasing use is made of statistics. Political phenomena are observed and classified, and generalizations

are made from the data thus collected. For this work, dealing with conditions both at home and abroad, the State draws largely upon university teachers of political science. Especially close is the connection between academic and practical politics in the state universities of the Middle West, in some cases, as in Wisconsin, the university has become in effect a coordinate department of state administration, and exerts a powerful and direct influence upon public opinion and upon legislation.

In Europe an even closer connection between academic and practical politics is maintained by the Seminary of the Prussian Statistical Bureau at Berlin and the independent School of Political Sciences at Paris. The former, a government institution opened in 1862 under the chief of the Bureau of Statistics, aided by various university professors, is a laboratory of political science. It trains university students for the higher branches of the civil service and collects a vast amount of data valuable for both the scholar and the statesman. The latter, founded in 1871 as a private joint stock company, prepares for public affairs, especially for certain branches of the administration under the civil service system, and many of its lecturers are men prominent in public life. The establishment of a similar institution at Washington has often been urged.

**Scope and Problems** — The scope of political science and its main divisions are determined by several broad categories under which the State may be viewed. There is, first, a distinction between the subjective and objective phases of the State. The former exists in the human mind and creates political theory, the latter exists in outward manifestations and gives rise to political institutions. Between political theory and political institutions the relation is close, each being both a cause and a result of the other. A second distinction views the State as both static and dynamic. From the former standpoint emphasis is laid on organization, from the latter, on function. Political science must tell what the state *is*, and what it *does*. The physical background of the State in population and territory, the constitutional organization of government, with its separation into legislative, executive, and judicial departments, and its division into national, local, and colonial agents, the governmental position of the electorate and of political parties, must all be described. The activities of the State are determined by the fundamental relations of individual to individual, some of which the State regulates under private law, the relations of State to individual, which the State determines in its public law, and the relations of State to State, which are regulated by the principles called international law. The share of individuals in governing authority and their freedom from governmental



interference open up important questions of sovereignty and liberty. Views as to the proper scope of state function vary from an extreme individualism to an extreme socialism. Opinions as to the proper nature of international relations show scarcely more agreement. A third distinction views the state as past, present, and future. The origin and political development of both theory and institutions must be traced; present conditions both as to organization and functions must be described; and future tendencies may either form the basis of political speculation or lead to active efforts at reform.

Certain fundamental changes have taken place during the past quarter century in the attitude of mind with which political scientists approach their subject. The doctrine of natural rights is now seldom referred to as a basis for political practice, neither are political events ascribed to the intervention of a divine Providence. There is also considerable hesitation in explaining broad and complex movements on the basis of racial characteristics. The speculative theorists and the builders of utopias have been replaced by men trained in historical research and in the scientific theory of evolution. Records of past political systems and theories are carefully studied, present day conditions are minutely analyzed and described, and principles of causation are diligently sought. Modern scholars, freeing themselves as far as possible of personal bias, and making little effort to praise or condemn, or to point morals, aim to view the origin, development, organization, relations, and functions of the state, in the light of past conditions and present tendencies, constantly remembering the close connection between the political activities of mankind and those other phases of development which make up the total process of social evolution. R G G

See CIVICS for treatment of the subject in the lower schools.

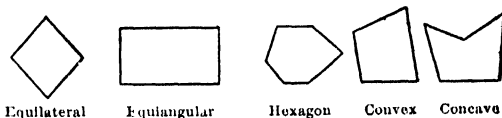
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**POLYGON** — A word derived from the Greek and meaning many-angled. In elementary geometry the term is usually limited to convex plane figures bounded by a continuous line, made up of straight lines. We may, however, have concave polygons, cross polygons, and polygons that are not in the same plane (skew polygons).

A polygon is said to be regular if its sides are equal and its angles are equal. The study



of the regular polygons forms a part of the work in elementary plane geometry. Of the principles of polygons, one of the most important is that relating to the sum of the angles, this sum being equal to  $(n-2)$  times 2 right angles. The study of the stellar polygon was prominent in medieval education. D. E. S.

**POLYGONAL NUMBERS** — The Greeks paid much attention to the theory of numbers, and there still remain in arithmetic certain relics of their activity in this field, as in the treatment of prime numbers, even and odd numbers, and square and cube numbers. A square number derives its name from the fact that 4, 9, 16, 25 dots can be arranged in the form of a geometric square. A square number is a special form of a polygonal number, for it is possible to arrange the dots in the form of other polygons, such as triangles, pentagons, etc. Among the polygonal numbers studied by the Greeks, and found in the medieval education, are the following —

Triangular,	1,	3,	6,	10,	15,	..
Square,	1,	4,	9,	25,	36,	..
Pentagonal,	1,	5,	12,	22,	35,	..
Hexagonal,	1,	6,	15,	28,	45,	..

With the exception of square numbers the polygonal numbers are no longer studied.

D E S

**POLYHEDRON** — A term derived from the Greek and meaning many-faced, or many-seated. A regular polyhedron has all of its faces congruent regular polygons. There are five regular convex polyhedrons, and these were studied so extensively in the school of Plato as to have the name of "Platonic bodies." The Greeks attributed particular mystic significance to these various bodies. One of the fundamental properties of convex

## POLYHEDRON

polyhedrons is that the number of faces plus the number of vertices equals the number of edges plus two. The polyhedrons of chief importance in the teaching of elementary mathematics are usually considered to be those which are needed in the problems in mensuration; namely, the cube, parallelepiped, prism, pyramid, and frustum of a pyramid. As a formula of mensuration the most important one is the so-called prismatoid formula, that  $v = \frac{h}{6}(b + b' + 4m)$  where  $h$  = height,  $b$  and

$b'$  = the bases, and  $m$  = a mid-section parallel to the base (See GEOMETRY.) D. E. S.

**POLYTECHNIC HIGH SCHOOLS.** — See INDUSTRIAL EDUCATION; TECHNICAL EDUCATION

**POLYTECHNIC INSTITUTE, BROOKLYN, N Y** — See TECHNICAL EDUCATION.

**POLYTECHNIC SCHOOLS.** — See TECHNICAL EDUCATION.

















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